

GEORGIAN SPIDERS

TAMARA MCHEIDZE



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SYSTEMATICS, ECOLOGY AND
ZOOGEOGRAPHIC ANALYSIS

TAMARA MCHEIDZE

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Preface to the Translation

Tamara Mcheidze was born in Kutaisi on 22 December 1915. After graduating from the Stalin State University (nowadays *Ivane Javakishvili Tbilisi State University*), she taught zoology of invertebrates and insects until her retirement in 1990 and continued some teaching activities until her death on 11 April 2006. During her early days the famous Russian arachnologist Dmitri Charitonov was Tamara Mcheidze's mentor and supervisor of her doctoral thesis on the spiders of Georgia. She also cooperated with Alexander Utochkin in the study of the genus *Xysticus*.

Tamara Mcheidze mainly studied the spider fauna of her home country Georgia, but also undertook a few studies on mites and opiliones. During approximately 70 years of arachnological activity, she described 36 spider species (and several harvestman and mite species). She also extended the list of spider species recorded from Georgia by 226 species and the list of species recorded from the Caucasus region by 119 species. For more information on Tamara Mcheidze's life and publications refer to Marusik & Otto (2008).

Although many of her species descriptions and determinations cannot be verified due to lost types and voucher specimens, Tamara Mcheidze can be considered one of the most important arachnologists of the Caucasus region – not least because of her monograph on the spiders of Georgia. The last name of Tamara Mcheidze (Georg. მჭედზე) can be transliterated in several ways, e.g. 'Mkheidze', 'Mkheidse', 'Mcheidze'. I follow the spelling 'Mcheidze', used in the Platnick Catalog, to minimize confusion.

Tamara Mcheidze wrote the bulk of this monograph during the 1970s but did not pursue the publication after the death of her husband in 1977 and increasingly difficult working conditions in the last years of the Soviet Union. The book was finally printed in 1992 but remained unpublished during the turbulent and insecure years of post-Soviet Georgia until 1997. Copies of this rare book can be found in some arachnological libraries, e. g. at the Naturkundemuseum Berlin and the Senckenberg Museum Frankfurt/Main.

When my friend and passionate myrmecologist Jürgen Trettin held up this book in a Tbilisi bookstore during our first trip to Georgia in 2004, calling out: 'Look Stefan, a spider book!', I did not have the hint of a thought on spending the coming years working on Caucasian spiders nor translating this monograph of nearly four hundred pages, written in this strange language

with the beautiful letters. The five-year translating process was mostly a prolonged exercise during learning the Georgian language, but to me it was also an introduction to the spider fauna of Georgia. The checklist on the spiders of Georgia has almost doubled since the publication of Mcheidze's monograph (Mikhailov, 2013; Otto, 2014) and more suitable determination tools for the European spider fauna have become available. However, I am sure that consulting this monograph can improve the arachnological work of anybody working on the spiders of Georgia and the Caucasus Ecoregion.

I kept the translation as close to the original as possible, in order to enable taxonomists and faunistically interested zoologists to cite from this translation as one would cite from the original. I only added taxonomic information from the Platnick Catalog, version 14.0 (Platnick, 2013), some footnotes to the text and translations of citations in the references section (p. 391).

In order to facilitate convenient comparisons to the original, numbering of chapters, families, genera through to species is exactly as in the original. A number of citations in the original were not listed in the references section; this is especially true for sources of records given in the 'Distribution' part in the species entries. I suspect that most of these do not refer to actual publications but merely indicate collector and year, e. g. 'Mcheidze 1975'.

In addition to the mere translation I added Part III with some supplementary information: geographic information and a map on the locations, a comprehensive index to all taxonomic and geographic names as well as a separate references section with the literature I used for editing the translation (p. 425).

Making this monograph available to a broader audience should foster the study of Caucasian spiders and facilitate taxonomic studies by making some species descriptions by Tamara Mcheidze available in English language. This should be of help to anyone working on the taxa in question, especially, since most of Tamara Mcheidze's type material is lost. I hope that this translation will make both the work of Tamara Mcheidze and the Georgian/Caucasian arachnofauna more accessible to science.

Acknowledgements

First of all, I wish to thank Shamil Shetekauri (Tbilisi), his family and Hans-Joachim Zündorf (Jena) for introducing me to the Caucasus and Georgia in the first place. Without these friends, I would never have come to Georgia and this book would have remained untranslated.

Shamil Shetekauri and Vera Pkhakadze (Tbilisi) put great effort and time into finding relatives of Tamara Mcheidze and relevant people within Georgian institutions involved in the publication of the original Georgian edition. This greatly helped in the translating process and gave me valuable orientation on how to publish this translation.

I thank Yuri Marusik (Magadan), who provided additional information on the cooperation of Tamara Mcheidze with Dmitri Charitonov and helped putting her work into perspective.

I received helpful comments on an early draft of the manuscript from Theo Blick (Hummeltal), Jason Dunlop (Berlin), Peter Jäger (Frankfurt/Main) and Christoph Muster (Putbus). Andrew Liston (Müncheberg) helped me to improve some parts of the English text and gave some valuable information concerning the hymenopteran prey of spiders.

I am very happy to have this translation published as an open-access document. Gerwin Kasperek was of great help implementing the publication through the vifabioDOC repository and the Arachnologische Gesellschaft e.V., namely Frank Lepper (Freiburg), helped in providing the DOI.

Stefan Otto (January 2014 in Leipzig)

Abbreviations

Abbreviation	Meaning
a	anterior
ad	antero-dorsal
AE/ME/PE	anterior/median/posterior eyes
AER/MER/PER	anterior/median/posterior eye row
ALE/MLE/PLE	anterior/median/posterior lateral eyes
AME/MME/PME	anterior/median/posterior median eyes
av	antero-ventral
d	dorsal
p	posterior
pd	postero-dorsal
pv	postero-ventral
v	ventral

Introduction

The spiders (Aranei) make up an important part of the invertebrate animals. The animals of this group are an essential part of the Georgian fauna and exhibit a large diversity. This diversity can be explained by the natural conditions in Georgia, because almost all landscape types can be found here.

Initially we started working on spiders because the animals of this group had been treated only insufficiently in earlier times, their role in the ecosystems had not been thoroughly investigated (their specific relevance in the cycle of life) as well as in human economy, ecology and biogeography. This presented a challenge to study the animals of this group, even though spiders are not well-recognized objects in scientific studies because they are of no direct benefit to mankind, e.g. as a food resource.

Recently the motivation to study this group has increased concerning its extraordinary diversity. Regarding this a jointly initiated and worked-out ecological and biological program plays an important role. The literature reveals a useful characteristic of a number of spider species, especially, that spiders are predators and that they consume large quantities of pest insects, limiting their calamities in forests, fields and gardens. Lange (1969²) points out, that the spiders are species-rich and fix components of different biocoenoses among the invertebrates. Besides, spiders can be utilized for zoogeographic analysis. For example, spiders of the cave fauna are weaker indicators than insects.

Literature reports that the silk threads produced by the spinnerets, are widely utilized because they are six times as durable as common silk. They are invaluable for optical Instruments because they are fine, tensile and elastic. It is not a coincidence, that because of these characteristics spider silk is given preference over platinum fibers in theodolites and telescopes.

On the Polynesian Islands the local population utilizes spider silk in the production of clothing and fishing nets. On Madagascar they made experiments with fishing nets, which were later shown at the world exhibition in Paris 1710³. However, producing such silk artificially is still a problem (Spassky, 1920; Charitonov, 1945).

²This source is not listed in the references section.

³Sic Mcheidze (1997).

Besides the scientific interest, spider studies also have a large practical relevance. The species of this group consume the pests of cultivated plants. In this regard the spiders are almost as important as birds and certain groups of animals, which function as beneficial organisms.

Within our study a number of spider species is of extraordinary relevance, concerning measures of fighting pest insects of tea crop and citrus plants. In this regard we must point out the species *Agelena taurica*, *Agelena labyrinthica*, *Araneus diadematus*, *Argiope bruennichi*, *Misumenops tricuspidatus* and others, which live in large numbers in the citrus plantations of Western Georgia. There they consume pest species in large numbers, such as *Pieris sp.* and red-haired mites⁴, various species of aphids on citrus and tea plants and others. We collected the spider species *Erigone dentipalpis* and *Dictyna uncinata* on vine leaves in the rayons of Baghdati and Satskhvili, where they feed on spider mites (Tetranychidae). Furthermore we find the house spiders *Tegenaria domestica*, *Teutana grossa*, *T. triangulosa* and others in libraries, where they feed on book pests such as carp beetles (*Anthrenus sp.*)

Recently spiders were found underneath the bark of coniferous plants, where we normally find the larvae of bark beetles. We noticed, that the spiders living there feed on the body juices of bark beetles (*Ips sp.*) and certain sawfly species. It cannot be excluded that spiders are natural enemies of bark beetles, e. g. *Steatoda bipunctata*, which is hemi-synanthropic in Russia and is widely distributed in the coniferous forests of Borjomi and Tsaghveri in Georgia. They live in wood in a depth of 24-25 cm and feed on pest insects (bark beetles, sawflies). In any case it is important to investigate these questions.

Some *Xysticus* species should also be investigated in those coniferous forests, where the large Asian bark beetle lives. Many species of this genus are aggressive predators, which could limit the number of these pests during calamities (Charitonov, 1950)⁵.

Several biocoenoses have been subjected to quantitative countings, while during our times in the tea and citrus plantations, the quantitative results on the spiders indicated that the spiders represent a large part of the biomass and do not lag behind the insects.

Some spider species are pests, e. g. the black widow (*Latrodectus tredecimguttatus*) and the large wolf spiders (*Lycosa singoriensis*, *Lycosa vultuosa*).

The poison of the black widow is 15 times stronger than the poison of the poisonous rattle snakes. A human dies from a medically untreated bite of a black widow within one or two days. According to Rosikov (1893)⁶ ten

⁴Mcheidze (1997) probably refers to the European red mite *Panonychus ulmi* (Tetranychidae).

⁵This source is not listed in the references section.

⁶This source is not listed in the references section.

such deaths were reported in a region of the Urals. In the same year 1000 bites with 100 deaths were reported from the lowlands of Kyrgyzstan and Kaminski. Of 100 men, fighting the female spiders near Samarkand, 24 were bitten, causing four deaths. The black widow causes a lot of damage among the farm animals in the country. The bite of the large wolf spiders affects small animals (insects, passerine birds). In humans, the bite causes a local inflammation (Kalandadze & Mcheidze, 1955).

We began to study the spiders of Georgia roughly four decades ago. This monographic description of the spider fauna of Georgia is the first in the Georgian language⁷. A thorough study of the literature sources led us to the conclusion, that the study of certain groups of animals so far was of only accidental character. The researchers of the Caucasian fauna collected only near spa towns, such as Sukhumi, Gagra, Borjomi, Abastumani, Batumi, Kobuleti, etc.

It was our foremost aim to present the systematic structure of a certain group of animals. Therefore, material from all landscapes of Georgia was collected and processed in the past decades. It was the aim of the study to observe the life habits of the spiders. During these efforts their useful role in reducing the abundance of pest insects of tea and citrus plantations became clear. A number of people participated in the work. I am especially indebted to the known arachnologists Prof. D. E. Charitonov and lecturer A. S. Utochkin (Perm), who helped in the determination of spider material and provision of literature. I am very much obliged to Prof. L. Kalandadze, who urged me to start the study of spiders, a poorly studied group in Georgia and supported my early work with his helpful consultations.

The author is looking forward to receiving remarks to be included in the next edition. Original figures (from microscope and binocular) were made by L. Kutubidze, M. Dodoberidze, M. Mcheidze and the author. Additionally, figures were used from works of by N. Azheganova, J. Buchar, P. Marikovski, V. Tishchenko, P. Utochkin and D. Charitonov.

Tamara Mcheidze (1992)

⁷Referring to the original Georgian edition of this book (Mcheidze 1997).

Part I
General Part

Chapter 1

Study History

The first information on Georgian spiders was presented by Koch (1878)¹. He recorded five species for the first time in Georgia; three of these in Borjomi, one in Atsquri and one in Kazbegi. Important material on the spider fauna of Georgia was also collected by Kulczyński (1884², 1895). He recorded 43 species and one subspecies in Georgia. Of these, 19 species were recorded for the first time for Kutaisi, 14 for Tbilisi, 10 for Gelati, two for Zestaponi (Qvirila). Kulczyński recorded *Xysticus cristatus* for Kutaisi and Gelati, which had been recorded for the first time in Georgia in Borjomi by Koch. Schmidt (1895) recorded eight species for the first time in Georgia; of these, three species in Tbilisi, two in Lagodekhi, one in Alazani Valley and one species each in Poti, Sukhumi and Dusheti. Simon recorded a total of 32 species in Georgia, 24 for the first time. Eight species were recorded for the second time. Of these species, 12 were recorded in Batumi, five in Tsebelda, five in Poti, three in Zugdidi and four in Gagra.

Wierzbicki (1902) recorded only one species in Georgia (near Batumi, Kobuleti and Lagodekhi). Zawadsky (1902) recorded a whole of 20 species, of which 12 were first records for Georgia and eight were second records. Of these, twelve each were recorded in Tbilisi and Lagodekhi, four in Manglisi, two in Batumi, three in Ksani as well as two species each in Pshavi, Tshauri, Poti, Shakriani. Reimoser (1930) described a new species (*Nesticus borutzkyi*) from the Rioni Cave. Based on the handwritten manuscript of S. Spassky, Charitonov (1936) recorded four species in his *Supplement to the Catalog of Russian Spiders*: in Batumi, Tsnori River and Sukhumi. From exactly this location Charitonov describes a new species (*Nesticus zaitzevi*). It is obvious, that Charitonov's material was collected by Zaitzev.

Spassky studied the spider fauna of the Black Sea coast. He recorded a total of 64 species for Sukhumi and in part for Batumi. Of these, 35 species were recorded for first time in Georgia and 45 species for Sukhumi and nine

¹In Mcheidze (1997) sic: 'C. L. Koch, 1878', lapsus.

²This publication is not listed in the references section.

for Mikhailovski Pass. A great service in the study of the spiders of our country was done by the known arachnologist D. Charitonov. Without the attention of this researcher, the study of the Georgian arachnofauna would not have started and his works are viewed by everybody with great interest. With no less effort he dealt with peculiarities of the faunistics and ecology of the cave spiders of Georgia.

As mentioned above, Charitonov (1939) published the description of *Nesticus zaitzevi*. He regards this species to be a true troglobiont, which, besides in the Kelasuri Cave, was also found in other caves (Adzaba, Mikhailovi, Tse-belda, Psirtska). Later (1940³) he describes a further troglobiont. Osterlopi (1940)⁴ recorded *Tegenaria abchasica* among other spiders collected in the Kelasuri Cave, e. g. the three species *Nesticus zaitzevi*, *Meta bourneti* and *Meta merianae*.

It is noteworthy that Charitonov (1941) divides the distinct phylogenetic group of the Caucasian troglobionts into two sub-groups. In Georgia, two species of the first form are distributed, which are placed in the phylogenetic *Pontic group* (*Nesticus borutzkyi*, *N. ponticus*, while another species, *Nesticus zaitzevi*, belongs to the phylogenetic *Abkhazian group*. Within the same article, the author records two species in the Stalactite Cave near Tsqaltubo: *Holocnemus longipes* and *Nesticus borutzkyi*.

Based on material collected by Zaitzev (1941) in the Sataplia Cave, the same author (1946) recorded the two species *Holocnemus longipes* and *Nesticus borutzkyi*. Afterwards (1946b) he published a study, which focused on spiders from Uzbekistan and in which a new spider species from Georgia was described: *Coelotes spasskyi*. Based on material of Zaitzev, Charitonov (1947⁵) described a new troglobiontic spider species from the Tarkiladze Cave in Abkhazia: *Cybaeus abchasicus*. Furthermore, he described a species based on material of Zaitzev from Lagodekhi (Ninigori Forest), the new primitive spider species *Brachythele zaitzevi*. Charitonov's revision of the family Dysderidae in the USSR (1956) is especially noteworthy, adding 13 species to the already known 18 species.

Of these species, the author described three species from Georgia (*Dysdera spasskyi*, *Harpactea zaitzevi*, *Harpactocrates fedotovi*) and recorded two more for the first time in Georgia: *Dysdera punctata*, *Harpactea caucasia*⁶. In this genus Charitonov (1936, 1939, 1941, 1946, 1947, 1948, 1956) recorded a total of 17 species for Georgia. Of these, eight were new to science: *Brachythele zaitzevi*, *Dysdera spasskyi*, *Harpactea zaitzevi*, *Harpactocrates fedotovi*, *Coelotes spasskyi*, *Tegenaria abchasica*, *Cybaeus abchasicus*, *Nesticus zaitzevi*. Four species were recorded for the first time in Georgia: *Dys-*

³This publication is not listed in the references section; possibly Mcheidze referred to Charitonov (1941a) or (1941b).

⁴This publication is not listed in the references section.

⁵In Mcheidze (1997) sic: '1948', lapsus.

⁶In Mcheidze (1997) sic: 'harpactea caucasica', lapsi.

dera punctata, *Nesticus ponticus*, *Meta merianae*, *Meta bourneti* and four species were recorded for the second time: *Harpactea caucasia*⁷, *Holocnemus longipes*, *Episinus truncatus*, *Nesticus borutzkyi*.

The academic F. A. Zaitzev (1940, 1948) showed greatest interest in the study of the cave fauna of Georgia. Together with scientists he also collected specimens of other taxa. He sent the material to cooperating specialists for determination. He privately collected arachnids from caves in Abkhazia, Kutaisi and Tsqaltubo. Charitonov worked on this material and described new species. Zaitzev (1940, 1948) described the spider fauna of Georgian caves in identity with information given by Charitonov. Differing from this, Zaitzev describes the faunistic composition of certain systematic groups in the caves. He recorded species, collected in the caves and for every species he designated its degree of troglobiosis. Furthermore, he prepared a list of the cave arachnids, listing 12 spider species.

We consecutively studied the araneofauna of Georgia since 1937. Aiming at the faunistic-ecological study of spiders, we studied spiders with stationary and mobile methods in some regions (rayons) for four decades (1937–1980). Attention was given not only to a national comparison but also concerning questions of their life habits.

Based on the study of our own material and literature sources, 362 species and forms were registered within 116 genera and 27 families. Of these 362 species in Georgia, we recorded 226 for the first time. We recorded another 128 species for the second time, which had been recorded for the first time by other authors. Eight species are only listed in the literature. 119 species are new for the Transcaucasus. We recorded one genus (*Harpactocrates*, Dysderidae) and nine species for the first time in the USSR. Besides, 34 species and three subspecies are new to science. The descriptions of 22 of these species have been published in the past. The remaining 15 new species are described in this monograph.

⁷In Mcheidze (1997) sic: 'Harpactea caucasica', lapsus.

Chapter 2

Spider Morphology

The spiders (Aranei) are included in the phylum Arthropoda within the sub-phylum Chelicerata and the class Arachnida. Body structure and size vary between the species but a number of morphological characters are shared by all species. The body structure of female spiders is given in Fig. 1.

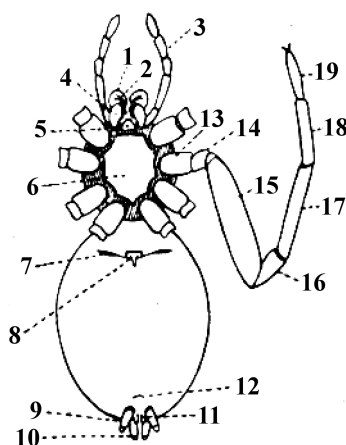


Fig. 1: **Morphology of female spiders** (ventrally). 1 - Chelicere; 2 - Cheliceral claw; 3 - Pedipalpus; 4 - Gnathocoxa; 5 - Labium; 6 - Sternum; 7 - lung stigma; 8 - Epigyne; 9 - Anterior spinnerets; 10 - Posterior spinnerets; 11 - Middle spinnerets; 12 - Tracheal opening; 13 - Coxa; 14 - Trochanter; 15 - Femur; 16 - Patella; 17 - Tibia; 18 - Metatarsus; 19 - Tarsus.

The body of spiders is covered by a cuticula and divided into two body parts: Carapace (prosoma) and abdomen (opisthosoma). Both parts are not segmented and are connected by a thin, short petiole. Behind the central part of the prosoma is a small longitudinal depression (fovea) from which furrows radiate. The cephalic region usually bears eight eyes (rarely six). Some cave spiders (of the troglobiontic type) have reduced eyes. Eye forms can vary: semicircular, dot-like, lense-like and others. Some genera have

distinct eye arrangements. Often, they are arranged in two, three (rarely four) transverse rows. According to the position we distinguish anterior median eyes (AME), posterior median eyes (PME), anterior lateral eyes (ALE) and posterior lateral eyes (PLE). Furthermore, day and night eyes are distinguished. The dark colored and clearly bulging eyes are called day eyes. Differently formed (oval, angular, irregular) and only weakly bulging eyes, which sometimes have a nacreous shine, are known as night eyes.

The prosoma bears six pairs of appendages. In anterior view, the strongly developed chelicerae are situated in front of the mouth opening. They are used in catching and chewing prey. They consist of a basal part and motile, sharp claws with openings at the tip, where the poison glands terminate. The edges of the furrow on the basal part is dentate. Number and arrangement of these teeth are of systematic significance. The area between the cheliceral basis and the AER is called clypeus. The form of the clypeus is of systematic significance. The second pair of extremities is the pedipalpus and consists of five segments. The pedipalpi are the main sensory organs of a spider.

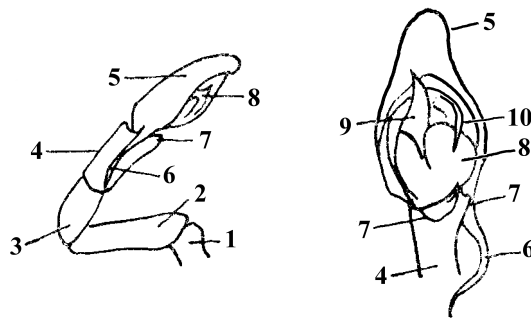
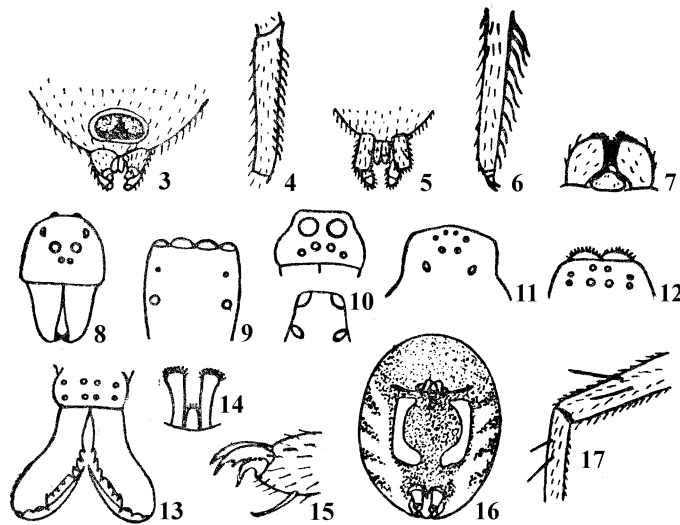


Fig. 2: **Structure of the male pedipalpus.** 1 - Trochanter; 2 - Femur; 3 - Patella; 4 - Tibia; 5 - Tarsal segment; 6 - Tarsal apophysis; 7 - Tibial apophysis; 8 - Bulbus; 9 - chitinous appendage of the bulbus; 10 - Embolus.

The pedipalpi of the males are modified as copulatory organs (Fig. 2). The labium terminates between the basal segments of the pedipalps. The sternal plate (sternum) is situated behind the labium as the central area of the ventral side; it is of multi-angular form. Its fringe is characterized by small concave depressions, representing the attachment sites of the coxae of the appendages. The structure of the walking extremities is analogous to the pedipalp structure. They consist of the following segments: the coxa, which is fused immovably to the carapace, trochanter, femur, patella, tibia, metatarsus, tarsus. The tarsus bears long claws in some forms. The leg segments bear spines and setae, the number and arrangement of which is of systematic significance.

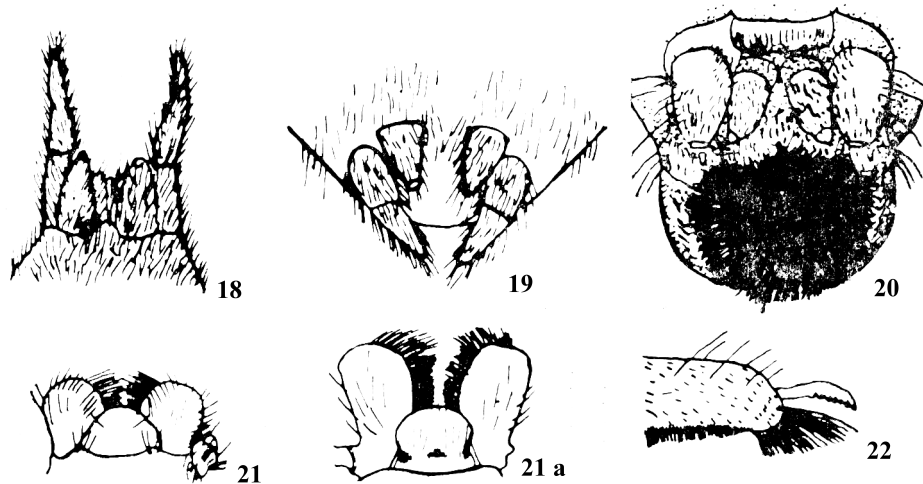


Figs. 3-17: **Determination plates of the spider families of Georgia.**
 3. Cribellum; 4. A row of curved spines on metatarsus IV (calamistrum); 5. Spinnerets in Gnaphosidae; 6. Comb of curved spines on legs IV; 7. Labium and gnathocoxae in Theridiidae; 8. Eye arrangement in Oxyopidae; 9. Eye arrangement in Salticidae; 10. Eye arrangement in Lycosidae; 11. Eye arrangement in Pisauridae; 12. Eyes arranged in two rows; 13. Chelicerae in Tetragnathidae; 14. Labium and gnathocoxae in Tetragnathidae; 15. Weaving spur on tarsus IV of a cross spider (*Araneus*); 16. Venter of a cross spider; 17. Leg spines in Linyphiidae.

Some spiders have an oval, sometimes flat sieve-like chitinous plate with holes in front of the spinnerets, from which the silk thread is exuded. This is called the cribellum. The females of cribellate spiders bear a row of setae on the metatarsus of the fourth pair of walking extremities, which is called calamistrum. The spiders use it for the construction of the web. The tarsi and metatarsi of some spider species are covered by dense rows of movable and distally broadened setae. This structure is called scopula (Fig. 22¹). The scopula is utilized in climbing on smooth and vertical surfaces. The spiders do not have appendages on the abdomen, but other surface structures may be present.

A pair of openings of the respiration system (stigmata) terminates on the ventral side of the abdomen. Spiders respire with lung sacs and tracheae. Accordingly, the spiders are divided into two groups: Tetrapneumones and Dipneumones. Spiders within Dipneumones not only have lungs but also a bundle of respiration organs and an additional pair of tracheae instead of the second pair of lungs.

¹Mcheidze (1997) sic: '21', lapsus.



Figs. 18-22: **Spinnerets, gnathocoxae and scopula.** 18-19: Spinnerets in Agelenidae: 18. *Agelena sp.*; 19. *Tegenaria sp.*; 20. Spinnerets in Oecobiidae; 21-21a: Labium and gnathocoxae in Araneidae; 21: *Araneus*; 21a: *Meta*; 22. Row of setae on tip of tarsus - scopula.

The openings of the respiratory system terminate between the stigmata on the venter and are connected with the epigastric furrow. The genital opening of the female is covered by a chitinous plate (epigyne); in some species it bears appendages, which are of importance in copulation. The structure of the epigyne is very complex and of systematic importance, e. g. in the description of new species.

The posterior end of the venter bears three pairs of spinnerets (mamillae), which are arranged in three rows: the anterior row (lower row), posterior row (upper row) and small spinnerets in between. Their form, size and arrangement is of systematic importance. A small anal tubercle is situated behind the spinnerets.

Sexual dimorphism is well developed in spiders. The males are usually significantly smaller than the females and can easily be distinguished from the females by their copulation apparatus on the palps.

Chapter 3

Collecting and Preserving Spiders

Before we collect spiders in nature, we should get acquainted with the synanthropic species, which can be encountered in the places inhabited by humans or animals: below sheds, in caves, on the outer walls of buildings, on balconies, on wood or stone fences, etc. During excursions in forests, gardens, shrubs, in tea and citrus plantations, in vineyards, on grain farmland, we should inspect leaves, stipes, twigs, hollows in old trees, roots, below the bark of young and dried plants.

Leaves and twigs can be shaken above beating trays or a simple white sheet of cloth. In grass, spiders can easily be collected together with insects. While collecting spiders in forests, attention should especially be paid to the ground layer and the ground vegetation of each biotope. Many spiders run about on top of the soil and hide below various structures, such as dry leaves, or they construct their burrows in deep hollows within the soil. Collecting cave spiders is especially interesting. In the mountains we should look for spiders below rocks and on the edges of rocks and caves. A characteristic spider fauna lives in the burrows of rodents, on the shores of stagnant waters, swamps as well as in mosses. Among the spiders, one species, the water spider *Argyroneta aquatica*, lives permanently submersed in the water.

Spiders can be collected with forceps or with the hand. Using the hand, one should be cautious because some species are very poisonous (black widows, large wolf spiders). During collecting one should pay attention to the type of web, the retreat, the vegetation, in which the spider was collected, the web, the egg sac, its form, coloration and, finally, the stratum.

In comparison to insects the integument of spiders is soft. Therefore, one must be cautious during collecting, otherwise the spider could be damaged. Especially the appendages break off very easily. The collected material is stored in 80 percent alcohol. Fixation in formalin is not suitable because it stiffens the integument, the extremities and some appendages of the body.

This makes determination more difficult. Only fresh or well preserved material should be subjected to morphological studies. In contrast to some insects, spiders dried on a layer of cotton are completely worthless. The integument shrivels, changing form and coloration.

The determination of spiders to species includes the study of the structure of the sexual apparatus (the genitals), e. g. the epigyne of the females and the palpus of the males. The preparation (amputation) of epigyne and palpus and a microscopic analysis of their structure is a standard procedure in a thorough study. The severed genitals soon dry up, change their form and break easily. Therefore, they must be placed in 70-percent alcohol or be processed as a permanent preparation.

In preparing the microscopic analysis, the severed palpus or epigyne must be freed from any soft tissue, using a 10-percent solution of caustic soda. The material must be boiled in this solution for some minutes or remain in the cold solution for 24 hours. Afterwards it is cleansed using distilled water and stored in 70-percent alcohol. The objects of interest are transferred into a 50:50 solution of 70-percent alcohol and glycerine. After 30 to 60 minutes they are transferred into a clean drop of glycerin and covered with a cover slip on wax feet.

In the case of a permanent preparation (for one to two years) the object prepared in glycerine is transferred into a drop of glycerol and covered with a cover slid. For long-term conservation the material first is passed through a number of alcoholic solutions with rising concentrations (up to 96 %) before being bleached in phenol-xylene oil. The bleached objects are then cast in several drops of Canada balsam and covered with a cover slide.

A lens with a large magnification is necessary for the determination of spiders. The use of a binocular microscope is a better alternative. A microscope must be used for the determination of small spiders, for setae, spines and other small appendages. For this, the spider is placed in a small glass bowl with fixation fluid. Furthermore, we need thin forceps, a preparation needle, drafting compass and a ruler (with millimeter scale) to measure the size of the spider and certain body parts.

The spiders of the five natural regions of Georgia were studied for a period of four decades (1937–1980) in order to describe their faunistic-ecological composition. This includes the 62 administrative rayons with up to 450 locations¹.

Material collected by students during field studies and the material provided by individuals was used. We thank biol. cand. R. Dzhanashvili for collecting cave spiders for us.

¹All locations are listed and mapped in Part III (pp. 403ff.).

Chapter 4

Species Distribution

The relief of Georgia is complex. The snow-covered mountains and the lowlands at sea level form a characteristic and singular contrast. The territory of our republic covers 6,548,600 hectar, of which 75 percent are mountains; lowlands do not exceed 25 percent. Therefore, the vertical zonation of this comparatively small area is well developed.

As explained in the first chapters, faunistic studies on the spiders of Georgia were made in numerous regions, covering the spectrum of the natural conditions of Georgia. It was the aim to picture the specifics of the distribution patterns and the natural complexes of some species. Within the natural areas we will focus on the mainland with its characteristic climatic elements, the conditions of the soil as well as the formation of certain vegetation types (Gulisashvili, 1964).

Characterizing the the natural areas, we use the information provided by Ketskhoveri (1957¹) und Gulisashvili (1964). In order to reduce the amount of work to a minimum we simplified the characterization of the natural areas to an extent, which we deem suitable for the faunistic representation of the zones and their comparison. In this work the characterizations of soils and the vegetation cover are extremely short^{2 3}.

The spiders of Georgia are characteristic and extraordinary ecological indicators. According to our data these indicators primarily concern their habitat. The stationary distribution of these species according to the zones is presented in tables 1–5.

¹In Mcheidze (1997) sic: '1953', lapsus.

²The soils of the natural areas are characterized in Volobuevis (1951, 1953), Sabashvili (1936, 1948) and other works, the vegetation in Grossheim (1926-48), Gulisashvili (1942-64), Dolukhanov (1932-55), Ketskhoveri (1953), Kolokovski (1948-58), Tumandshanov (1938-60) and other works.

³With the exception of Ketskhoveri (1953), these publications are not listed in the references section.

4.1 Colchis

The zone of the Colchic lowlands includes the lower stretches of the river Rioni; eastwards the lowlands extend up to the Likhi Range, northwards along the coast of the Black Sea to the mouth of the river Kodori, southwards it almost reaches Kobuleti.

The climate of the Colchic lowlands is moist, warm and the average amount of precipitation exceeds 1000 mm; it even reaches 2500 mm in some places. Winters are mild, summers hot. The annual amplitude of the temperature comes close to approximately 20 °C, in the hottest month August even 25 °C.

The vegetation cover of the Black Sea coast stands on rocky soils with grassy and forest bogs, with lowland forests and an evergreen understorey with peaty and humous soils.

When we started our research, 97 spider species were known from the Colchis; today 236 species and forms are recorded from this region. Our research lasted from 1938 to 1976. Spiders were collected in the following regions: Zestaponi, Tshiatara, Satshkhere, Terdzhola, Baghdati, Vani, Zamtredia, Khoni, Kutaisi, Tqibuli, Tsqaltubo, Lantshkhuti, Tshokhatauri, Ozurgeti, Abasha, Zenaki, Martvili, Khobi, Tshkhorotsqu, Tsalendzhikha, Zugdidi, Poti, Sukhumi, Gulripshi, Gagra, Bitshvinta, Gudauta, Otshamtshire, Batumi und Kobuleti.

Apart from our own material we used material from the Academy of Sciences of the GSSSR, the Agricultural Institute and the Institute of Plant Protection (Prof. D. Kobakhidze, Doc. Z. Ekvitimishvili, Prof. G. Dekanoidze, cand. dipl.-biol. R. Dzhanashvili and others 1940, 1953, 1960-1961).

Mostly thermophilous species live in this zone, including forms of the subtropic fauna of the mediterranean subregion. They migrate naturally or in part because of human activities, reaching the Colchic lowlands. Their majority is distributed on Adjarian and Abkhazian territories. The number of species is higher compared to other zones; the quantitative composition differs between the species.

According to our assumption, members of the families Dysderidae invaded the Georgian Black Sea coast from mediterranean countries, adapted to the climatic conditions and dispersed in the Eastern Colchic lowlands, e. g. *Dysdera crocata*, *D. punctata*, which in Georgia also developed some Caucasian local forms.

It is assumed that these species also dispersed in the Crimea (Charitonov, 1956). *Dysdera cribrata*, which we recorded for the first time in the USSR, is interesting. It was collected in the vicinities of Akhali Atoni and Sukhumi below the bark of palm plants (Mcheidze, 1939). This species was introduced to us with the import of subtropical plants. The existence of such adventive species in Georgia is to be expected, given the intensive import of cultivated plants in Georgia during recent years, especially in the Western part. Very

probably coming from the Crimea, *Dysdera erythrina* dispersed in the region of Abkhazia. The dispersal of some species from the Crimea to Georgia can easily be imagined.

Within this family, the genus *Harpactocrates* is only distributed in Georgia. Currently, in this genus only four species are described, of which one species (*Harpactocrates trialetiensis* n. sp.) was found in Adjara. Besides Adjara, one specimen of this species was also found in a mountainous region in West Georgia, in Kodzori (1400 m a.s.l.). *Agelena taurica* is widespread and very abundant in the whole Colchic lowlands, especially in regions with citrus and tea plantations. It feeds on pest insects of citrus plants (Fig. 418)⁴. It is not only distributed in the Colchic lowlands but in all natural zones of Georgia. Within the Tetragnathidae, a mediterranean species (*Eucta isidis*) dwells in the vicinity of Poti (in fields with low grass). Besides, the hemi-synanthropic species *Filistata insidiatrix* is distributed from the subtropical zone of the Mediterranean Sea to the Black Sea coast. Furthermore, we encounter the thermophilous, hemi-synanthropic spitting spider *Scytodes thoracica* (Sicariidae) not only in the Colchic lowlands but with one specimen also in another zone. Mediterranean forms of the genus *Xysticus* (Thomisidae) are often encountered also in the Colchic lowlands.

Among the thermophilous species, *Oecobius annulipes* only occurs on the Black Sea coast. In these places we found *Menemerus parietinus* (Salticidae). This species is abundant on the Black Sea coast and distributed in other places of the Colchic lowlands as well. On the banks of rivers and stagnant waters of the Colchic lowlands we often find the orb webs of *Tetragnatha extensa*, *T. solandri* (Tetragnathidae) and others between the twigs of bushes, furthermore species of the families Araneidae and Linyphiidae. *Lycosa radiata* (Lycosidae) is interesting, the largest representative of that genus, which invaded from the mediterranean subregion. This species is abundant on the Black Sea coast and also dispersed into the mountains of Adjara (Keda, Khulo). From Adjara it also invaded the mountainous regions of Eastern Georgia.

Besides these lycosids, numerous species of the genera *Pardosa*, *Lycosa*, *Arctosa*, *Pirata* are distributed in the Colchic zone. Their habitat is the vicinity of the banks of stagnant waters and rivers, where we found them in moist places. For example, *Arctosa leopardus*, *A. tbiliensis*, *Pardosa colchica* were found in the Lantshkhuti rayon, near Lake Dzhapani. *Araneus alsine*, *Dolomedes fimbriatus* are distributed on the shores of peat-bog lakes near Kobuleti. During their larval phase they live in the forest for up to one year. We found the water spider *Argyroneta aquatica* in this zone (Atshigvara, Poti, Lake Paliastomi)

The spiders recorded from the Colchic lowlands are not evenly distributed across the habitats (Tab. 1). The tall herbaceous vegetation is characterized

⁴In Mcheidze (1997) sic: 'fig. 417', lapsus.

by a maximum number of species and the forest edge, where up to 110 species live (46.6 % of the total number of species). Nearly the same number of species characterize the vegetation of short grasses, compared to shrubs, woody plants in mixed forests and the habitats below rocks with 56 to 68 species (23.7%–28.8%). In habitats like the soil, caves, buildings and others, the number of species is at a minimum.

Tab.1: The spider species of the Colchis in the habitats.

	Absolute number of species	Relative proportion of species
Tall herbaceous vegetation	56	23.7 %
Short herbaceous vegetation	110	46.6 %
Shrubs, tea, citrus cultures	63	26.7 %
Mixed forests	57	24.2 %
Decaying wood on plants	26	11.0 %
Forest floor	34	14.4 %
Under rocks	68	28.8 %
On rocks	19	8 %
Hollows in the soil	3	1.3 %
Shores of water bodies	26	11 %
Buildings and constructions	5	2 %
Caves	12	4.7 %
Water bodies	1	0.4 %

The limits of the region are characterized by other species with wide distributions: *Dysdera punctata*, *Segestria florentina*, (Dysderidae), *Xysticus kochi*, *X. gallicus*, *X. audax*, *Misumena vatia*, *Synaema globosum* (Thomisidae); other species: *Araneus diadematus*, *A. cucurbitinus*, *Mangora acalypha*, *Cyclosa oculata*⁵, *Argiope bruennichi* (Araneidae), *Agelena taurica*, *Alopecosa pulverulenta*, *Xerolycosa miniata*, *X. nemoralis*, *Trochosa ruricola*, *Pardosa lugubris*, *P. amentata*, *P. plumipes* (Lycosidae); *Episinus truncatus*, some species of the Linyphiidae and others.

A number of species, which have so far only been recorded from only a few zones, deserve special attention: *Brachythele pontica*, *B. zaitzevi*, *B. recki*, *Oecobius annulipes*, *Dysdera imeretiensis*, *D. cribrata*, *Harpactocrates fedotovi*, *H. zaitzevi*, *Harpactea charitonovi*, *H. caucasia*, *Segestria florentina*, *Salticus mutabilis*, *Mithion canestrini*, *Marpissa zaitzevi* n. sp., *Carrhotus bicolor*, *Menemerus semilimbatus*, *Dendryphantes nidicolens*, *Tibellus maritimus*, *Xysticus kochi abchasicus*, *X. gallicus batumiensis*, *X. adzhari-cus*, *Oxyptila mingrelica*, *Tmarus stellio*, *Pistius truncatus*, *Cybaeus abchasicus*, *Tegenaria abchastica*, *Pardosa colchica*, *Pirata hurkai*, *Meta bourneti*, *M. merianae*, *Hypsosinga pygmaea*, *H. sanguinea*, *Eucta isidis*, *Nesticus borutzkyi*, *N. ponticus*, *N. caucasicus*, *N. zaitzevi*.

A number of species are characterized by a preference for the ground layer, soils, hollows in the soil, e. g. all species of the genera *Pardosa*,

⁵In Mcheidze (1997) sic: '*Cyclosa aculeata*', lapsus.

Trochosa, *Alopecosa* (Lycosidae) und *Brachythele* as well as most species of the genus *Dysdera*. Many species of the Araneidae construct webs.

It is noteworthy that *Lycosa vultuosa*, *L. narbonensis*, *Eresus niger*, *Brachythele zaitzevi*, *Harpactea charitonovi*, *Agelena taurica*, *Araneus diadematus*, *Argiope bruennichi* and other species are associated only with the mentioned habitats.

Species like *Tetragnatha extensa*, *T. montana*, *T. solandri*, *Tibellus maritimus*, *T. oblongus*, *Araneus cornutus*, *A. alsine*, *Dolomedes fimbriatus*, *Pirata piccolo*, *P. knorri*, *Marpissa radiata* and others mostly live on the banks of rivers and stagnant waters.

Tegenaria domestica, *Pholcus phalangioides*, *Teutana grossa*, *T. castanea*, *T. triangulosa* only live in buildings, whereas *Holocnemus longipes*, *Meta merianae*, *M. bourneti*, *Nesticus borutzkyi*, *N. zaitzevi*, *N. ponticus*, *N. birsteini*, *N. caucasicus*, *Tegenaria abchasica*, *Cybaeus abchasicus* mostly live in caves.

We meet synanthropic species everywhere in certain zones. The climate of the Colchic zone and the abundance of prey represent the most suitable environment for them.

It is known, that the microclimate and the vegetation of the Colchic forest are very similar to those of the Tshiauri Forest of the Lagodekhi Reserve. The Tshiauri Forest remained as a refuge, which is similar to the Colchic forest in not having experienced a glaciation. This led to a faunistic similarity of these two regions of Georgia. This is supported by the fact that a number of spider species live only in the Colchis and in the Tshiauri Forest (*Brachythele*, *Harpactocrates*, *Harpactea*, *Dysdera*).

4.2 Mountain Forests

The forest zone is developed on the slopes of the Greater and Lesser Caucasus. In the Greater Caucasus the forest zone starts at the borders of Georgia, in the Western part of the valley of the river Psou. From there it mostly runs along the Southern border of the mountain chain. In some places it crosses the watershed northwards and ends eastwards of the Matsimi River. In the Lesser Caucasus it includes the borders of Adjara-Imereti and the Trialeti Range.

A number of different forest types can be distinguished in this zone according to their geographic location: forests on the Southern slope of the Greater Caucasus in Western and Eastern Georgia, mountainous forests of the Lesser Caucasus (on the slopes of the Ajara-Imereti chain) as well as on the slopes of the Trialeti Range in East Georgia.

The forests are distinguished from one another not solely by their location but also by their species composition, their vertical zonation, their soil characteristics and foremost climatically. In the last consequence this is

caused by the geographic location, the characteristics of the relief, which in themselves influence the composition of the forest and its vertical zonation. Therefore, for some authors it is impossible to combine the forests in one single landscape zone (Gulisashvili, 1964). However, we do combine them within one zone because the habitats of this zone and the composition of the araneofauna correspond to one another.

The soils of the forest zone are mostly comprised of one type: brown forest soils. They are characteristic for oak forests, chestnut forests, beech forests and spruce-/fir forests. Furthermore, chestnut forests are not developed on locations with carbonatic brown forest soils.

The climatic conditions are diverse and this diversity in the vertical dimension determines the composition of the forest. It must be noted that this zone is well developed in Western Georgia with high precipitation and high humidity, whereas it is much less developed in Eastern Georgia, although the precipitation is still considerable but in part compensated by a very high evaporation.

Under moist climatic conditions the upper timberline reaches 2050 m a.s.l. in some places of the slopes in the Greater and Lesser Caucasus at the borders in West Georgia. In the East, at a greater distance from the sea, the moisture decreases continuously and the climate becomes continental. The upper timberline rises accordingly, reaching 2400 m a.s.l. in some places.

In the zone of the mountainous slope forests pine and birch forests have the widest distribution among the woody plant species. They build distinct, dominating massifs in such locations, which are characterized by a continental climate, e. g. in some places of Meskhet-Javakheti, in Tani Valley and Tedzari Valley of Georgia and others. According to Gulisashvili (1964) the borders of the pine and birch forests are identical with the former limits of the ice. Nowadays, the upper limits of the pines and birches reach the sub-alpine zone. The lower limit, however, varies: in Western Georgia the pine goes down to 250 m a.s.l., in Eastern Georgia to 700-800 m a.s.l. The lower limit of the birch lies at 900-950 m a.s.l. The zone of the pines and birches is characterized by cold and continental conditions. Furthermore, the more hygrophile spruce-pine forests are distributed on the slopes of the Greater and Lesser Caucasus, mostly at the borders of Western Georgia but we do find them in many rayons in Eastern Georgia. Among these, the spruce is distributed more eastwards than the fir. Vertically, its altitudinal distribution has an amplitude between 150-160 m and 2000-2100 m a.s.l. It is clear, that the zonation of the forests corresponds to the variability of the climatic conditions in vertical as well as in horizontal direction.

The species composition of the spiders of the mountain forest zone of Georgia is rich in individuals and species, which is probably a result of abundant prey and suitable microclimatic conditions (e.g. high precipitation and relative moisture) The conditions in the mountain forest zone are similar to those of the Colchis lowlands. This can be understood because they are

mostly situated in the Colchic forest.

Up to the begin of our studies, seven spider species were known from the mountain forest zone of Georgia. Today, 99 species are recorded from there. Faunistic studies were conducted between 1938 and 1975. Spiders were collected in the regions of Ambrolauri (Khotevi, Satsalike Mt.), Oni (Shovi, Tshiora, Sakao, Ghebo), Tqibuli (Nakerala), Kvaisi Pass, Mestia, Lentekhi (Sashashi- und Moashi Mt., Ushguli), Mtirala, Bakhmaro, Keda, Khulo, Akhaltsikhe, Adigeni, Sairme, Zekari Pass, Surami Pass (Iron Cross), Lagodekhi, Tusheti, Telavi (Tsivi), Borjomi, Manglisi, Dusheti und Pshavi-Khevsureti.

Of the spiders of the forest zone, the three families Dipluridae, Dysderidae and Sicariidae are distributed in the forests of the Caucasus, the Crimea and Central Asia. The other families are widely distributed and we found them everywhere: Micryphantidae, Linyphiidae, Thomisidae, Theridiidae, Argiopidae, Lycosidae, Clubionidae, Salticidae, Gnaphosidae, with fewer species also in Oxyopidae, Pholcidae, Dictynidae, Uloboridae, Mimetidae, Sparassidae.

Among the typical forest forms, the family Araneidae is worth mentioning: *Araneus diadematus*, *A. angulatus*, *A. ceropegius*, *A. grossus*, *A. ocellatus*, *A. circe*, *Mangora acalypha* and others; they live in the mountain forests and on bushes. Vertically they are distributed up to the alpine zone. Within this family, the beautifully colored, mediterranean southern form *Argiope bruennichi* lives in broad-leaved forests and on places with cover, constructing an orb web with stabilimentum (Figs. 547, 547a) in high grass.

Araneus diadematus is widely distributed in the forest zone but we met it also in other zones. The Georgian endemic *Coelotes spasskyi* mostly lives in mountainous forests but we often met it in the subalpine zones (Mestia, Lentekhi, on Sashashi Mt. and Ghoburi Mt., Shovi, Tshiora, Mamisoni Pass on 3000 m NN, Mtirala, Bakhmaro, Ninigori Mt., Tusheti and others). It lives below rocks and among dry, decaying roots of woody plants. During recent years some primitive tetrapulmonate species of the genus *Brachythele* (Dipluridae) were recorded in the Tshiauri Forest in the Lagodekhi Reserve. We know the same species from the Colchic lowlands.

In similar habitats we meet genera from the family Dysderidae: *Dysdera*, *Harpactocrates*, *Harpactea* and *Segestria*, species like: *Harpactocrates georgicus*, *H. trialetiensis* n. sp., *H. fedotovi*, *Harpactea zaitzevi*, *Dysdera tkibuliensis*, *D. atra*.

The forest zone is inhabited by a great number of lycosid species. They belong to the group of the hunting spiders which do not construct spider webs, e. g. the genera *Alopecosa*, *Pardosa*, *Trochosa*, *Xerolycosa*, *Pirata* which we found on the ground, below rocks and in dry leaves. *Pardosa lugubris*, *P. blanda*, *P. arenicola*, *P. wagneri*, *Alopecosa albofasciata* vertically reach 3000 m a.s.l. We found *Xerolycosa nemoralis* in the lowlands as well as in mountainous places.

Within the family Gnaphosidae many species of the genera *Gnaphosa* and *Drassodes* are distributed in the coniferous and broad-leaved forests and live on the ground, below rocks or on forest meadows. They are abundant on subalpine pastures in the areas of Zekari (Tsiteli Mindori) Sairme, Khulo, Bakhmaro, Adigeni, Akhaltsikhe und Tusheti.

Many species of the family Thomisidae live in the forest zone and other biotopes of almost all zones. Species distributed in coniferous and broad-leaved forests of the forest zone are: *Xysticus striatipes*, *X. kempeleni*, *X. cambridgei*, *X. robustus*, *X. audax*, *Oxyptila praticola* and others.

Some of these live below the bark of woody plants in the wood and feed on pest insects (saw flies, bark beetles. *Pisaura mirabilis* und *P. novicia* live on grass in sunlit forests. In the forest we often find the hygrophilous *Dolomedes fimbriatus* on leaves. Hygrophilous and mesophilous species (*Erigone*, *Linyphia*, *Tetragnatha*, *Clubiona*, *Gnaphosidae*, *Thomisidae* and others) live on forest meadows, on bushes and in habitats covered with mosses.

Tab. 2: The spiders of the forest zone in the habitats.

	Absolute number of species	Relative proportion of species
Short herbaceous vegetation	27	27.3 %
Tall herbaceous vegetation	49	49.5 %
Mixed forests	33	33.3 %
Decaying wood	9	9.1 %
Ligneous plants and mosses	13	13.1 %
Ground layer, plants, mosses	26	26.3 %
Soil hollows	2	2.2 %
Shores of water bodies	18	18.2 %
Buildings	6	6.1 %
Caves	1	1.1 %

The forest zone is poor in terms of synanthropic species, except for the cosmopolitic species *Tegenaria domestica*, *Teutana grossa* and *Steatoda bipunctata*. According to Russian classification they are hemi-synanthropic. They live below the bark of coniferous ligneous plants in a depth of 24–25 cm, feeding on the eggs and larvae of bark beetles (Borjomi Valley).

The spiders of the forest zone are not evenly distributed across the habitats (Tab. 2). The maximum number of 33–49 (33.3–49.5%) species can be found in tall herbaceous vegetation, shrubs and ligneous plants in mixed forests. The habitats in rock crevices, below rocks and the vicinity of the banks of water bodies exhibit comparable numbers of species (26–18, 26.3–18.2%). In such habitats, like in soil hollows, caves, buildings and others, the species composition is at a minimum.

Some species, which have preliminarily only been recorded in certain zones, deserve our special attention: *Titanoeca schineri*, *Amaurobius pallidus*, *A. similis*, *Dysdera spasskyi*, *D. tkibuliensis*, *Harpactocrates charito-*

novi, *H. georgicus*, *H. trialetiensis* n. sp., *Euophrys erratica*, *Gnaphosa caucasica*, *Drassodes albicans*, *Zelotes subterraneus*, *Xysticus cambridgei*, *X. ucrainicus*, *X. acerbus*, *Clubiona neglecta*, *C. frutetorum*, *Steatoda bipunctata*, *Theridium simile*, *T. pinastri*, *Coelotes spasskyi*, *Pardosa amentata*, *Pardosa wagleri*, *Trochosa spinipalpis*, *Xerolycosa nemoralis*, *Araneus ceropegius*, *Araneus marmoreus*, *Araneus marmoreus* var. *pyramidatus*, *Araneus grossus*, *Tetragnatha montana*, *Linyphia triangularis*, *L. emphana*, *Erigone atra*.

A number of species is characterized by a distinct preference for soils, forest soils, decaying wood and vegetative parts, rocky and bare places. Their frequency and abundance is higher there compared to other habitats. Among them are some species of the families *Dysderidae*, *Agelenidae*, *Lycosidae*, *Clubionidae*, *Gnaphosidae*, *Araneidae*, *Erigonidae*. It is noteworthy, that *Coelotes spasskyi*, *Araneus ceropegius* and the genera *Alopecosa*, *Pardosa*, *Xerolycosa*, *Trochosa*, *Drassodes*, *Gnaphosa*, *Synaema*, *Xysticus* are connected only to certain habitats.

Species like *Araneus cornutus*, *Tetragnatha extensa*, *T. solandri*, *T. obtusa*, *T. nigrita* and many species of the *Lycosidae* mostly live on the banks of rivers and stagnant waters as well as on shrubs near or on the vegetative parts of ligneous plants.

Tegenaria domestica, *Teutana grossa*, *T. castanea*, *Pholcus phalangioides* live in buildings (synanthropic species), whereas *Holocnemus longipes* lives in caves.

4.3 Steppe and Semideserts in Eastern Georgia

The zone of the steppe and semideserts occupies a large part of Georgia. This area is situated East of the Likhi Range between the Greater Caucasus in the North and the Lesser Caucasus in the South. In the East it stretches along the valley of the Kura River along the border to Azerbaijan up to the mouth of Khrami River. Afterwards it runs across the plains of Gardabani and Kartli-Kakheti through the Shiraki-Eldari lowlands. Further down, this zone extends into Azerbaijan.

Ketskhoveli (1960) stated: *The main areas of steppe and semi-desert lie in Eastern Georgia, along the left and right banks of the Kura River, the Vake River and the foothills of the Lesser Caucasus. Within the borders of Georgia it is distributed between an altitude of 200 m a.s.l. (at Eldari) and 750 m, but in some places (Shiraki, Garedzhi Steppe, Outer Kakheti, etc.) it rises up to 900 m.*

The conditions vary between the steppe and semi-desert zones of East Georgia but both are distributed here, although often secondarily and altered to some degree. The characteristics of the steppe are well developed, becoming more typical to the East and finally attaining full semidesert char-

acter in the Eldari lowlands.

The mean temperature of the steppes of East Georgia varies between 12–15 °C. The summers are extremely hot, the warm months reaching a median temperature of 25 °C and more. In the lowlands the winter is mild, at a mean 1 °C and more. In the mountains it is comparatively rough with temperatures below freezing on a number of days. The temperature amplitude between January and July is 24–28 °C. The absolute amplitude is 47–55 °C. The relative atmospheric humidity is comparatively low. In the summer it sinks to 50 %; sometimes it does not even reach 5–10 % (in the vicinity of Tbilisi). This leads to the evaporation of soil water and often its complete desiccation.

Generally, the climate is clearly continental; towards the spring the precipitation is raised. Such a classification of the climate is without doubt connected to the classification of the vegetation. In East Georgia, mostly formations of the semidesert are distributed; in the central part between Gardabani and Tbilisi we find open steppe and in the Western part in (Kartli) thorn-shrub steppe. This classification matches the classification according to temperature and precipitation. As we move from the East to the West, precipitation increases and, accordingly, the mesophilic vegetation.

The spiders of this zone are thermophilous, some halophilous. Depending on the conditions the diurnal rhythms of the spiders vary. The majority of species is active during the morning and evening hours, some during the night. During the period of intense radiation many species remain passive. In the steppe zone we meet those forms, which are characteristic for the tropical and subtropical regions of the earth.

At the onset of our studies 27 species were known from the steppe and semi-desert zone; today, 80 species are recorded from this zone.

We conducted faunistic studies between 1937 and 1965 in the following places: Shiraki-Eldari lowland, Garedzhi Steppe, Udzharma, Gardabani Steppe, Kartli lowland, Tbilisi, Krtsanisi Field, the area of the Khrami River up to the Mingetshaur Lake (Azerbaijan).

This zone, like other zones, is rich in Thomisidae. In the open steppe, *Thomisus albus* is abundant, which changes color depending on the habitat and *Misumenops tricuspoidatus*, which we also find on citrus bushes in the Colchis. *Synaema caucasicum* lives below rocks in habitats with short herbaceous vegetation. In this biotope we also find *Philodromus histrio*, *Heriaeus oblongus*, *Xysticus striatipes*, *X. sabulosus*, *X. tristrami* and the endemic species *X. kalandadzei*. From the family Oxyopidae we find *Oxyopes lineatus* and *O. heterophthalmus* in low herbaceous vegetation; they have also been found on subalpine meadows. *Theridium impressum* and *Phlegra fasciata* live in tall herbaceous vegetation and are also distributed on subalpine and alpine meadows.

Within the Oxyopidae, *Oxyopes lineatus* and *O. heterophthalmus* live on low herbaceous vegetation and have also been found on subalpine meadows.

On tall herbaceous vegetation we find *Theridium impressum* and *Phlegra fasciata*, which also live on subalpine meadows.

The monotonous grassy landscapes of the steppe yield a large number of species. Bushes and ligneous plantes on the banks of stagnant waters and rivers provide suitable conditions for mesophilic and hygrophilous species. Therefore we find mesophilic philodromids, e. g. *Tibellus oblongus*, *T. maritimus*, *Philodromus aureolus* as well as species from other families, e.g. *Micrommata virescens*, *Singa hamata* as well as representatives of the family Tetragnathidae (on Cyperaceae grass) and reed. On the banks of lakes and rivers, on high grass, bushes, ligneous plants (willows, on coiled-up leaves of stinging nettle (*Urtica dioica*, Urticaceae) at lake Tabatsquri) we meet species, which cannot be found in the open steppe, e. g. *Araneus cornutus*, which lives in various biotopes. *A. folium* is distributed in such habitats, *Singa*, *Hypsosinga*, *Clubiona stagnatilis*⁶, which folds a leaf of reed twice and fixes it with silk. The spider lives in such a nest with its egg sac.

Many wolf spiders live on the banks of water bodies: *Pardosa*, *Trochosa*, *Pirata* and *Dolomedes fimbriatus* (Pisauridae). Additionally, *Lycosa singoriensis* is characteristic; it lives on salty soils with a halophilous vegetation. In Georgia we find it on the banks of former salt lakes (in the vicinity of the Tbilisi Lake) in places near the salt lakes, hidden from the heat in crevices of the salty soil as well as in single hollows. Besides, it was found in Kobuleti, near the sea shore. Within this family we find *Lycosa narbonensis* and *L. vultuosa* in steppe biotopes. They were also found in other zones and live in vertical hollows in the soil.

In grass, on bushes as well as on the ground we find *Agelena taurica* und *A. labyrinthica* in a funnel-shaped retreat in their web. In grass below rocks we find *Lithyphantes paykullianus*, *Latrodectus tredecimguttatus* - the black widows (the most poisonous spiders). The large and beautiful *Eresus* males, which live in grass of mountainous forests as well as in hollows in the soil in comparatively xerophytic environments. In body size they are comparable to the large wolf spiders and they are distributed in forests of the total reserve of Vashlovani (Pantishari Valley), the steppes of Shiraki and Eldari in the vicinity of Garedzhi.

Many interesting species live on the vegetation of the semideserts, e. g. *Argiope lobata*, a distinct Southern species. In the steppe and semidesert we found one single specimen of this species. *Argiope bruennichi*, *Araneus ullrichi*, *A. adiantus*, *A. victoria*, *A. redii*, *A. bisantinus*, *Neoscona adianta* are characteristic for the steppe and the semidesert zone as well.

In the steppe zone we often meet species of the Gnaphosidae, Clubionidae and Dictynidae. Furthermore, such species are characteristic for this zone, which continuously live in buildings. Besides the main species, all species of the Pholcidae are synanthropic. Within buildings we meet the semi-

⁶In Mcheidze (1997) sic: 'stagnalis', lapsus.

synanthropic species *Filistata*, *Scytodes* and *L. paykullianus*.

Tab. 3: The spiders of the steppe and semidesert in the habitats.

	Absolute number of species	Relative proportion of all species
Short herbaceous vegetation	59	73.75 %
Tall herbaceous vegetation	58	72.5 %
Forests, fruit plantations	15	18.75 %
Ground layer, below rocks	26	32.5 %
Shores of rivers and stagnant waters	9	11.25 %
Soil hollows	4	5 %
Buildings	6	7.5 %

The spiders recorded from the steppe and semi-desert zone are not evenly distributed across the habitats (Tab. 3). The largest number of species is characteristic for low herbaceous vegetation, where 59 species are recorded (73.75 % of all species). A similar number of species is characteristic for tall herbaceous vegetation and shrubs: 58 species (72.5 %). 26 species live below rocks (32.5 %), whereas the number of species is minimal in habitats like hollows in the soil, on the banks of rivers and stagnant waters and buildings.

Near the borders of the zone, many species of the Thomisidae with a wide distribution are characteristic, e. g. of the genera *Xysticus* and *Synema*, furthermore *Lithyphantes paykullianus*, *L. albomaculatus*, *Oxyopes lineatus*, *O. ramosus*, the lycosids *Alopecosa cuneata*, *Pardosa calida*, *Xerolycosa nemoralis*, *Hypsosinga*, *Singa*, *Araneus adiantus*, *A. angulatus*, *Philaeus chrysops*, *Misumena vatia* and others, which are recorded in two to three of the seven habitats in Table 3.

The majority of the listed species is characterized by a high frequency and abundance. The species, which have been recorded only in one zone, deserve special attention, e.g. *Eresus niger*, *E. lavrosiae* n. sp., *Philaeus chrysops*, *Heliophanus melinus*⁷, *Oxyptila lugubris*, *Xysticus tristrami*, *X. striatipes*, *X. kempeleni*, *X. kalandadzei*, *Latrodectus tredecimguttatus*, *Lithyphantes paykullianus*, *Oxyopes lineatus*, *Lycosa singoriensis*, *L. narbonensis*, *Pardosa caraiensis*, *Argiope lobata*, *Araneus ullrichi*, *A. victoria*, *A. bisantinus*.

A number of species are characterized by a distinct preference for grasses, the soil, the underside of rocks, hollows in the soil and webs. Their frequency and abundance there is high compared to other habitats. This is especially true for species of the following families: Lycosidae, Eresidae, Theridiidae, Thomisidae, Araneidae, Salticidae.

It is noteworthy that *Lycosa singoriensis*, *L. vultuosa*, *L. narbonensis*, *Latrodectus tredecimguttatus* (black widow), *Argiope lobata*, *Araneus ullrichi* and some species of the Thomisidae are only associated with the specified habitats, whereas species like *Araneus alsine*, *A. cornutus* and their

⁷In Mcheidze (1997) sic: 'Heliophanus mellinus', lapsus.

substitutes *A. folium*, species of *Tetragnatha*, *Pardosa*, *Pirata* and others are hygrophilous or live permanently on the banks of water bodies.

Among the synanthropic species we meet *Tegenaria domestica*, *Pholcus phalangioides*, *Teutana grossa*, *T. triangulosa*⁸, *Lithyphantes paykullianus* and others.

4.4 Subalpine and Alpine Zones

In Georgia the subalpine and alpine zone can be found in both the Greater and Lesser Caucasus. The transition from the subalpine to the alpine zone starts at altitudes of 1950–2700 m a.s.l. Therefore, on the slopes of the Greater Caucasus the subalpine and alpine zones cover an altitudinal range between 1900 and 3000 m. However, the lower and upper limits vary in some parts of the mountain chain. On western and northern slopes they are situated somewhat lower than in the East.

According to Gulisashvili (1964) the climatic conditions of the subalpine zone share the following characteristics: an average annual temperature of 3.2–4.1 °C, the warmest month with 12.9–13.7 °C, cold winters with long snow cover. In Gudauri the snow lies 186 days, with a minimum temperature of -26 °C. The central part of the Greater Caucasus receives abundant precipitation (1371–1675 mm). In the Western Caucasus the precipitation is distinctly higher than in the Eastern Caucasus. In the Lesser Caucasus the subalpine zone is comparatively high. Accordingly, the annual average air humidity is comparatively high in this zone, in Gudauri it reaches 70 %, in Lagodekhi 71 %. As a consequence the climate of the subalpine zone is cool with a comparatively short summer and a rough and long winter.

The climate of the alpine zone is significantly rougher. During the summer it is even colder in this zone, the winter is long and rich in snow. The average temperature of January reaches -13 °C. At the Cross Pass (Gudauri) the minimum temperature can drop to -32 °C. Temperatures falling below zero degrees are possible in every month. An intense radiation is characteristic for the climate of the alpine zone, with a lot of UV radiation. The air pressure is low, the winds, however, strong.

Soil formation in the subalpine zone is influenced by the conditions of the subalpine meadows, *Rhododendron* as well as sunlit forests. Above 2000 m a.s.l. the soils mostly are forest soils and podsol. Above 2000 m we find a growing number of mountain-meadow soils.

The vegetation of the subalpine zone is rather diverse. The upper forest belt is situated in this zone, which is composed mostly of birches, maple and other sunlit forests with a well developed understory. In the upper shrubs we often find *Rhododendron*, *Vaccinium*, *Juniperus*, *Empetrum*, *Daphne*, *Berberis*, *Azalea*. The upper forest belt mostly bears herbaceous vegetation of the

⁸Mcheidze (1997) sic: 'T. triangularis', lapsus.

subalpine meadows, of which *Heracleum*, *Inula*, *Anthriscus*, *Agrostis*, *Convallaria* and many others are noteworthy.

Higher up the forests are replaced by alpine meadows. The typical subalpine vegetation of the Greater Caucasus is developed between 2500 and 3500 m a.s.l. We do not find any ligneous plants. Here, the alpine meadows are noteworthy, which mostly consist of herbs and grasses. The alpine mats are rich in dicotyledonous plants, specialized *Alchemilla* species and other well adapted herbs.

The described zone is characterized by a rough climate, a weak, kryophilous and somewhat specific fauna. The summer is short and cool, the winter rich in snow and long. Two spider species were known from the subalpine and alpine zones before we started our studies. Up to today we have recorded 68 species in this zone.

We conducted faunistic studies between 1938 and 1975. Spiders were collected in the following locations: near Kazbegi (Gergeti, Sioni, Andeziti, Quri, Devdorak Glacier), Tusheti (Omalo, Upper Alvani), Lagodekhi, (Kotshalo Mt., Ninigori Mt.), Bakuriani, Nine-Springs Pass (3000 m a.s.l.), Upper Ratsha (Tshiora, Sakao), Shovi, Mamisoni Pass (3000 m a.s.l.), Mestia (near Ushba Mt., Latali, Betsho, Shixra, Atsa, Ipari), Lentekhi (Qurulda, Laskadura Valley, Sashashi), Keda (Agara, Zendidi), Khulo (Tago, Nakerala, Utshkho, Sapitsria), Tseli Mindori (a summer pasture in the rayon Baghdati).

The subalpine and alpine zones are characterized mostly by the following families: Gnaphosidae, Dysderidae, Thomisidae, Agelenidae, Araneidae, Salticidae. *Gnaphosa taurica*, *G. lucifuga*, *G. caucasica* n. sp., *Drassodes pubescens*, *Haplodrassus signifer* and others live in grass, below rocks and can be found from the subalpine zone upwards to the alpine zone (Tusheti, Bakuriani, Nine-Springs Pass, Kazbegi, Khulo, Bakhmaro, Upper Ratsha). Within the Thomisidae, endemic species have been recorded in this zone *Xysticus bacurianensis*, *X. charitonovi*, *X. ucrainicus* as well as *X. audax*, *X. kempeleni*, which are widely distributed and have been found by us in the Colchis as well (Poti).

Some species of the Araneidae exhibit an extraordinary ecological plasticity: we meet *Araneus diadematus* in almost all zones (except under desert and semidesert conditions). *A. ceropegius* from the forest zone also reaches the subalpine zone. *A. marmoreus* and *A. quadratus* are distributed from the forest zone through the subalpine zone and partly into the alpine zone (Surami Pass (Iron Cross), 1800 m a.s.l., Nakerala Pass (in *Azalea* shrubs), Bakhmaro, Kazbegi, Mestia (near Ushba Mt. on *Azalea* shrubs), Lentekhi, (Ghoburi Mt. and Sashashi Mts.). Species of the genus *Pardosa* (Lycosidae) live in higher places, some are subalpine or alpine endemics: *Pardosa alasiensis* sp. n., *P. ninigoriensis* sp. n. (Kotshalo Mt., Ninigori Mt.), furthermore, we meet *P. hortensis*, *Alopecosa pulverulenta* everywhere in this zone, e. g. on Mamisoni Pass.

Tab. 4: The spiders of the subalpine and alpine zones in the habitats.

	Absolute number of species	Relative proportion of all species
Short herbaceous vegetation and the ground layer	42	61.8 %
Tall herbaceous vegetation, shrubs	40	58.8 %
Ligneous plants, decaying wood	10	14.7 %
Under and on rocks	27	39.7 %
Shores of water bodies	8	11.8 %
Buildings	4	5.9 %

The small (3–4 mm) dwarf spiders (Micryphantidae) are noteworthy. Within this family *Erigone dentipalpis* and *E. longipalpis* are distributed in the alpine zone (on Mamisoni Pass). Besides, we meet *E. longipalpis* in the Colchis lowlands (Zestaponi, Satshkhere, Poti). *Oxyopes lineatus* (Oxyopidae) is distributed in the lowlands in the vicinity of Poti but also in the subalpine and alpine zones (azonal).

The spiders of the subalpine and alpine zones are not evenly distributed across the habitats (Tab. 4). The species with the highest abundance (up to 42 species, 61.8 % of the total number) are characteristic for low herbaceous vegetation and the ground layer. Nearly as many are characteristic for the tall herbaceous vegetation, subalpine meadows, shrubs: 40 species (58.8 %). Under and on rocks we find 27 species (39.7 %), whereas in habitats like the banks of water bodies, vegetative parts of ligneous plants, decaying wood there are 8-10 species (14.7 %). In buildings the species number is minimum with 4 species (5.9 %).

The borders of this zone are characterized by species with a wide distribution: *Gnaphosa taurica*, *G. lucifuga*, *G. lugubris*, *Drassodes lapidosus*, *Clubiona neglecta*, *C. similis*, *Alopecosa pulverulenta*, *Pardosa lugubris*, *Araneus diadematus*, *Linyphia peltata*, *L. pusilla*, *Erigone atra*, *E. dentipalpis*, representatives of the Thomisidae and others, which are listed in two to three of the six habitats of Table 4. Of the listed species, the majority is characterized by high frequency and abundance.

Species, which have so far only been recorded from one zone, deserve our special attention: *Dictyna uncinata*, *Gnaphosa lucifuga*, *Drassodes lapidosus*, *D. pubescens*, *Haplodrassus signifer*, *Diaea dorsata*, *Xysticus bacurrianensis*, *X. charitonovi*, *Clubiona similis*, *Theridium nigrovariegatum*, *T. denticulatum*, *Alopecosa pulverulenta*, *Pardosa lugubris*, *P. ninigoriensis* sp. n., *P. calida*, *P. agrestis*, *P. hortensis*, *P. arenicola*, *Araneus nordmanni*, *A. alpicus*, *A. quadratus*, *A. svanetiensis* sp. n. A number of species are characterized by a clear preference for grassy places, the ground layer, decaying wood and vegetative parts of ligneous plants, rocks and habitats below rocks, where their frequency and abundance is high compared to other habitats. This is true for some species of the families Gnaphosidae, Clubionidae, Linyphiidae, Araneidae, Micryphantidae, Thomisidae, Salticidae.

It is noteworthy that *Araneus ceropegius*, *A. marmoreus*, *A. alpicus*, *Coelotes spasskyi*, *Xysticus bacurianensis*, *X. charitonovi*, *Haplodrassus signifer*, some species of the Clubionidae and others are connected only to the described habitats.

Hygrophilous species of the families Lycosidae, Tetragnathidae, Micryphantidae and others are distributed in this zone. The synanthropic species of both zones are comparable.

4.5 Meskhet-Javakhetian Mountains

The zone of the Meskhet-Javakheti Highlands of southern Georgia is unique in respect to its regional environmental conditions. Maruashvili (1964) writes: "*Karl Ritter called Javakheti a cool island rich in air and water. He emphasized the peculiar position of this region (rayon) within the system of the eastern Caucasian landscapes. This landscape reminds us of the landscapes in the lowlands of the Kuban river of southern Russia and the volcanic cones rising at the horizon let us feel the Caucasian highlands.*"

The borders of this zone are situated mostly outside of Georgia: in the East they almost extend to Dmanisi, in the North they are limited by the Trialeti Range, the western border is the upper part of the Kura River, and the southern border is the political border with Turkey.

The relief of the region is mostly a result of volcanic and tectonic processes. B. Qavrishvili (1955)⁹ assumed, that the volcanic activity started during the Eocene and at the end of the Oligocene, reaching its greatest intensity only at the end of the Tertiary Period.

Besides the combined volcanic and tectonic processes, the usual processes of erosion and accumulation play an important role. Finally, the relief is also a result of the volcanic and tectonic nature of the high mountains and of the volcanic activity.

The mountain chains of Arsiani and Adjara-Imereti are of great importance for the climate of the mountainous Meskhet-Javakheti zone. They form a barrier at the border of the zone for the moist air masses coming from the Black Sea. Therefore, the recent climate is of dry, continental character. The mountains of the Meskhet-Javakheti zone are situated at an altitude of nearly 1500–2000 m a.s.l. Its main climatic characteristics are: an average annual temperature of 2–6 °C, an average temperature of the coldest month of -2 to -22 °C, a temperature of the warmest month of 14–18 °C. The average annual temperature amplitude varies between 24–25 °C. The annual precipitation amounts to 650–700 mm. The winter is colder than in other places at comparative altitude of the Caucasus. The snow cover lasts for 4–5 months, its thickness hardly reaches 10–20 cm (L. Maruashvili, 1964).

⁹This publication is not listed in the references section.

Within this zone the forest remained only in some places. Grass vegetation dominates and almost the whole plateau is of high-mountain character, leading to the higher subalpine and alpine meadows. Many short-grass meadows are situated on the plateau, with *Stipa*, *Festuca*, *Carex* and others. The vicinities of lakes and peaty places bear a water and swamp vegetation with representatives of the boreal flora, which might have populated this area during the glaciation events during the quaternary period. This zone is characterized by a dry continental climate, variable conditions and a reduced number of animal species.

Three spider species were recorded from the montane zone of Meskheti-Javakheti before we started our studies. Currently, 65 species are recorded from there. We conducted faunistic studies in the years 1939, 1972, 1973 and 1974. Spiders were collected in the regions of Adigeni, Akhaltsikhe, Aspindza (Khizabavra), Akhalkalaki and Tsalka.

Within this zone we obtained interesting material of the family Dysderidae. From the genus *Dysdera* four species are described new: *D. iberica*, *D. meschetiensis*, *D. charitonovi*, *D. spasskyi*. *Segestria bavarica* and *S. florentina* also belong to this family. They are all thermophilous species of the mediterranean subregion. These spiders can be found below and on rocks on pastures.

In places with tall herbaceous vegetation we meet representatives of the Araneidae like *Argiope bruennichi*, *Araneus bisantinus*, *A. cucurbitinus*, *A. adiantus*, whereas, on ligneous plants and shrubs in fruit gardens we meet *Mangora acalypha*, *A. diadematus*. In sunlit fields with tall herbaceous vegetation we often find *Pisaura mirabilis* and *Oxyopes lineatus* and many species of crab spiders (Thomisidae). In the fields of Rustavi (Aspindza) with short herbaceous vegetation we meet *Lycosa vultusa* in great abundance in soil hollows. Hunting spiders can be found in large numbers on the banks of rivers and irrigation canals: *Pardosa*, *Pirata*, *Tarentula*, *Xerolycosa*.

In September 1973, we collected the poisonous black widow *Latrodectus tredecimguttatus* on the high mountain pastures of Aspindza (1200 m a.s.l.) on the road leading to Khizabavra in low places next to rock chunks. This was the first record from such an altitude inside Georgia. From the same family, the species *Lithyphantes paykullianus*, *L. albomaculatus* live in the same habitats as the black widow. They were recently found in the mountain meadows of Adjara. *Gnaphosa taurica* (Gnaphosidae) is distributed in the habitats of the Aspindza plateau.

Zelotes seriatus, *Phaeoedus braccatus* and some species of the genus *Dictyna* live below rocks in the vicinity of Vardzia. the interesting Georgian endemic species *Coelotes spasskyi* is distributed throughout Adjara (Keda, Khulo, Mtirala). It was recorded once in the forests of Akhaltsikhe and Adigeni. A large number of crab spiders (Thomisidae) can be found in grass. Like in other zones, too, we meet synanthropic species here.

Some of the spiders collected in the Meskheti-Javakheti zone are assumed

to be thermophilous. They have colonized the subtropic regions of western Georgia from the Mediterranean subregion and acclimatized well to the new conditions, settling in the mountains of Adjara (Keda, Khulo). It cannot be excluded that they colonized the mountains of South Georgia from the region of Adjara-Imereti.

Tab. 5: The spiders of Meskhet-Javakheti in the habitats.

	Absolute number of species	Relative proportion of all species
Short herbaceous vegetation	45	69.2 %
Tall herbaceous vegetation	19	29.2 %
Under and on rocks	21	32.3 %
Soil hollows	1	1.5 %
Shores of water bodies	10	15.4 %
Buildings	5	7.7 %

The spiders of the mountain zone of Meskhet-Javakheti are not distributed evenly across the habitats (Tab. 5). The largest number of species is characteristic for low herbaceous vegetation: 45 species (69.2 % of all species). Ligneous plants, shrubs, rocks and the lower side of rocks are habitats for 19–21 species (29.2–32.3 %), whereas the shores of water bodies are home to 10 species (15.4 %). Soil hollows and buildings yield a minimum number of species: 1–5 species (1.5–7.7 %).

Among others, characteristic species include *Xysticus marmoratus*, *Oxyopes lineatus*, *Alopecosa taeniopus*, *Araneus adiantus*, *A. diadematus*, *Theridium lunatum*, *Philodromus histrio*, *Linyphia pusilla* and some species of the families Dysderidae and Lycosidae, which have been recorded in three to four of the seven habitats listed in Table 5. High abundance and frequency are characteristic for the majority of these species.

Species, which have so far been recorded only in this zone, deserve our special attention: *Dictyna pygmaea*, *Dysdera iberica*, *D. meschetiensis*, *D. armenica*, *D. charitonovi*, *Zelotes seriatus*, *Xysticus umbrinus*, *X. marmoratus*, *X. ninnii*, *Synema richteri*, *Philodromus margaritatus*, *Theridium lunatum*, *Tegenaria pagana*, *Pardosa blanda*, *Alopecosa cursor*, *Pisaura mirabilis*, *Araneus cucurbitinus*, *A. bituberculatus*, *Linyphia pusilla* and *L. hortensis*.

A number of species is characterized by a preference for bare rocky places and rock crevices as well as vegetative parts of grasses and herbs, where their frequency and abundance are high compared to other habitats, e. g. some species of the families Dysderidae, Gnaphosidae, Lycosidae, Thomisidae and Araneidae.

Species like *Araneus cornutus*, *Trochosa spinipalpis*, the genera *Pardosa*, *Alopecosa*, *Pirata* seem to be hygrophilous species and mostly live on the banks of lakes (Tabatsquri Lake), rivers and irrigation canals (Gardabani).

Like in other zones, synanthropic species include *Tegenaria domestica*, *Pholcus phalangoides*, *Teutana grossa*, *T. castanea*, *T. triangulosa*.

Chapter 5

Comparative Analysis

As can be seen from the material presented above, Georgian spiders are characterized by an uneven distribution within the landscape zones in different natural areas (Tab. 6). The Colchic lowlands differ from the other zones with 236 registered species (65.3 %). Second is the zone of the montane forests with 99 species (27.3 %), followed by the 80 species (22.2 %) of the steppes and semideserts, the subalpine and alpine zones with 68 species (18.9 %), the mountainous zone of Meskhet-Javakheti with 65 species (18 %).

This uneven distribution of the spiders across the landscape zones can be explained by a number of different causes. First of all, it is known that the number of suitable environments for spiders varies between the different zones. As can be seen in Table 7, ranking first in this respect are the Colchic lowlands and the montane forests, where the number of environments is at maximum. The other zones are comparatively poor in this respect, especially the alpine and subalpine zones as well as the mountain steppe of Meskhet-Javakheti

Tab. 6: The distribution of the Georgian spiders in the landscape zones. 1 – Colchis, 2 – montane forest, 3 – steppe and semidesert, 4 – subalpine and alpine zone, 5 – mountainous Meskhet-Javakheti.

	Landscape Zones				
	1	2	3	4	5
Number of species	236 65.3 %	99 27.3 %	80 22.2 %	68 18.9 %	65 18 %
Characteristic species	37 (15.6 %)	33 (33.8 %)	19 (23.8 %)	22 (32.3 %)	20 (30.7 %)

As we have seen, the number of environments correlates positively with the number of species. The more suitable environments exist in a landscape zone, the higher is the number of species.

The altitude above sea level has no lesser significance to the distribution of spiders. Spiders are, as a rule, thermophilous animals. This is why the conditions for the spiders are especially suitable in the Colchic forests, where

the annual temperature curve is higher compared to the other zones and the climatic conditions do not vary very much. The temperature curve of bordering zones, like the alpine, subalpine or mountain-steppe (Meskhet-Javakheti) zones, shows larger variations and is lower, influencing the species composition and abundance of spiders. This is similar to information given in some works of other authors, e. g. Saveleva (1972), Moni's (1962, 1967), Belovi (1969), Mitiaevi (1971), Andreeva (1961) and other works¹. It follows that the number of species and spider abundance decreases with increasing absolute altitude, while the number of specialized (endemic) species increases.

Tab. 7: The number of environments of spiders in the natural zones.

	Absolute number of habitats	Relative proportion of all habitats
1. Colchic lowlands	13	30.68 %
2. Montane forest	10	9.9 %
3. Steppe and semi-desert	7	5.6 %
4. Subalpine and alpine zones	6	4.08 %
5. Mountainous Meskhet-Javakheti	6	3.9 %

In spite of this, the richness of the collected materials of other zones allows a thorough characterization of these zones. Comparing each of the ecological characteristics of the spider fauna of the landscape zones to the data of the tables 1–5, we can state the following: A number of species differs from the others not only in their uniform distribution within the borders of a given landscape zone but in all or the majority of the zones, e.g.: *Dysdera crocata*, *D. punctata*, *Segestria florentina* (Dysderidae), *Lycosa vultuosa*, *Pardosa amentata*, *P. lugubris*, *P. plumipes*, *P. monticola*, *Trochosa terricola* (Lycosidae), *Araneus diadematus*, *Argiope bruennichi* (Araneidae), *Evarcha arcuata*, *Menemerus parietinus*, *Heliophanus cupreus* (Salticidae), *Tegenaria domestica*, *Agelena taurica*, *Coelotes spasskyi* (Agelenidae) and some species of the genus *Xysticus*. At the same time, these species live in the main environments of the majority of zones, but most of them are also special in occurring with high abundances in large populations.

In contrast, other species have a more homogenous distribution pattern compared to representatives of the first group; they do not reach dominance in any given zone because of low abundances and small populations, e.g. *Brachythele pontica*, *B. zaitzevi*, *B. recki* (Dipluridae), *Oecobius annulipes* (Oecobiidae), *Eresus niger*, *E. lavrosiae* sp. n. (Eresidae), *Filistata insidiatrix* (Filistatidae), *Ero aphana* (Mimetidae), *Scytodes thoracica* (Sicariidae), *Anyphaena accentuata* (Anyphaenidae), *Hyptiotes paradoxus*, *Eucta isidis*, *Gnathonarium dentatum* and others.

Within some some zones a number of species with significantly restricted distributions are characterized by a lower frequency and population size.

¹Except for Saveleva (1972) all these publications are not mentioned in the references section

Taxa with a preference for the forest zone (Colchic montane forest) are: Dipluridae, Dysderidae, Linyphiidae, Thomisidae, Theridiidae, Argiopidae, Lycosidae, Clubionidae, Gnaphosidae, Salticidae.

Then follow such families, genera and species, which are more commonly associated with the steppe and semidesert, e.g. Eresidae, Oxyopidae (*Oxyopes lineatus*), Lycosidae, *Lycosa singoriensis*, *L. narbonensis*, *Alopecosa cursor*, Pisauridae, Thomisidae, *Philodromus*, *Thanatus*, *Xysticus*, Linyphiidae, *Latrodectus tredecimguttatus*, *Lithyphantes paykullianus*, *Eucta isidis* (Tetragnathidae), *Araneus ullrichi*, *A. adiantus*, *Argiope lobata* (Araneidae).

Recalling the above mentioned, we can classify the spiders in the following ecological groups: I. Transzonal, eurybiontic species, in high abundances in their habitats (38 species); II. Transzonal, stenobiontic species, in low abundances in their habitats (24); III. Species with a preference for the forest zone, (50); IV. Species with a preference for arid zones, including specialized species of the steppe and semidesert (23–25); V. Species in soil cavities (4); VI. Cave species (12); VII. Hygrophilous species of shores and swamps (24); IIX. Water species (1) and IX. Synanthropic species (5).

If we compare the peculiarities of the distribution of certain species, first within certain landscape zones and secondly in other zones, then we see that they match each other in many cases. Some eurybiontic species are in one or another zone characterized by the same characteristics as in other zones, e. g. *Agelena taurica*, *A. labyrinthica*, *Araneus diadematus*, *Argiope bruennichi*, *Mangora acalypha*, *Lycosa radiata*, *L. vultuosa*, *Misumenops tricuspidatus*, *Theridium impressum*, *Xysticus* species, all synanthropic species and others.

Secondly, some species, which are stenobiontic in one landscape zone, are characterized as being stenozone or by being stenobiontic in other zones, e. g. *Filistata insidiatrix*, *Mimetus laevigatus*, *Scytodes thoracica*, *Dendryphantas nidicolens*, *Drassodes albicans*, *Talanites atcharica*, *Anyphaena accentuata* and others.

Therefore, many spider species are characterized by similar ecological characteristics in different landscape zones. The distribution of the species and their ecological valency in a certain natural zone match their according characteristics within other landscape zones.

A characteristic picture emerges for relatively stenobiontic species upon examination of zonal aspects. It is most noteworthy that some environmental conditions are comparable between the the landscape zones, for example in the different forest zones and the zones of the semidesert and steppe as well as in the subalpine and alpine zones. As expected, some species are characterized as being stenozone, namely, in case they are recorded, for example, in the Colchic zone or the zone of the montane forest. These species are usually not found in other zones (Tab. 6).

Other stenobiontic species within the zonal aspect are characterized by other characteristics. In some of them a habitat shift can be recognized, e. g. in *Araneus diadematus*, which in the Colchis lives mainly on ligneous plants,

shrubs, in tea and citrus plantation, but in the steppe and semidesert it lives on high grass, in montane forests on ligneous plants, shrubs (especially on *Rhododendron luteum*) but in the mountain steppe and the subalpine zone it lives hidden in rock crevices and small pits. *Steatoda bipunctata*, which in Russia is regarded as a hemi-synanthropic species, lives in coniferous forests (among the wood fibers in a depth of 24-24 cm) in Georgia. There it feeds on pest insects, e. g. the eggs and larvae of the bark beetles (Scolytidae), which occur in Borjomi Valley in large numbers.

Alopecosa radiata is a thermophilous species and a Mediterranean form. It is abundant in low vegetation on the shores of the Black Sea. In montane forests it lives under rocks, among leaves in mosses, but on subalpine meadows it lives under rocks in small hollows.

Episinus truncatus is distributed in the Colchic lowlands – in forests, in grass and in Adjara and Abkhazia on citrus shrubs. During this time it was often found in caves in Abkhazia. This is the reason, why this species is regarded as being an accidental cave spider (trogloxenous species). In our opinion it bears this title rightly.

These phenomena are well known from other animals as well, namely in insects. For the first time they were outlined by the well known entomologist G. Bei-Bienko, who described the mentioned cause, the so-called 'principle of the habitat shift' (Bei-Bienko, 1930, 1959²). The essence of this theory lies in the fact, that the humidity and temperature conditions differ between areas of one zone. Among all specific conditions the "species" chooses only such habitats, which meet its requirements. Recently, the principle of habitat shift was established for other invertebrates as well and its universal character emerged, e. g. in a study on the distribution of mites in Georgia (Kadzhaya, 1975), which came to the same conclusions.

If we compare the frequency of certain species within the habitats of the natural zones, we see pronounced differences. We should study this in a number of species, e. g. *Araneus diadematus*, *A. marmoreus* and *Linyphia frutetorum*. Their frequency in forest habitats of the subtropical zone does not exceed 9–10 % (of the total number of the sample). In the zone of the montane forest the according number is hardly higher, whereas in the steppe, subalpine and alpine zones their frequency is higher (near 20–30 %).

If we return to table 7, where the abundance of spiders in habitats of a number of natural zones is given, we see a homogenous pattern. Namely in the zone with the highest number of habitats (Colchis), the frequency of the species is lowest. On the other hand, the frequency within habitats is highest in zones with fewer habitats (semideserts, steppe, subalpine zone, subtropical zone).

Such a pattern can, as we see, depend on the heterogenous composition of the species communities in the biotopes. In semideserts, where the spi-

²In Mcheidze (1997) sic: '1953', lapsus.

ders occur in lower abundances in the habitats, the communities are less structured than, for example, in forests, where spiders are more abundant in suitable habitats, leading to more structured communities. Because of this, in the first above-mentioned case the probability of encountering the species in the habitats is significantly higher than in the second.

Part II
Descriptive Part

Chapter 6

Identifying Spiders

The description of an animal species includes the attribution of a scientific name to a specimen. This means that the species is registered in the systematic literature and included in the zoological system. Determination keys help in distinguishing all species according to systematic morphological characters. Therefore, a good knowledge of the morphological characters is important for the identification of species.

The identification keys follow the Swedish system. In this system one complex (or thesis) is contrasted by a second complex (the antithesis). Each thesis is preceded by a number, the first specifying the thesis, the second in brackets specifying the antithesis. Determination starts with reading the thesis. If the characters of the spider fit the description in the text, one proceeds to the next thesis. If the characters do not fit the description, one must consult the antithesis behind the number in brackets. The antithesis must of course also be consulted in the case of the thesis well fitting the spider's characters.

Determination starts with the family key, which assigns the specimen in question to a family. Subsequently the specimen's genus is determined with the help of the genus key of this family; and finally, the species is determined within this genus. The correctness of the determination must be checked according to the diagnosis of the species in question.

All species names in the key follow the Latin binary nomenclature and in case of the subspecies the trinary nomenclature respectively. The spider's name is followed by the name of the person who first described it. After determination, a label has to be written with the Latin name of the spider, the location, collection date as well as first and surname of the collector and the person having made the identification.

Chapter 7

Keys and Descriptions

Key to families

- 1 (2) Chelicerae horizontal, with long, parallel claws. Two pairs of lungs with covers. Without tracheae. (Mygalomorphae) **1. Dipluridae** (p. 44)
- 2 (1) Chelicerae arranged downwards or antero-ventrally, their claws opposing each other. One pair of lungs and tracheal openings in even or odd number. (Araneomorphae) **3**
- 3 (14) Cribellum directly in front of the spinnerets (Fig. 3). Metatarsus IV with 1–2 rows of curved spines (calamistrum, Fig. 4). (section Cribellatae) **4**
- 4 (5) Anal tubercle bifid, with long setae formed like a brush (Fig. 20). Spinnerets like Fig. 20. **2. Oecobiidae** (p. 47)
- 5 (4) Anal tubercle normal, without brush of long setae. **6**
- 6 (7) Eyes arranged in three rows. Anterior part of carapace not narrowed or only slightly narrowed compared to the posterior part. **3. Eresidae** (p. 48)
- 7 (6) Eyes in two rows. Anterior part of carapace distinctly narrower than posterior part. **8**
- 8 (9) Labium completely fused with sternum. Epigyne of the female genital opening not visible in the adult female. **4. Filistatidae** (p. 53)
- 9 (8) Labium movably connected with sternum. Genital opening of the adult female with epigyne. **10**
- 10 (11) Tarsi I–IV with a row of dorsal sensory setae. Cribellum often bifid (Fig. 3). Calamistrum consisting of two rows of curved spines (Fig. 4). **5. Amaurobiidae** (p. 54)
- 11 (10) Tarsi I–IV without dorsal row of sensory setae. Cribellum in most species in one piece. Calamistrum with a comb-like row of curved spines (Fig. 6). **12**

- 12 (13) Distance between AME and PME not smaller than between ALE and PLE. **6. Dictynidae** (p. 57)
- 13 (12) Distance between the AME and PE smaller than between ALE and PE. **7. Uloboridae** (p. 63)
- 14 (3) Without cribellum. Metatarsi IV without calamistrum. (section Ecribellatae). **15**
- 15 (16) Tibia and metatarsus I and II ventro-laterally with long spines and short spines in-between. **8. Mimetidae** (p. 68)
- 16 (15) Tibia and metatarsus I and II without a row of such spines. . . **17**
- 17 (18) Tarsus thin and slender, with false segments. Legs very long; legs II 4–5 times as long as the body. Labium fused with sternum. **9. Pholcidae** (p. 70)
- 18 (17) Tarsus without false segments. Legs comparatively short; legs II more or less twice as long as the body. Labium not fused with thorax. **19**
- 19 (22) Six eyes. Genital opening of the adult female without epigyne. Male bulbous bulged, more or less covered with setae, rarely with a chitinized structure. Pedipalpus joints without appendage. . . **20**
- 20 (21) Carapace with large hump. Only one tracheal opening in front of the spinnerets. **10. Sicariidae** (p. 74)
- 21 (20) Carapace without hump. A pair of tracheal openings close to the epigastric furrow. Large and medium-sized spiders with at least 2 mm body length. Labium longer than wide. **11. Dysderidae** (p. 76)
- 22 (19) Eight eyes (rarely the eyes are reduced more or less in cave spiders). In most cases with epigyne covering the genital opening of the female. Copulatory organs of the males complex and characterized by differently chitinized structures. Some joints of the male either with apophyses or without. **23**
- 23 (34) All tarsi with two claws. **24**
- 24 (25) Eyes in three rows: AER with four eyes, MER and PER rows each with two eyes. AME very large, larger than the remaining eyes. Eyes of MER small and often poorly visible (Fig. 9). **12. Salticidae** (p. 104)
- 25 (24) Eyes arranged in two rows. If eyes in three rows, then eyes of the AER significantly smaller than the eyes of the PER. **26**
- 26 (27) Distance between inner anterior spinnerets as long as their diameter. **13. Gnaphosidae** (p. 129)
- 27 (26) Anterior spinnerets partly or completely touching. **28**
- 28 (29) Odd number of tracheal openings terminating in the central part of the venter. **14. Anyphaenidae** (p. 144)
- 29 (28) Tracheal opening terminating directly in front of the spinnerets. **30**

- 30 (33) Legs I and II directed laterally, so that the morphologically dorsal side is facing backward and the ventral side is facing forward. Spiders move sideways. Often with colulus, sometimes without. **31**
- 31 (32) Edge of cheliceral furrow with some teeth. Scopula well developed on all tarsi and metatarsi. Tip of metatarsus with trilobate membrane. 15. **Sparassidae** (p. 146)
- 32 (31) Edge of cheliceral furrow without teeth or with only 1–2 teeth. If tarsus and metatarsus with scopula, then only weakly developed. Tip of metatarsus without membrane. 16. **Thomisidae** (p. 148)
- 33 (30) Legs I and II directed forwards. Spiders capable of lateral movement. Never with a colulus. 17. **Clubionidae** (p. 205)
- 34 (23) All tarsi with three claws. **35**
- 35 (36) Tarsus IV with a ventral row of 6–10 dentate spines. Labium and gnathocoxa like Fig. 7. 18. **Theridiidae** (p. 221)
- 36 (35) Leg IV without such spines. **37**
- 37 (38) Eyes arranged in three rows. Only two eyes in the anterior row (Fig. 8). 19. **Oxyopidae** (p. 248)
- 38 (37) Eyes not arranged in rows; if in three rows, then with four eyes in the anterior row. **39**
- 39 (44) All legs with trichobothria. Labium not wide. **40**
- 40 (41) Legs without scopula. Distal part of trochanter not cut off. Tarsi with a dorsal row of sensory setae. The length of these setae increasing towards the tip. Spinnerets like Figs. 18 and 19. 20. **Agelenidae** (p. 252)
- 41 (40) All tarsi with scopula. Distal part of trochanter cut out semi-circular. Sensory setae on tarsus arranged without order or grouped in two rows. **42**
- 42 (43) Posterior eye row curved so strongly that the eyes seem to be arranged in three rows (Fig. 10). Each tarsus with an additional claw, which is not dentate or single-toothed. Tibia of the male palpus without appendage. The females carry their egg sacs around attached to the spinnerets. 21. **Lycosidae** (p. 267)
- 43 (42) Two ER, PER weakly curved, with two ER (Fig. 11). Each tarsus with claws, each with 2–3 teeth. Male palpus with tibial appendages. Females never with egg sacs attached to their spinnerets. 22. **Pisauridae** (p. 309)
- 44 (39) No tarsus with dorsal trichobothria. Labium wide (Fig. 21). **45**
- 45 (48) Width of the eye field reaches width of the cephalic part. Eyes uniform (ventral part cross-like, Fig. 16). **46**
- 46 (47) All femora without trichobothria. Tarsus IV below the claws with dentate spines for spinning (Fig. 15). Legs always with spines. Labium and gnathocoxae like Figs. 21 and 21 a. 23. **Araneidae** (p. 312)

- 47 (46) All femora with trichobothria, without dentate spinning spines below the claws of tarsus IV. Legs often without spines (but not always); if with spines, then abdomen and carapace strongly elongated. Adult females without epigyne. Chelicerae like Fig. 13, labium and gnathocoxae like Fig. 14. 24. **Tetragnathidae** (p. 355)
- 48 (45) Width of the ME field clearly smaller than the distance between the AE or in rare cases longer (An exception is *Tapinopa* from the family Linyphiidae). Eyes variable. 49
- 49 (50) Gnathocoxae approximated above the labium. Legs without spines but with long setae and spines. Not very small spiders (usually more than 3 mm body length). 25. **Nesticidae** (p. 362)
- 50 (49) Gnathocoxae not approximated above the labium, their inner edge more or less parallel. Legs with or without spines. 51
- 51 (52) Legs IV with two dorsal spines on the tibia, sometimes one, then metatarsi I and II with short spines (Fig. 17). Last segment of the male palpus with a claw. Small and medium-sized spiders. 26. **Linyphiidae** (p. 369)
- 52 (51) Legs IV with a dorsal spine on the tibia. All metatarsi without spines. Last segment of the male palp without claw. Small and very small spiders. 27. **Micryphantidae** (p. 379)

7.1 Dipluridae

This family belongs to the mygalomorph spiders (Mygalomorphae). They are old and primitive forms (relict species). They are distributed in Central and South America, East- and South Africa, on Madagascar and in Australia as well as in Southern Europe and in Anatolia. Some mostly small and medium-sized species reach the temperate zone. In Georgia, we only meet three diplurid species of the genus *Brachythele*.

Two rows of teeth on the tarsus are characteristic for these spiders. Legs I and II bear a scopula, which starts at the basis of the metatarsus. The tarsus has no spines. The eight eyes are situated in the anterior part of the carapace. The anterior eye row is arranged in a straight line or with the ends slightly curved backwards. The size of the LE exceeds that of the ME or both are of similar size. Representatives of this family have 2–6 spinnerets, of which the posterior spinnerets are very long. They reach almost half the length of the abdomen. The spiders have two pairs of lungs and construct their webs on the lower parts of ligneous plants. They construct a broad web in shrubs between rocks connected to a tube-like retreat.

7.1.1 *Brachythele* Ausserer, 1871

Key to species

- 1 (4) Gnathocoxae with eight or fewer spinulae. 4
- 2 (3) Gnathocoxae with four or five spinulae. Tibia with 2:2:2 ventral spines. Inner edge of cheliceral furrow with nine teeth, the two most basal ones being larger than the others. Carapace red, extremities and sternum yellowish. Abdomen dark red, spinnerets yellowish. Length of carapace approx. 5.1 mm. 1. *B. pontica* (p. 45)
- 3 (2) Gnathocoxae with six to eight spinulae. Tibia with 1:2:2 ventral spines. Inner edge of cheliceral furrow with 9–10 teeth. Carapace light brown. Extremities and sternum yellowish, abdomen light yellow. Length of carapace 4 mm. 2. *B. recki* (p. 45)
- 4 (1) Gnathocoxae with more than eight spinulae (11 spinulae). Tibia with 1:2:2 ventral spines. Inner edge of cheliceral furrow with 11 teeth, the second tooth from the base being the largest. Basis of the furrow with eight very small teeth. Carapace dark yellow, posterior part orange-yellow. Abdomen gray-yellow with blurred auburn-brown markings. Carapace 4.8 mm. 3. *B. zaitzevi* (p. 46)

1. *Brachythele pontica* Spasskyi, 1937

Description: Carapace length 5 mm, width 4.5 mm. The carapace is orange-red, the extremities and thoracic region are yellowish. The inner edge of the cheliceral furrow bears nine teeth, the basal two being larger than the others. The gnathocoxae bear 4 to 5 spinulae. The dark red abdomen bears yellowish spinnerets.

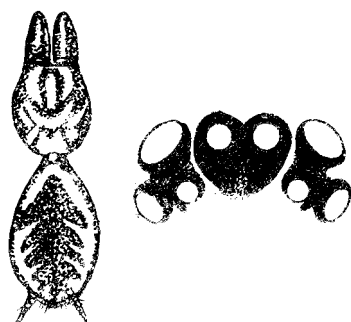
Habitat: Under dry roots of ligneous plants and under rocks.

Distribution: Batumi, Khosta, (Spassky, 1937), Kobuleti, Keda, Omanishara (near Gulripshi) (Mcheidze, 1943, 1971). Caucasian endemic species.

Taxonomy: Platnick (2013): *Raveniola pontica* (Spassky, 1937) (Nemesiidae).

2. *Brachythele recki* Mcheidze, 1983

Description: ♂ Carapace length 4 mm, width 3 mm; abdomen length 7 mm. The posterior part of the light yellow carapace is darker. The cephalic region is slightly protuberant and bears flat furrows radiating from the thoracic part as well as 2–3 pairs of flat radial furrows in the posterior part of the carapace. The posterior third of the carapace bears a transversal depression reaching its posterior end (Fig. 23).



Figs. 23–23 a. **Dipluridae, *Brachythele***. *Brachythele recki*: 23 – habitus, 23 a – eye region.

The yellow sternum bears long setae. Sternum and labium are separated by a furrow. The upper surface of the yellowish brown and bow-like chelicerae is raised and flat with a gray band along its whole length. The inner edge of the cheliceral furrow bears nine teeth on the left side and ten teeth on the right side. The outer edge of cheliceral furrow bears a number of dense rows of setae the outside. The pedipalps are yellow; the lower side of their coxae bears 7/4 large and three large spinulae in the median part on the right side and six spinulae on the left side. The palpal tibia bears 1:2 spines, spinulae and an apical spur with six teeth.

The legs are orange-yellow to dark yellow, their apical parts bear two large and one small spur in-between; the large spurs bear 5–6 teeth arranged in two rows. Metatarsus and tarsus I and II bear a scopula.

The abdomen is light yellow and densely covered with setae. The dorsum bears a longitudinal brown-auburn streak, from which emerge four pairs of transverse streaks of the same color. The spinnerets are yellow; the posterior spinnerets are of considerable length (but shorter than half the abdomen) and consist of four segments. The anterior spinnerets are short and cylindrical. The venter is gray-yellow.

Habitat: In forests in a tube-like retreat between rocks or roots of ligneous plants.

Distribution: Lagodekhi (Shromi Valley, Tshiauri Forest) (Mcheidze, 1968, 1969). Georgian endemic species.

Taxonomy: Platnick (2013): *Raveniola recki* (Mcheidze, 1983) (Nemesiidae).

3. *Brachythele zaitzevi* Charit., 1948

Description: Carapace length up to 4.8 mm, width 3.9 mm; abdomen length 7.3 mm, width 4.5 mm. The carapace is dark yellow, in its posterior half orange-yellow. The eye region bears three marks. The orange-yellow

sternum is long and bears thin, short setae on the edges. The chelicerae are red-brown, the inner edge of the cheliceral furrow bears a row of 11 teeth, of which the second from the base is larger than the others.

The pedipalps are yellow, the postero-ventral median part of their coxae bears 11 irregularly arranged spinulae of varying sizes. Tibia I bears 2:2:3¹ ventral spines. The tarsi bear 3:1:2:2 ventral spines. The legs are orange-yellow to brown-yellow. The tarsal claws bear a double-row of seven teeth. Metatarsus and tarsus I and II bear a scopula.

The abdomen is ashen-yellow and densely covered with thin setae. The dorsum bears indistinct auburn-brown markings forming a blurred mark in the anterior half. The posterior spinnerets are yellow and three-segmented. The anterior spinnerets are short, cylindrical. The venter is ashen-yellow; the epigastric region is dark yellow.

Habitat: In forests under rocks and the bark of ligneous plants. With egg sacs.

Distribution: Lagodekhi Reserve (Matsimi Valley, Ph. Zaitzev, University Tbilisi. 1937; Shromi Valley, Mcheidze 1964). Georgian endemic species .

Taxonomy: Platnick (2013): *Raveniola zaitzevi* (Charitonov, 1948) (Nemesiidae).

7.2 Oecobiidae

This family includes small forms with eight eyes situated close to one another in the cephalic part of the thorax. The small chelicerae bear weakly developed claws. The labium is not fused with the sternum. In some specimens the eyes are uniform, in others they vary. The brightly colored carapace and abdomen bear dark marks. The legs bear dark rings or marks which are sparsely covered with long setae. Metatarsi and tarsi are without scopula; the tarsi have three apical claws. The respiratory organs are tracheae (terminating in an odd number of stigmata) and lungs covered with lids. The anal tubercle is rounded or of oval form and terminating in a long-haired brush. The palpus is well developed and densely covered with apophyses.

This family includes tropical and subtropical forms, which often live in caves, houses and below rocks. They can be met in cellars, sheds and in the attic. After copulation the females construct a rounded or weakly flattened egg sac.

More than 20 species from 2 genera are combined in this family. Only the genus *Oecobius* is distributed in the Palearctic. Within this genus only one species is recorded from Georgia.

¹Contra determination key.

7.2.1 *Oecobius* Lucas, 1846

1. *Oecobius annulipes* (Lucas, 1846)

Description: Male body length 1.5–2 mm. The eyes are situated on a dark mark in the cephalic part of the whitish carapace. The carapace bears a marginal line and a submarginal row of small brown to black marks, which is tapering towards the end. The sternum is uniformly brown or sometimes surrounded by a black band; in males the sternum is protuberant.

The dorsum is gray and bears marmorate markings with white and black marks.

Habitat: Thermophilous species.

Distribution: According to Spassky (1937, 1938) in the vicinity of Sukhumi.

Taxonomy: Platnick (2013): *Oecobius annulipes* Lucas, 1846. In Mcheidze (1997) sic: '(H. Laucas, 1846)', lapsus.

7.3 Eresidae

Usually large formes of dark color are included in this family. The cephalic region is raised towards the thorax and narrowed in its anterior part. The eyes are arranged in three rows with two eyes in the first row, four in the second and two eyes in the third row. The MME are larger than the other eyes. The AE are approximated, the PE on the other hand, stand far apart from each other. The chelicerae are large and directed forward. The outer edge of the short cheliceral furrow bears one tooth.

The gnathocoxa is broad and almost rectangular. The length of the labium is larger than its width. The sternum is elongated and narrowed. Apophyses or large spines are not visible on the male palp; the bulbus bears a thin distal apophysis and a small, short embolus. The legs are thick and bear few short spines and densely standing setae. The calamistrum on metatarsus IV consists of a single row of long curved spines. The abdomen is densely covered with long setae. The muscle spots are well visible on the abdomen.

The spiders live in soil hollows or between bushes in tube-like retreats. They feed on beetles, grasshoppers and butterflies. Copulation takes place in fall (Western Europe) or in spring (Central Asia, Georgia). The large, lentiform egg sac is guarded by the female. The subadult spiders hibernate.

They are mostly distributed in the deserts, semi-deserts, open places in forests, and in the steppe. In the former USSR we meet two genera with 5 species. One species is known from the European part of the USSR, two species from one genus in Georgia.

7.3.1 *Eresus* Walckenaer, 1805²

Synonym: *Erythrophorus* C. L. Koch 1851

Key to species

- 1 (2) Carapace black. Female abdomen velvety black. Body length 9–11 mm. Male dorsum carmine, with 4 sloping black marks. Inwards white (bands). Body length 8–11 mm. 1. *E. niger* (p. 49)
- 2 (1) Male carapace black, dark brown or orange. Dorsum velvety black, all around with a broad band (a fringe of white setae). Dorsum with 2–3 pairs of reddish marks. Female body length 12–13 mm. 2. *E. lavrosiae* (p. 50)

1. *Eresus niger* Petagna, 1787

Description: Female body length 12 mm, male 8–10 mm (sexual dimorphism). The whole body of the female is black and densely covered with velvety setae. The legs are short, stout and densely covered with black setae. All leg segments bear an apical fringe of white setae. The male shows a contrasting coloration: the carapace is densely covered with black setae, which are mixed with fire-red setae in the posterior and lateral parts (Figs. 24–25, male).

Legs I and II are black with white rings. The coloration of legs III and IV is dominated by black and orange-red setae. The abdomen is densely covered with orange-red setae, except for four rounded black marks bearing a white fringe. Palpus like Fig. 26. The anterior spinnerets are prominent, long and large compared to the posterior spinnerets.

Habitat: The spiders live in the steppe, semi-desert and forest clearings in comparatively xerophytic vegetation (Kiketi, Fig. 27). The web is located in the midst of xerophytic vegetation. Its tube, which is the retreat of the spiders, extends to a hollow 6–7 cm into the soil. They feed on large insects (beetles, grasshoppers). Copulation occurs in spring. The egg sac is comparatively large and holds 70–80 eggs. The female leaves the egg sac in the hollow during the night and carries it into the sun during the day. The female dies after the hatching of the juvenile spiders. Previously, it closes the entrance and the young spiders hibernate next to the dead female.

Distribution: Central and Southern Palearctic except Japan (especially in the Mediterranean), e. g. Crimea, in the southern regions of the Ukraine, Gorki Region, Southern Urals, Turkmenistan, Tomsk Region and Altai Mountains. **In Georgia:** Shiraki (Kasri River, Eldari, Vashlovani Reserve (Pan-

²Mcheidze (1997) with year '1851', lapsus.

tishari valley)), Kiketi (forest clearings) (Mcheidze 1961, 1962, 1969). First record for the Transcaucasus.

Taxonomy: Platnick (2013): *Eresus kollari* Rossi, 1846. In Mcheidze (1997) sic: 'E. cinnabarinus Oliv-, 1789', lapsi.

2. *Eresus lavrosiae* Mcheidze, 1997

Description: Male carapace length 6 mm, width 5 mm; abdomen length 6–7 mm, width 4–5 mm. The carapace is black, dark brown or carmine, its cephalic region is significantly bulged and raised towards the thoracic region. It is wider than high with a broadened, sharply cut and sloping anterior part; its posterior part is weakly depressed. The eight eyes are arranged in three rows: the AER with two eyes, the MER with four and the PER with two eyes. The PE are spaced at a large distance from the MER as well as from each other. The AE stand close to each other. The MME are larger than the other eyes.

The chelicerae are broad and protruding, black or brown and densely covered with black setae; the cheliceral claw is short and stout. The cheliceral furrow bears one tooth. The labium is longer than wide. The gnathocoxae are broad. The palpus is small and dark with a large bulbus bearing an unforked apophysis (Fig. 29).

The sternum surface is shagreen, dark brown or black and its length exceeds its width; its edges are almost parallel. The legs are stout, comparatively long, densely covered with black setae and with white setae at the joints (forming a white ring). The spines of the calamistrum on leg IV are arranged in a row.

Leg armament: **Leg I:** femur and patella each bear a spine in the apical part; the tibia bears a spine in its apical and basal areas; the metatarsus bears a spine near the tip. **Leg II:** femur and patella bear a spine in the apical and basal areas near the end, the tibia bears a spine in the apical area. **Leg III:** femur, patella and tibia bear a spine in the apical and basal part. **Leg IV:** the femur bears a spine in its apical and basal part; the patella bears a spine in the basal part.

The abdomen is vertically somewhat flattened, oval, black or dark brown, velvety (densely covered with short velvety setae). Along their entire length the sides bear two broad white and laterally dentate bands of setae. The dorsum bears 2–3 pairs of reddish or whitish impressed pointy marks, which are oval or weakly elongated, and they are arranged diagonally or forming a parallel row (Fig. 28 a). The venter is black or dark brown. The cribellum is complete.

The described species is similar to *Eresus semicanus*³ Sim. but differs from it in the structure of the sexual organs. The bulbus apophysis is not

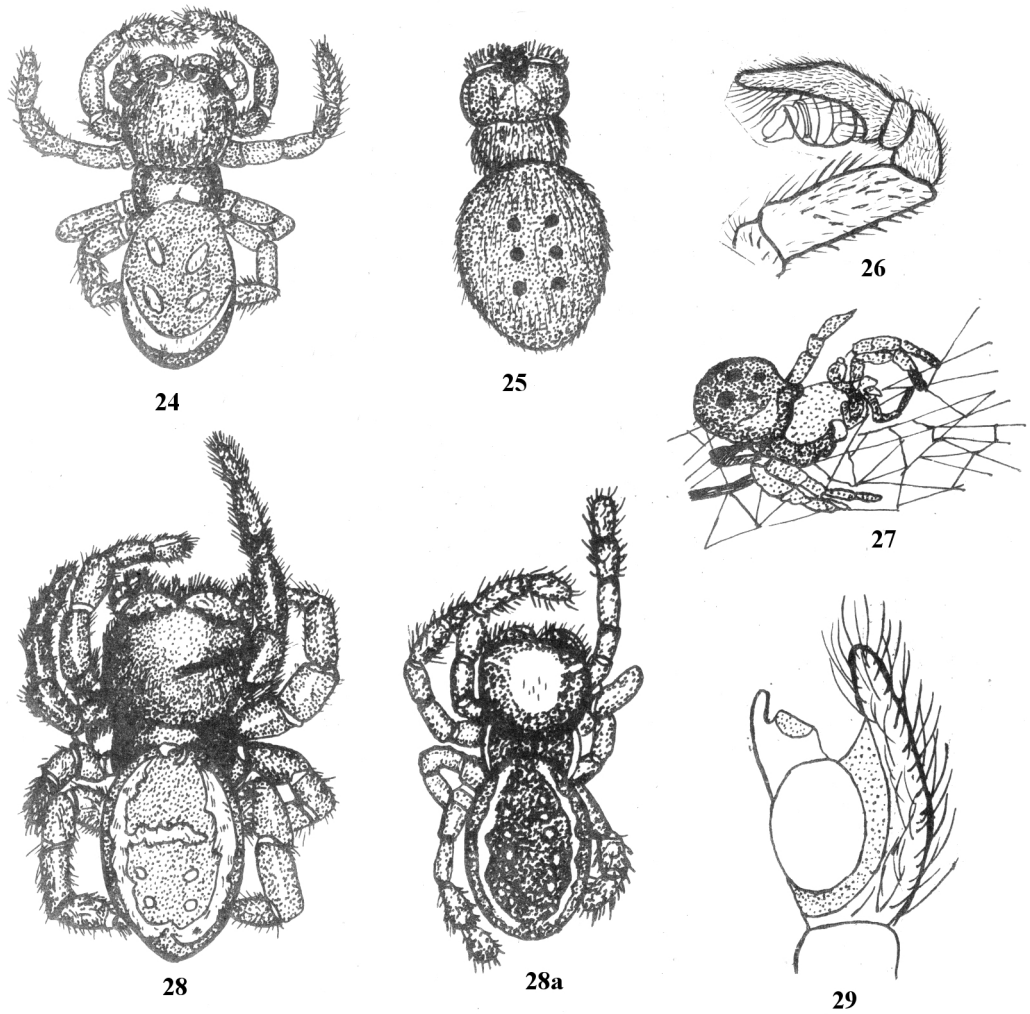
³Cf. Platnick (2013): *Eresus semicanus* Simon, 1908.

bifid in our species (Fig. 29). Furthermore, they can be separated by body size and coloration of the abdomen. The female is not known.

Habitat: In barren places under rocks and in rock crevices.

Material: 3 ♂. Kodzori (Udzo), 1400 m a.s.l. 25 VI. 1963, 5 VII. 1967.

Taxonomy: Platnick (2013): *Eresus lavrosiae* Mcheidze, 1997.



Figs. 24–29. Eresidae, *Eresus*. *E. niger*: 24 – male, 25 – female, 26 – male palpus, 27 – in xerophytic vegetation. *E. lavrosiae*: 28, 28a male, 29 – male palpus.

7.4 Filistatidae

The elongated oval carapace is somewhat raised in the cephalic region. The eight eyes are arranged in two approximated rows; the AME are day eyes, the remaining eyes are normal oval night eyes. The chelicerae are small and the edge of the cheliceral furrow bears short teeth. The basal segments of the chelicerae are fused to the base or to one another. The elongated labium is completely fused with the sternum. The gnathocoxae are approximated above the labium. The large poison glands with their branched appendages take up almost the entire carapace.

The legs are long, stout and armed with small spines. The calamistrum is short, normal and consists of several densely standing spines. All legs bear three claws. The main claw is characterized by 7–16 almost parallel and uniformly sized teeth. The copulation apparatus of the male is primitively bulbous bearing a terminal bulbus and a short embolus.

Two lung stigmata and one tracheal stigma are situated between the genital opening and the spinnerets of the venter. The anterior spinnerets are cylindrical and significantly separated from one another; the posterior spinnerets are even shorter. The cribellum is short and hardly visible. The epigyne of the female is short.

The spiders live below rocks, in hollows of trees and hills, in crevices of walls and columns where they construct their web tubes with radiating catching threads. They feed on hard-winged insects and myriapods. Copulation occurs in the web tube of the female. They are distributed in the tropics and subtropics. We find only one species in Georgia.

7.4.1 *Filistata* Latreille, 1810

1. *Filistata insidiatrix* (Forsskål, 1775)

Description: Small haplogyne⁴ spiders. Female carapace length 4–4.5 mm, male 2.5 mm. The carapace is yellow. The eight eyes in the cephalic region are arranged in two groups on a dark protuberance; each eye group contains three similar eyes and one distinct eye.

The chelicerae are yellow. The labium is fused with the sternum, which is bright yellow; in its anterior part as well as at the base of the trochanter it bears bright yellow setae. In the male the palpal tibia of the yellow legs is not longer than twice the length of the patella and its width. Tibia III of the female bears a dorsal spine.

Habitat: Under rocks, in tree hollows, in crevices of walls of buildings; there they live in their web tube with radiating catching threads (Fig. 30 a). Hemi-synanthropic species.

⁴Mcheize (1997) sic: 'mygalomorph', lapsus.

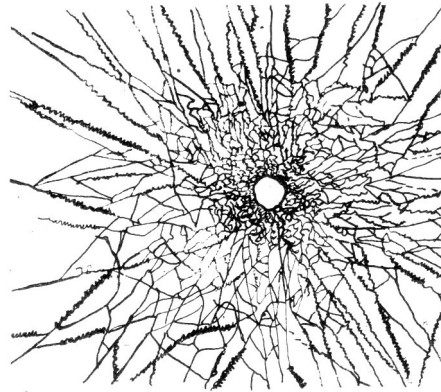


Fig. 23. **Filistatidae**, *Filistata*. Web of *F. insidiatrix*.

Distribution: Mediterranean species. Subtropics and tropics. Caucasus.
In Georgia: Tsnori River, Shiraki (Spassky, 1936). Botanical Garden of Zugdidi (on the bark of *Magnolia*), in Poti on the outer walls of buildings (Mcheidze, 1960, 1965).

Taxonomy: Platnick (2013): *Filistata insidiatrix* (Forsskål, 1775).

7.5 Amaurobiidae (incl. Titanoecidae)

Synonym: Ciniflonidae

The carapace is wide, oval and bears a longitudinal median furrow. The eight eyes are arranged in two rows; the AER is straight, the PER somewhat curved. Normally the eyes are of the same size but sometimes the AME are somewhat smaller or larger than the ALE. The median-eye rectangle is longer than wide. The clypeus is broad and reaches the eye region.

The large vertically arranged chelicerae are significantly protruding forward. Some species have long setae on the chelical base. The edges of the chelical furrow bear 5 teeth. The labium is motile and elongated. The gnathocoxae are long and curved but sometimes straight and parallel.

The simple palpus of the female bears a thin claw on its distal segment. The palpus of the male is modified as a copulation apparatus; its patella usually bears 2–3 apophyses. The legs are comparatively short and stout; their segments bear thick spines and setae. The sides of the cylindrical tarsus are not flattened; it lacks a scopula but bears a dorsal row of sensory setae and three apical claws. The calamistrum on metatarsus IV is arranged in two rows (rarely only one row).

The broad-oval abdomen is sometimes slightly elongated; its coloration is brown or dark brown to black. The anterior spinnerets are thick, cylindrical,

coniform and of the same length as the posterior spinnerets. The cribellum is often bifid. The anal tubercle is comparatively large and semi-circular.

Representatives of this family make a tubiform retreat, which is connected to a catching web. Close to 180 species are known, which are distributed in all countries of the world, even in the Antarctic and the Holarctic. Currently, 13 species are known in the USSR with two genera and four species in Georgia.

Key to genera

- 1 (2) Calamistrum in one row. 1. *Titanoeca* (p. 55)
- 2 (1) Calamistrum in two rows. Cephalic region of the carapace broad and raised. 2. *Amaurobius* (p. 56)

7.5.1 *Titanoeca* Thorell, 1870

Key to species

- 1 (2) Abdomen with a continuous dorsal white line. Body length 4.5–5 mm (Fig. 31). 1. *T. schineri* (p. 55)
- 2 (1) Abdomen with more than one dorsal pair of white marks. Body length 6.5 mm. 2. *T. nivalis* (p. 56)

1. *Titanoeca schineri* L. Koch, 1872

Description: Body length 4.5–5.5 mm. Tibia I of the male with small ventral spines; they are especially numerous on the tibia base but also on the outside of the tip, where they form an irregular row and a streak. Carapace and extremities are reddish. The black abdomen bears two white marks on the dorsum (Fig. 31).

Tibia I of the female bears significantly fewer spines, forming a weak band or is not noticable at all. Coloration of the extremities and the carapace are similar to the male. The black abdomen lacks a dorsal pair of white marks in the central part (Fig. 32). Epigyne like Fig. 33.

Habitat: In forests under rocks, in leaf litter and in loose soil

Distribution: In the whole European part of the USSR, northern Karelia, Kirow Region, Perm Region, Kazakhstan, Anatolia. **In Georgia:** Tbilisi, Gori (Ateni Valley), Telavi, Tsinandali, Nasomkhari, Baghdati, Gelati, Batumi, Khulo, Lantshkhuti (Mcheidze, 1939, 1940, 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Titanoeca schineri* L. Koch, 1872 (Titanoeidae). Mcheidze (1997) sic: '(C. L. Koch, 1872)', lapsus.

2. *Titanoeca nivalis* Simon, 1874

Description: The blackish legs have bright tarsi; the spines on the metatarsus are relatively strong, numerous and arranged in irregular rows. In females the carapace is reddish yellow; the legs are bright yellow. The sternum is bulged.

The abdomen of the male is black. The abdomen of the female is uniformly black. Epigyne like Fig. 34.

Habitat: In grass, below rocks.

Distribution: Iberian Peninsula, French Alps, Switzerland. **In Georgia:** Tbilisi, Lagodekhi, Sighnaghi, Telavi (Tsivi), Baghdati, Zekari, Tshokhatauri, Bakhmaro (2300 m a.s.l.) (Mcheidze, 1939, 1940, 1960). First record in the former USSR.

Taxonomy: Platnick (2013): *Titanoeca nivalis* Simon, 1874 (Titanocidae). Mcheidze sic: '(E. Simon, 1874)', lapsus.

7.5.2 *Amaurobius* C.L. Koch, 1837

Mcheidze (1997) sic: 'C. L. Koch, 1937', lapsus, and citing the synonym *Ciniflo* Blackwall, 1841.

Key to species

- 1 (4) Males. **2**
- 2 (3) Both palpus tibia apophyses straight. Body length 9–10 mm. 1. *A. pallidus* (p. 56)
- 3 (2) Median palpus apophysis tip pointed. Abdomen lividly yellow, sides with black marks, anterior and median parts with a broad, brown median band. 2. *A. similis* (p. 57)
- 1 (4) Females. **5**
- 5 (6) Median epigynal plate 4x as wide as long. Body length 12.5 mm. (Fig. 35). 1. *A. pallidus* (p. 56)
- 6 (5) Median epigynal plate in its posterior part significantly wider than in the anterior part (Fig. 37). Body length 12–12.5 mm. 2. *A. similis* (p. 57)

1. *Amaurobius pallidus* L. Koch, 1868

Description: Female body length 12.5 mm. The thoracic region of the carapace is bright dark-brown-yellow, whereas the cephalic region is reddish dark brown and changing into dark brown or black in its anterior part. The labium is reddish dark brown and whitish in its anterior part. The posterior part of the pale dark brown, yellowish, oval sternum is suppressed, shining, flat, its sides are without depressions and covered with spine-like setae.

The dorso-anterior part of the yellow-gray abdomen is black and its posterior part bears a sharp long band, which extends towards a long row of small marks. A black, curved band of spots and marks is situated on the sides. The abdomen is swollen, its posterior part is weakly narrowed, 1.3x as long as wide, weakly shining and covered with simple short setae (Fig. 36). The spinnerets are yellowish; the anterior pair is thick and somewhat longer than the posterior pair. The epigyne is reddish dark brown.

The pedipalps are dark-brown to yellow, the legs are somewhat darker. Tibia III and IV bears two circular blurred black marks. The AER is straight and situated close to the anterior edge of the cephalic region. The ME are round, small and closer to one another than the large, oval LE. The PLE are round and small compared to the AE.

Habitat: In forests below bark and root hollows.

Distribution: Crimea. **In Georgia:** Gori, Lagodekhi, Kazbegi (Devdorak Glacier) (Mcheidze, 1940–41). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Amaurobius pallidus* L. Koch, 1868. Mcheidze (1997) sic: 'Amauribius pallidüs', lapsi.

2. *Amaurobius similis* (Blackwall, 1861)

Description: Female body length 9–12 mm; carapace length max. 4.1 mm, width 3 mm. The carapace is dark red, in its anterior part fading into a dark color; the thoracic part is somewhat raised; the cephalic region in comparison is short, broad, blunt and weakly rounded.

The second eye pair is rather large, the ME are comparatively small and widely separated (but not twice the distance of their diameter). The distance between the LE is smaller than between the ME. The eyes of the AER are of similar size.

The chelicerae are dark brown to yellow, dark, weakly protruding and with a broader base. The legs are brown-red, except for the dark femora. The pedipalps are brown and bear three forward-directed dorsal apophyses. The abdomen is pale dark brown with lateral black marks and a weak anterior and dorsal dark median band. Epigyne like Fig. 37.

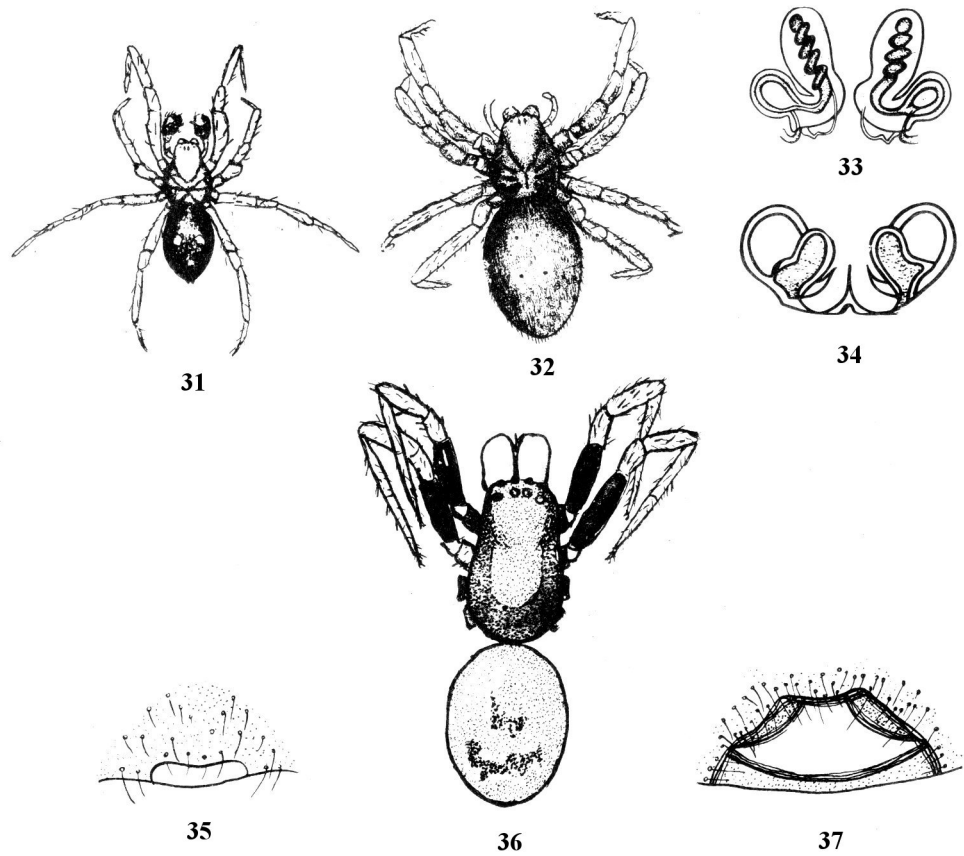
Habitat: In mountainous habitats. Below bark and roots, in tree hollows, rock crevices, feeding on pest insects.

Distribution: Central Kazakhstan. **In Georgia:** Gori, Kazbegi, Bakuriani, Lagodekhi (Mcheidze, 1940–1970). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Amaurobius similis* (Blackwall, 1861). Mcheidze (1997) sic: '(Blackw., 1859)', lapsus.

7.6 Dictynidae

The cephalic region of the oval carapace is usually raised and distinctly protruding above the thoracic region. The eight eyes are arranged in two



Figs. 31–37. *Titanoecidae*, *Titanoeca*, *Amaurobiidae*, *Amaurobius*.
T. schineri: 31 – male habitus; 32 – female habitus; 33 – vulva. *T. nivalis*:
 34 – vulva. *A. pallidus*: 35 – epigyne. 36 – female habitus. *A. similis*: 37 –
 epigyne.

rows; the AME are dark, the other eyes are bright. ALE and PLE stand very close and sometimes touch one another. All eyes are of almost the same size. The chelicerae are arranged vertically; in the male they are often straight and massive. Males hold the female with their chelicerae during copulation.

The male palpus is developed as a complex copulation apparatus. In most cases the palpus tibia bears an apophysis. The leg segments most often lack spines; the tarsi are without trichobothria and bear three apical claws. The calamistrum is developed as one row; in the genus *Dictyna* it consists of 30 curved spines.

The posterior part of the elongated oval abdomen is more or less flattened. Normally it is not high but significantly raised above the thoracic region, covering the petiolus from above. The epigyne of the female is weakly sclerotized. They have six small spinnerets, the anterior spinnerets are rather distantly spaced. The anal tubercle is small.

The spiders live in grass, on twigs of shrubs as well as on broad leaves. In western Georgia some representatives of the genus *Dictyna* can be observed on vine leaves. They feed on spider mites (Tetranychidae) and dipterans.

The Dictynidae are one of several cribellate families, which we always find not only in the southern Palearctic but also in more northern regions. A total of 220 species are known, which are distributed worldwide. Six genera with 32 species are known in the former USSR. One genus with five species is distributed in Georgia.

7.6.1 *Dictyna* Sundevall, 1833

Key to species

Note that *D. armata* (p. 61) is not keyed.

- | | | |
|---------|---|----------------------------------|
| 1 (8) | Males. | 2 |
| 2 (3) | Penultimate palpus segment with a small pointed hump (Fig. 38).
Abdomen like Fig. 39. | 1. <i>D. pusilla</i> (p. 60) |
| 3 (2) | Penultimate palpus segment with a thick, dorsal apophysis. ... | 4 |
| 4 (5) | Apophysis of the penultimate palpus segment long and pointed
towards the end. Basal appendage of the bulbus collar-like bifid
(Fig. 41). | 2. <i>D. uncinata</i> (p. 60) |
| 5 (4) | Palpus appendage tip not like this. | 6 |
| 6 (7) | Basal appendage of the bulbus bent zig-zag-like (Fig.
44). | 3. <i>D. arundinacea</i> (p. 61) |
| 7 (6) | Bulbus appendage hook-like (Fig. 47). Body length exceeding 2
mm. | 4. <i>D. pygmaea</i> (p. 61) |
| 8 (1) | Females. | 9 |
| 9 (12) | Epigynal openings rather far apart. | 10 |
| 10 (11) | Spermathecae round, copulation ducts short (Fig. 48). Dorsum
like Fig. 49. | 4. <i>D. pygmaea</i> (p. 61) |

- 11 (10) Spermathecae small and oval, copulation ducts long and bow-like curved (Fig. 42). Dorsum like Fig. 43. . 2. *D. uncinata* (p. 60)
 12 (9) Epigynal openings approximated. 13
 13 (14) Epigynal openings touching (Fig. 40). Dorsum like Fig. 39. 1. *D. pusilla* (p. 60)
 14 (13) Epigynal openings separated by a raised septum (Fig. 45). Dorsum like Fig. 46. 3. *D. arundinacea* (p. 61)

1. *Dictyna pusilla* Thorell, 1856

Description: Female body length 2–2.5 mm, male 2 mm. Carapace and sternum are dark brown with a shagreen surface; the sides of the carapace are parallel. The legs are yellow; the body bears white setae.

The dirty white dorsum bears dark-brown to black markings, which in the anterior part are formed by a mark along the middle and in the posterior half consist of 3–5 small marks. Often it has a metallic shine (Fig. 39). The gray venter bears a dark gray band. The male is darker than the female. Epigyne like Fig. 40. Male palpus like Fig. 38.

Habitat: We find this hygrophilous species in swampy locations and on the shores of water bodies.

Distribution: England, Switzerland, France. In the former USSR in the central zone of the European part and on Kamchatka Peninsula. **In Georgia:** Poti, Martvili, Tsqaltubo (Mcheidze, 1960, 1965). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Dictyna pusilla* Thorell, 1856.

2. *Dictyna uncinata* Thorell, 1856

Description: Female body length 2.5–3.5 mm, male 2.5 mm. Carapace, sternum and legs are dark brown.

The abdomen is gray, in the male black and almost without markings but densely covered with gray setae. Epigyne like Fig. 42, male palpus like Fig. 41.

Habitat: On forest edges with sparse grass cover, rock crevices, under rocks, mostly in moist habitats. They construct a web in dry shrubs, on or in rock crevices; lately this species was found on vine leaves, consuming large amounts of pest species (e.g. spider mites) in Satshkhere and Baghdati.

Distribution: Western Europe, East Asia. In the European part of the former USSR, Siberia, Kamchatka Peninsula. **In Georgia:** Ambrolauri, Mestia, Satshkhere, Baghdati (Mcheidze, 1939, 1961, 1975). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Dictyna uncinata* Thorell, 1856.

3. *Dictyna arundinacea* (Linnaeus, 1758)

Description: Female body length 3–4 (max. 8) mm, male max. 3 mm. The dark brown to black carapace and sternum are covered with short white setae. The legs are dark brown.

The yellow-gray abdomen bears dark brown markings, which longitudinally outline the organs in its anterior part, and in the posterior part it bears 3–4 transversal marks with densely standing white and dark brown setae (Fig. 46). The venter bears a transversal band of two rows of brightly colored dots. Epigyne like Fig. 45. Male palpus like Fig. 44.

They construct webs in dry shrubs of the last year which are surrounded by green plant cover, furthermore between plant twigs. Reproduction starts at the end of spring. The males die after copulation. The female constructs 5–6 egg sacs, each containing 10–35 eggs. The lentiform egg sac is guarded by the female.

Habitat: On forest edges with sparse grass cover and on the banks of ephemeral water bodies.

Distribution: Holarctic. In the whole former USSR in suitable biotopes.

In Georgia: Telavi, Borjomi Valley, Kazbegi (Sioni), Khulo, Keda, Ambrolauri, Shovi, Vardzia (Mcheidze, 1938–1974). First record in Georgia.

Taxonomy: Platnick (2013): *Dictyna arundinacea* (Linnaeus, 1758). Mcheidze (1997) also lists the synonym *Dictyna benigna* Walckenaer, 1802 sic: 'D. beninga Walck. 1802'. This should read '*Aranea benigna* Walckenaer, 1802' (see Platnick, 2013).

4. *Dictyna pygmaea* (Linnaeus, 1758)

Description: The body length does not exceed 2 mm. The carapace and sternum are dark brown. The legs bear broad yellow rings.

The brownish-gray abdomen bears black markings in the anterior part, which can be shaped like elongated black marks, as well as two rows of small marks fusing in the posterior part, thus forming bands (Fig. 49). Sometimes they are fused forming a dentate band. Epigyne like Fig. 48. Male palpus like Fig. 47.

Habitat: In grass in the lowlands.

Distribution: In the southern part of the former USSR and Tajikistan.

In Georgia: Okroqana, Gori (Kvernaki), Aspindza (Mcheidze, 1952). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Archaeodictyna consecuta* (O. P.-Cambridge, 1872).

5. *Dictyna armata* Thorell, 1875

Description: ♀ The side of the brown carapace bears dark radial lines; the sides of the cephalic region are darker and bear three dorsal median lines.

The dorsum is gray and bears a square blackish mark between the anterior and central parts, whereas the posterior part bears small dark marks. The edges of the sides are blackish; the venter is ashen.

♂ Carapace length almost 1 mm and with narrow shining furrows. The eyes are almost uniform. The auburn-brown chelicerae are long and narrow, 2.5x longer than wide. The base of the palpus bears an acorn-shaped apophysis. The legs are brown.

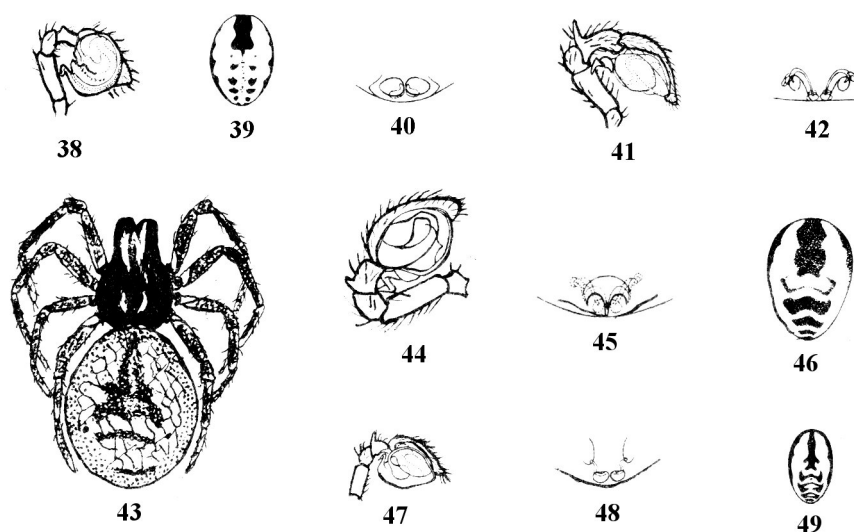
The anterior part of the dark, clay-colored dorsum bears a black, rectangular mark and blackish sides. The venter is dark clay-colored to gray. Males and females are of similar color.

Habitat: In grass and rock crevices in webs.

Distribution: In the southern part of the former USSR. Caucasus. **In**

Georgia: Gelati (Kulczyński, 1895), Tqibuli (Mcheidze, 1961).

Taxonomy: Platnick (2013): *Dictyna armata* Thorell, 1875.



Figs. 38–49. **Dictynidae, *Dictyna***. *D. pusilla*: 38 – male palpus; 39 – abdomen; 40 – epigyne. *D. uncinata*: 41 – male palpus; 42 – epigyne; 43 – female habitus. *D. arundinacea*: 44 – male palpus; 45 – epigyne; 46 – female abdomen. *D. pygmaea*: 47 – male palpus; 48 – epigyne; 49 – female abdomen.

7.7 Uloboridae

The flat carapace bears median, round, transversal impressions. The eyes are arranged in two widely separated rows. The chelicerae are directed perpendicular to the longitudinal carapace axis. Both edges of the cheliceral furrow bear teeth. They have no poison glands. The labium is longer than wide. The broad sternum is black or blackish.

The copulation apparatus of the male is large, of complex structure and with a round bulbus. Leg I is long and thicker than the remaining legs. Metatarsus IV is hardly curved and bears a single-rowed calamistrum. Tarsus and metatarsus are without scopula. The tarsus bears three apical claws and a number of accessory claws, which are differently formed and resemble curved spines.

The abdomen is elongated oval or broad and short, with a pair of lungs and one pair of tracheae. The epigyne is comparatively simple. The cribellum is oval and consists of one single part. The anal tubercle is long and segmented.

A total of 150 species are described in this family. Two genera with four species⁵ are recorded in the USSR. In Georgia we find two genera with five

⁵Sic Mcheidze (1997), lapsus.

species.

Key to genera

- 1 (2) Carapace oval. AME eyes hardly larger than PME. Legs comparatively long. 1. *Uloborus* (p. 64)
- 2 (1) Carapace as long as wide. AME significantly larger than PME. Legs comparatively short and stout. 2. *Hyptiotes* (p. 66)

7.7.1 *Uloborus* Latreille, 1806

Key to species

- 1 (2) ME rectangle almost as long as wide. Leg I of the male along the inner side of the tibia with a row of 6–8 spines, which are 3–4 mm long. Anterior part of the female abdomen raised, its crest with two thick, blunt humps and some smaller humps in the posterior sloped part. Body length 4–5 mm. 1. *U. plumipes* (p. 64)
- 2 (1) ME rectangle wider than long. 3
- 3 (4) Leg I of the male along the inner side of the tibia with 10–13 spines. Body length 4–5 mm. Abdomen of the female elongated oval but its anterior part not raised. Body length 6–8 mm (Fig. 50). 2. *U. walckenaerius* (p. 65)
- 4 (3) Leg I of the male along the inner side of the tibia without spines. Body length 3.3–3.5 mm. Abdomen of the female elongated, rather high or in this part with two blunt humps. Body length 5 mm (Fig. 51). 3. *U. georgicus* (p. 66)

1. *Uloborus plumipes* Lucas, 1846

Description: Female body length up to 4–5 mm, male 3–4 mm. The brown carapace bears a shingle-colored median band, which is narrowed in the cephalic region but broadened in the thoracic part.

The ME group is parallel on the sides and almost square. The AME are somewhat larger than the PME. The line of the second eye row is somewhat narrowed compared to the carapace. Tibiae I and II of the female bear long, ventral, blunt, black, brown and white setae (except the base).

The dorsum is swollen, its crest bears two blunt, two-fold humps. The posterior sloped part bears a few rows of small, densely standing and hardly noticeable humps.

The venter of the male is completely black and lacking a fringe. Femur I is brownish and medially divided by a white–brownish ring. Tibia I bears 6–8 inner rows of spines, which are directed laterally.

Habitat: In grassy locations.

Distribution: Holarctic, Azerbaijan (Kakhi) (Zavadzki, 1902). **In Georgia:** Lagodekhi (Mcheidze, 1955).

Taxonomy: Platnick (2013): *Uloborus plumipes* Lucas, 1846. Mcheidze (1997) sic: "(H. Lucas, 1846)".

2. *Uloborus walckenaerius* Latreille, 1806

Description: Female carapace length 2.5 mm, width 2 mm; abdomen length 5.5 mm, width 2.5 mm. Male carapace length up to 1.4–2 mm, width 1.8 mm. The carapace is dark shingle-colored, covered with white setae and decorated with four longitudinal bands, of which the two inner bands stand closer to one another than the inner bands from the lateral bands. The thorax surface is indented, the posterior part of the sides is somewhat narrowed and their anterior parts are strongly narrowed.

The carapace is somewhat swollen and bears lines in its posterior part along the median axis. Its center is lowered and the anterior part with the eye region is significantly raised. The longitudinal bands are more or less dark, the two median bands are sometimes merged forming one single line.

The broad clypeus is is very blunt. The ME form a square, the PE are uniform and significantly separated from the edge of the carapace. The LE are situated closer to the ME than the distance between the ME. The AME are larger, their distance from one another is somewhat smaller than their diameter; they are very small.

The brownish red and sometimes more or less dark leg I is very long and bears a thick and somewhat flattened femur and tibia. The other legs are short and dark.

The abdomen is strongly narrowed and elongated; its dorsum is white dorsum and bears a simple dark median line. The venter⁶ is black, elongated and its posterior part is pointed as well as covered with white setae.

The spiders construct an orb web, which always bears two broad, horizontally directed and zig-zag-formed stabilimenta; it is suspended between rocks and in dry bushes of Jerusalem thorn. They make a parchment-like egg sac with 60–90 eggs.

Habitat: In habitats with short grass.

Distribution: Palearctic. In the USSR in Moldova, Crimea, Caucasus. **In Georgia:** Tbilisi (Zavadzki 1902), Sukhumi (Spassky 1937), Gurdzhaani, Tshakvi, Sukhumi (Mcheidze, 1938–1962).

Taxonomy: Platnick (2013): *Uloborus walckenaerius* Latreille, 1806. Mcheidze (1997) sic: '(Latr., 1806)'.

⁶Probably, Mcheidze (1997) refers to the sternum here.

3. *Uloborus georgicus* Mcheidze, 1997

Description: Female carapace length 1.35 mm, abdomen 2.5 mm; total length 3-9 mm. Male carapace length 1.3–1.4 mm. The bright yellow carapace bears two irregular longitudinal bands; the median band is weakly narrowed in the middle and darker than the remaining part. The carapace is raised near the PER. This row is curved backwards stronger than the anterior row. The ME are larger than the LE. The ALE, MLE and PLE are almost uniform. The ME rectangle forms a trapezoid, which is almost as wide as long.

The chelicerae are yellow. The palpus is bright yellow. The orange-yellow sternum bears gray marks and a black line on the anterior edge. The legs are bright yellow; femur and patella bear hardly noticeable bright, gray rings (1–2 broad rings⁷) The legs are without spines.

The abdomen is raised above the carapace and bears two rows of blunt and short raised areas (Fig. 51). The color of the abdomen is mostly whitish, in the anterior part gray; in the middle it bears an elongated band. The posterior half of this gray band is elongated by two darker spots. The venter is white. Epigyne like Fig. 52.

The markings of the orange carapace of the male are similar to the carapace of the female but the posterior bright band is significantly narrower. Legs and palpus are orange-yellow. The venter is dark gray and bears three bright yellow longitudinal lines. Two brightly colored yellow spots are situated behind the central lines (Fig. 51 a). They are less conspicuous in the female.

Material: Lagodekhi (valley with spring). 6. VII. 1937.

Habitat: In grassy locations.

Taxonomy: Platnick (2013): *Uloborus georgicus* Mcheidze, 1997.

7.7.2 *Hyptiotes* Walckenaer, 1837

Mcheidze (1997) also lists the synonym *Mithras* C. L. Koch, 1834.

Key to species

- 1 (2) Tibia I of the male with 6–9 different, thorn-like spines, body length 2.8–3 mm. Female abdomen with two pairs of well developed humps, body length 4–4.5 mm. 1. *H. gerhardti* (p. 67)
- 2 (1) Tibia I of the male only with thin or weakly enlarged spines. Body length 3.5–4 mm. Female abdomen with only one well visible pair of humps. Body length 5–6 mm. 2. *H. paradoxus* (p. 67)

⁷Mcheidze (1997) sic: '2–2', probably lapsus.

1. *Hyptiotes gerhardti* Wiehle, 1929

Description: Female body length 4–4.5 mm, male 2.8–3 mm. Coloration of the carapace and abdomen similar to the next species, e. g. the short, thick and round legs. The abdomen of the female bears two pairs of well developed humps. Tibia I of the male with 6–9 enlarged thorn-like spines.

Habitat: In shrubs.

Distribution: In temperate climates. Vicinity of Sotshi. **In Georgia:** Sukhumi, Natanebi, Kelasuri (Mcheidze, 1962). First record in Georgia.

Taxonomy: Platnick (2013): *Hyptiotes flavidus* (Blackwall, 1862).

2. *Hyptiotes paradoxus* (C. L. Koch, 1834)

Description: Female body length 5–6 mm, male 3.5–4 mm. The carapace is brown. In profile view from the outside, the bulbus bears an obstructing lamella of the black apophysis on the tip of the lower edge; it is thin, sharp, bent down and somewhat coiled. The covering lamella is thin and smooth. Tibia I of the male bears only one pair of weakly enlarged spines.

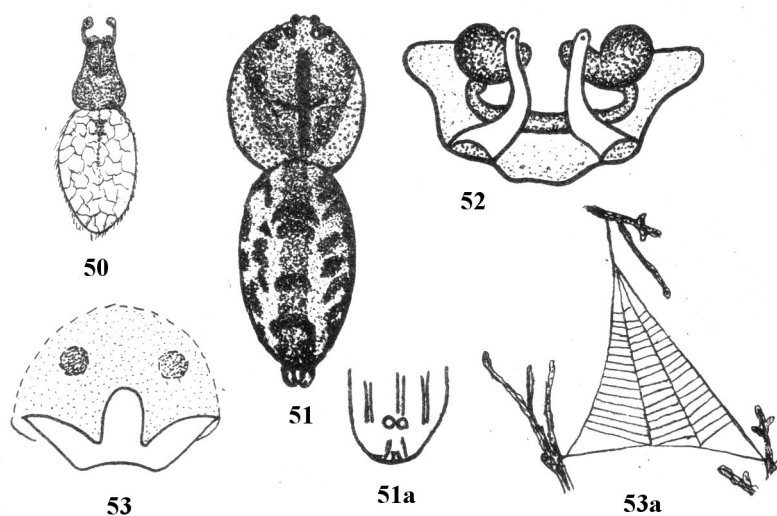
The abdomen is dark; the abdomen of the female bears only one pair of humps. The epigyne is rounded or almost square (Fig. 53), not split and arranged like a small needle coming out from below.

The spiders construct a triangular web (Fig. 53 a). The egg sac contains 10–12 eggs. The hatched juvenile spiders hibernate in the egg sac.

Habitat: In forests, almost always in spruce forest, sometimes on pine, European Box or Yew. If on aspen or birch trunks, then always near coniferous forests.

Distribution: Crimea, Caucasus. In countries with tropical and temperate climates. **In Georgia:** Tbilisi, Lagodekhi (Zavadzki 1902), Sukhumi (Spassky 1937), Batumi (Botanical Garden) (Mcheidze 1963).

Taxonomy: Platnick (2013): *Hyptiotes paradoxus* (C. L. Koch, 1834). Mcheidze (1997) sic: 'C. L. Koch, 1834' (without brackets).



Figs. 50–53. **Uloboridae**. *Uloborus walckenaerius*: 50 – female habitus. *U. georgicus*: 51 – female habitus; 51a – posterior part of venter (male); 52 – epigyne. *Hyptiotes paradoxus*: 53 – epigyne; 53 a – catching web.

7.8 Mimetidae

The body, especially the abdomen, is covered with long, yellow, yellowish-white or reddish-brown setae and spines as well as dark marks. The carapace is somewhat narrowed in the thoracic region. The eyes are heterogenous, the AME are darker than the remaining eyes. The ME rectangle is shorter than wide. The ALE and PLE almost or indeed touching each other.

The basal segment of the chelicerae is long with a short, strongly curved and almost semicircular claw. The outer edge of the cheliceral furrow bears 4–8 teeth; the inner edge is toothless or only with one small tooth. The gnathocoxae are long, narrowed and weakly pointed. The distal half of the palpus of the male bears a complicated copulation apparatus.

The femora of both sexes bear teeth as part of a sound-producing apparatus. The legs bear numerous long setae and spines. The curved spines on the tibiae I and II as well as on the tarsus are characteristic for the family⁸. The tarsus bears no trichobothria but three claws with the main claw bearing 2–4 teeth.

The rounded oval abdomen bears a number of dorsal humps. The epigyne is well developed. We meet these spiders under roots, in high grass. They do not construct prey-catching webs but feed on spiders in a peculiar way.

Close to 80 species are known within this family. They are distributed in warm and wet climates. Two genera with four species are recorded in the

⁸Mcheidze (1997) refers to Fig. 62 (Dysderidae), lapsus.

former USSR. In Georgia, we find two genera with two species.

Key to genera

- 1 (2) Clypeus as broad as the distance between AME and PME. Abdomen with 1–4 blunt dorsal humps (Fig. 54). . . . 1. *Ero* (p. 69)
- 2 (1) Clypeus width shorter than the distance between AME and PME. Abdomen without dorsal humps. 2. *Mimetus* (p. 69)

7.8.1 *Ero* C. L. Koch, 1836

1. *Ero aphana* (Walckenaer, 1802)

Description: Body length 3–3.5 mm. Body coloration varies between gray-white-black to brown-red. The carapace bears a black line behind the eyes, which is curved inwards, almost perpendicular (Fig. 54).

The tibia of the male palpus is longer than twice the width of the patella, almost cylindrical. The tarsus bears two apophyses, which differ from one another. The first apophysis base is very thick, almost vertical, reddish and has a black tip. On the inner side it is reddish and elongated like a needle, directed inwards and bent downwards. The marginal apophysis is pointed, at the base bent vertically and afterwards forward. The genital hump is indented, afterwards bent into a transversal-oval depression and split by a septum.

The abdomen in both male and female of almost circular form with four blunt dorsal humps, which are arranged as a trapezoid (Fig. 54).

Habitat: In grass.

Distribution: Hungary, Central and southern Europe. In the former USSR in the regions around Kiev and Rostov. Caucasus. **In Georgia:** Gori (Zemo Khviti), Tbilisi (Mcheidze, 1938).

Taxonomy: Platnick (2013): *Ero aphana* (Walckenaer, 1802).

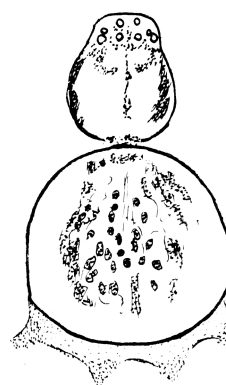


Fig. 54. *Ero aphana*. Habitus.

7.8.2 *Mimetus* Hentz, 1832

1. *Mimetus laevigatus* (Keyserling, 1863)

Description: The body length of male and female is 4–6 mm. The sides of the carapace bear some black marks as well as a broad black or brown median band. The chelicerae are very long and their tips are dark. The legs bear black marks and rings.

The abdomen is bright yellow (shingle-colored); it is covered with long setae and bears two large triangular dorsal marks in the center, which are united in the posterior part, where an additional triangular mark can be found.

Distribution: Southern Europe, Hungary, Syria, Tunis. In the former USSR in the Caucasus and Central Asia. In **Georgia:** Sukhumi (Mcheidze, 1961).

Taxonomy: Platnick (2013): *Mimetus laevigatus* (Keyserling, 1863).

7.9 Pholcidae

This family includes small spiders with a round elongated body. The carapace is somewhat flattened, usually gray or white and bears a black median mark. Of the eight eyes, the AME are situated at a distance from the remaining eyes, which form two isolated groups of three eyes each.

The chelicerae are weak; their basal segments are connected by a thin transparent membrane. A fixed tooth is situated on the distal end of the chelicerae, and together with the thin claw forms a characteristic scissor-like organ. The labium is broad and completely fused to the sternum. The gnathocoxae are narrowed and pointed at the end. The sternum is broad, swollen and usually unicolored, sometimes with livid marks. The hind coxae are distant from one another.

The palpus of the male has no claws in the distal half; the copulation apparatus is complex and unusual. The trochanter bears a straight or curved tooth. The tibia is very large and thicker than the remaining palpus segments. The cymbium is asymmetrical and of irregular form. Its tip bears a characteristic apophysis. Next to the embolus, the bulbus bears two additional apophyses.

The legs are exceptionally long and exceed the comparatively short and compact body by several lengths. With those legs the spiders resemble harvestmen. There are no thorns or thick spines on the legs. The tarsus is very thin, with false segments and three apical claws.

The abdomen is usually raised; its anterior part overlaps with the posterior part of the carapace. They have no tracheae or tracheal stigmata. The stigmata next to the epigyne belong to the lungs. The simple epigyne is strongly sclerotized. The spiders have a reduced colulus.

We meet these spiders in caves, in rock crevices. Some are true synanthropic species. More than 220 species are known, in the former USSR 13 species. In Georgia we find two genera with four species. The spiders can be found in tropical and subtropical regions.

Key to genera

- 1 (2) ALE and PLE rows strongly approximated and almost or indeed touching each other; PME touching ALE. Males without leg spines, their abdomen cylindrically elongated (Fig. 55 b). 1. *Pholcus* (p. 71)
- 2 (1) Neither ALE and PLE nor PME and ALE touching each other. Femur I sometimes with short spines. Abdomen not cylindrically elongated (Fig. 56). 1. *Holocnemus* (p. 73)

7.9.1 *Pholcus* Walckenaer, 1805

Key to species

- 1 (2) Sternum unicolored, medially without bright marks. Male palpus trochanter apophysis with a basal tooth. Epigyne at least 2x wider than long. Body length 8–10 mm. 1. *Ph. phalangioides* (p. 71)
- 2 (1) Sternum not unicolored. **3**
- 3 (4) Sternum grayish yellow, in the center with a bright round mark but on the sides also with 3–4 pairs of bright marks. Male palpus trochanter apophysis without a basal tooth. Epigyne 2x wider than long. 1. *Ph. alticeps* (p. 72)
- 4 (3) Sternum dark yellow, edge darker. Carapace sometimes with auburn lateral marks. Male palpus trochanter apophysis palp with a small tooth. Epigyne width hardly 2x its length. Body length 5–6 mm. 1. *Ph. opilionoides* (p. 72)

1. *Pholcus phalangioides* (Fuesslin, 1775)

Description: Body length 8–10 mm. The thoracic region of the female is brightly colored and bears blurred markings. The carapace is flattened. Eight eyes, of these two day eyes, which are smaller than the remaining eyes. The other eyes are night eyes and arranged in two lateral groups. Each of these groups contains three densely standing eyes (Fig. 55 a).

The legs are thin and long and without spines. The abdomen is whitish and elongated. the epigyne has the form of a triangular plate, which is more than 2x wider than long. The lamellae of the male palpus are dark, chitinized and visible from the inside; its base bears a tooth, which is bent outwards. It lacks a *T*-shaped apophysis.

Ecology: This synanthropic species lives in buildings and cellars, where the spiders live in webs with irregular threads. The eggs are tied up with threads instead of being in an egg sac. The eggs are carried around with the mouth parts until hatching after 2–3; the spiderlings shed their skin upon leaving

the egg shell. They feed on insects in living quarters (e.g. flies, midges, bed bugs, cockroaches).

Distribution: Europe, Africa, America, Asia, European part of the former USSR, Khosta, Transcaucasus. **In Georgia:** everywhere in the lowlands and the mountains, e. g. Batumi (Simon 1899, Spassky 1937), Sukhumi (Spassky, 1937).

Taxonomy: Platnick (2013): *Pholcus phalangoides* (Fuesslin, 1775). Mcheidze (1997) sic: 'Pholcus phalangoides (Fuess., 1775)', lapsus.

2. *Pholcus alticeps* Spassky, 1932

Description: ♀ Carapace length 1.65–1.8 mm, width 1.84–2.13 mm. The cephalic region of the testaceous carapace is auburn–brown with small, transversal, irregular marks, which are situated in the anterior part between the eyes. The raised cephalic region is densely covered with setae and decorated with a large mark, which does not reach the posterior edge.

The auburn–brown gnathocoxae are covered with setae. The palpus is yellow-brown. The edge of the yellow sternum sometimes bears three small marks. The auburn-brown legs are hirsute.

The abdomen is mixed testaceous and black-brown. The epigynal region is of different colors (testaceous, auburn, brown).

♂ Carapace length 1.54–1.7 mm, width 1.69–1.8 mm. The cephalic region is raised above the thoracic surface and covered with longer setae than in the female. The cephalic region is divided by a deep dorsal furrow. Overall, the coloration of the male is similar to the female's. The legs are not armed. The bulbous bears three ventral apophyses; its basal part bears a resinous ventral protuberance.

Habitat: Synanthropic species; lives in and on buildings.

Distribution: In tropical and subtropical countries. Introduced into the Mediterranean. Southern Russia, Novocherkassk. **In Georgia:** Kobuleti (Mcheidze, 1958). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pholcus alticeps* Spassky, 1932. Mcheidze (1997) sic: 'Spasskyi, 1932'.

3. *Pholcus opilionoides* (Schrank, 1781)

Description: Female carapace length 1–1.25 mm, male 1.5 mm; its surface bears a brighter median mark and three bright marks in several places. The legs are long and thin, tarsus I is especially long. All legs are without spines.

The width of the triangular epigynal plate is approximately 2x its length; its anterior part bears a small protuberance.

The palpus can be recognized from the inner side by the apophyses and by a quadrangular plate bearing a dentate outer edge. The upper edge of the plate is rounded; the posterior edge, on the other hand, is elongated. Its

anterior part bears two appendages as well as a *T*-shaped appendage on the inside.

Habitat: In buildings as well as in rock crevices. They prefer quiet places and feed on insects (flies, midges, cockroaches).

Distribution: In warm and temperate climates. They can be met everywhere in tropical and subtropical countries. In southern countries of Europe.

In Georgia: Poti, Kutaisi, Samtredia (Mcheidze, 1959). First record in Georgia.

Taxonomy: Platnick (2013): *Pholcus opilionoides* (Schrank, 1781). Mcheidze (1997) sic: '(Sohrank, 1781)', lapsus.

7.9.2 *Holocnemus* Simon, 1873

1. *Holocnemus longipes* Spassky⁹, 1934

Description: ♀ Body length 6–7 mm. Coloration of carapace and abdomen almost like in the male. The chelicerae are weakly flattened downwards. The anterior edge of the chelicerae bears no teeth. The gnathocoxa is curved, the palpus is brown. A row of spines is situated on femur I with up to 33 spines. The large epigyne is almost triangular, horned and wider than long (Fig. 57).

♂ Carapace length 2.4 mm, width 2.1 mm; abdomen length 4.1 mm, width 3 mm. The carapace is yellowish-green and dark on the edges, bearing deep median and posterior depressions as well as outwards directed depressions and two furrows behind the marginal line. A triangular and basally swollen field, which is divided by a furrow, is situated near the carapace edge.

The apical part of the chelicerae bears thin black teeth and a thick tooth on the outside. Labium and Gnathocoxae are strongly curved. The blackish sternum is in both parts deeply cut longitudinally.

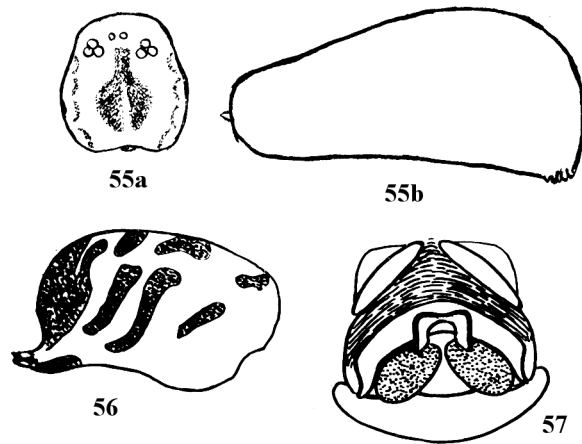
The auburn-brown legs bear blackish rings. The Abdomen is testaceous, blue and, when viewed from above, oval and with marks in the anterior part (Fig. 56). The coloration of the abdomen is variable. The bulbus is whitish and ball-like.

Habitat: In dark and wet cellars and caves. Troglophilous.

Distribution: Khosta (Spassky 1934). **In Georgia:** Batumi (Spassky 1934). Based on material of Zaitzev (1935–1941) D. Charitonov records this species from the Stalactite Cave near Tsqaltubo (close to the lake), from the anterior part of the Sataplia Cave as well as from the Tsqaltsiteli Cave.

We recorded this species from material of R. Dzhnanashvili from the Gogoleti Cave (70 km from Kutaisi, in the valley of the Shareuli river), Nikorts-minda (in the old river bed of the Shareula River in a depth of 30–40 m at

⁹Mcheidze (1997): "Spasskyi, 1934".



Figs. 55–57. **Pholcidae**. *Pholcus phalangoides*: 55 a – Carapace; 55 b – abdomen. *Holocnemus longipes*: 56 – abdomen; 57 – epigyne.

11°C, 1946), Tqibuli Cave (in a depth of 500 m at 5°C, 1965) as well as in the Urta Cave (1944). Caucasian endemic species.

Taxonomy: Platnick (2013): *Hoplopholcus longipes* (Spassky, 1934).

7.10 Sicariidae (Scytodidae)

These spiders have a relatively broad carapace, which is oval and broadest in its posterior part. The cephalic region bears six eyes, which are arranged in three separate pairs. The chelicerae are thin and bear short claws. The basal cheliceral segment bears a pointed chitinized appendage below the claw, forming an approximated disk. The labium is fix and fused to the sternum. The gnathocoxae are elongated.

The pedipalpus tip of the female bears 2–4 peculiar, apical sensory organs, which are very thick, hardly curved and with knob-like broadened apical setae. The primitive copulatory organs of the male are similar to those of the Dysderidae. The legs are long, thin and of almost equal length. The tarsi are arranged on pillows; the pairwise claws bear an odd number of smooth teeth.

Behind the epigastric furrow the ventral abdomen of the female bears two well-developed furrows. The chelicerae of the male attach to these furrows during copulation. The openings of the lung sac are well developed. The odd-numbered tracheal system is situated in the vicinity of the spinnerets. The elongated cylindrical colulus is situated in front of the spinnerets.

The genus *Scytodes* has hypertrophic poison glands, which take up most of the posterior part of the carapace and are developed as spinning glands. These spiders do not construct webs for prey catching but instead catch their

prey in an original manner. At a distance of 1–2 cm from the prey they jump backwards and spit on it with a sticky secretion from the complex spinning-glye gland. The spit secretion forms a zig-zag line, which instantly solidifies in the air and fixates the insect to the substrate¹⁰. The secretion from the spinning-glye gland separates from the tips of the chelicerae and has a toxic effect on the prey.

We find the spiders of this family mostly in the subtropical sub-regions, where they live in litter, under rocks or in rock crevices. In the north they live in buildings. One species is known in the former USSR.

7.10.1 *Scytodes* Latreille, 1804¹¹

1. *Scytodes thoracica* (Latreille, 1802)

Description: Female body length 4–5.5 mm, male 3.5 mm. The carapace is strongly bulged, its lines are formed like a lyra, meander and are dentate in the marginal parts. The posterior part bears two marks (Fig. 58). The tibia bears three rings, the legs are thin, long and annulated. The abdomen is whitish, bordered by black marks and sometimes has a transversal zone of two longitudinal rows in the posterior part.

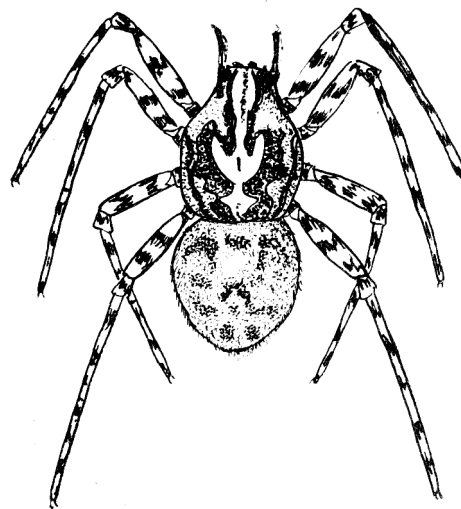


Fig. 58. *Scytodes thoracica*. Habitus.

The spitting spider lives in warm and hot countries, below rocks in plant remains or on roots, in rock crevices. Those specimens, which dwell in temperate and cold locations, live in buildings. The movement is slow, interrupted and

jumpy. During the day they hide until dusk. Upon encountering their prey they spit on it with a sticky fluid from the chelicerae, which instantly solidifies in the air and binds the prey with zig-zag lines. Mating occurs between March and October. During the summer they carry around an egg sac of 2–3 eggs. They grow slowly and hibernate twice. They live 4–5 years before dying.

Distribution: Subtropical zone. One species in the European part of the former USSR. Recorded in the Ukraine, furthermore in Khosta, Ge-

¹⁰Mcheidze (1997) refers to Fig. 99, lapsus.

¹¹Mcheidze (1997) sic: 'Lair, 1804', lapsus.

lendshik. **In Georgia:** Sukhumi (Mikhailovski Pass, Spassky 1937), Gori (Medzhvriskevi), Tshakvi, Sukhumi (Kelasuri), Keda (Mcheidze 1939–1967). **Taxonomy:** Platnick (2013): *Scytodes thoracica* (Latreille, 1802). Mcheidze (1997) also lists the synonym *S. cameratus* (Hentz, 1850)¹².

7.11 Dysderidae (incl. Segestriidae)

These medium-sized to large spiders reach 10–21 mm in body length, some species only 4–5 mm (*Harpactea*). The carapace is yellowish-orange, orange-red or brown-blackish; the abdomen is gray-blue, gray-brown or yellowish. The six eyes are arranged in one (*Segestria*) or two rows (*Dysdera*). The thick chelicerae often reach half the length of the carapace or more. The labium is somewhat longer than wide; the gnathocoxae are parallel, cylindrical or oval.

The venter bears a paired stigma and a pair of lung openings. The dorsum is unicolor (*Dysdera*) or bears dark marks (*Segestria*). The genitals of the female consist of an endogyne and a well-chitinized receptaculum seminis, which is situated distant from the epigastric furrow. In females, this is characteristic for the species. The copulation apparatus of the male is of simple structure and bears a large or swollen bulb.

The spiders live below rocks, in leaf litter in forests, under bark or roots, in tree hollows, in rock crevices. Often we meet them in houses and in other buildings. They hunt at night (*Dysdera*, *Harpactea*) or during the day (*Segestria*). During the reproductive period, the representatives of the genus *Dysdera* mate without a so called mating dance. Members of the genus *Segestria* perform complex mating dances. Copulation lasts for 5 to 20 minutes. They do not construct a true egg sac, but instead often place the eggs in the tube and loosely tie them up in a thin web. Only *Segestria* constructs a lentiform egg sac. Copulation occurs during spring (April–May) or at the end of summer.

The main area of distribution of the Dysderidae is the palearctic Mediterranean region, where all genera and most of the species are concentrated. Only *Segestria* and *Dysdera* are distributed beyond the limits of the Mediterranean, reaching the sub-regions of Central Asia, Europe, America, Africa and Australia. One species, *Dysdera crocata*, is almost a cosmopolitan species.

The Dysderidae have their origin in the Tertiary period. The living genera *Segestria* and *Dysdera* existed as early as the Oligocene. Within the USSR, the distribution of the genus *Dysdera* is limited to an area between the Crimea, the limits of the neighboring Black Sea, the Sea of Asov, the Caucasus and Central Asia, where relicts of the Tertiary Mediterranean fauna are preserved.

¹²In Platnick (2013) without brackets.

In 1965 the known fauna of the Transcaucasus included 15 species, with eight endemic species, seven species, which are also distributed in the Crimea. Only eight species were recorded from Georgia. The genus *Harpactocrates* is distributed only in Georgia. We do not know records from other parts of the former USSR. A number of characteristic forms is also distributed in the Mediterranean countries, in parts of Anatolia and in the Balkans. Georgia exhibits the best conditions for the occurrence of Dysderidae; e. g. *Dysdera punctata* develops some local forms, which invade Crimea from Georgia. As one can see, Georgia is rich in representatives of the Dysderidae and endemic forms.

It is well known that males of the family Dysderidae can be determined according to the structure of their copulatory organs (the bulbus). Additional attention is paid to armament, coloration, form and structure of the integument of the legs and others. In this respect, the determination is different in females. The result does not solely depend on morphological characters. Furthermore, the females do not have an epigyne, which is the base for determination in other systematic groups. Therefore, it is normal during determination to consult the structure of the endogyne (following the Italian arachnologist P. Alicata, 1964). The known Russian arachnologist D. Charitonov (1956) was the first to use the structure of the endogyne in the determination of the females (*Dysdera*, *Harpactocrates*).

According to the form of the receptacula, two main groups can be distinguished in the genus *Dysdera*: I. the *Dysdera-crocata* group with mushroom- or sombrero-like receptacula and II. the *Dysdera-punctata* group with ear-like receptacula. We think that the structure of the epigyne is a major criterium for the determination of the females, but other characters, e. g. the surface structure of carapace and abdomen, coloration, leg armament, body and others represent additional systematic characters.

We collected representatives of the Dysderidae over a long period of time, but special attention was paid to them during the last ten years. We present the results of the recently conducted studies, based on the structure of the endogyne of material from species of the genera *Dysdera* and *Harpactocrates* collected in Georgia. This was the first time that such a study was conducted on a larger scale in the former USSR (Mcheidze, 1972, 1979).

According to Charitonov (1956), 31 species of the Dysderidae are recorded in the former USSR. Among these, as mentioned above, the fauna of the Transcaucasus comprises 15 species. Of these, seven species are characteristic for the fauna of Georgia. Based on our material, to this day 27 species from four genera are known in the family Dysderidae. Of these, 15 species are endemics of Georgia, whereas three species are endemic species of the Transcaucasus. Three species – *Dysdera richteri* (Tbilisi (Shavnabada)), *Dysdera cribrata* (Akhali Atoni, Sukhumi) and *Dysdera ucrainensis* (Kodzori, Kobuleti) are not listed in the determination key.

Key to genera

- 1 (6) Dorsal part of carapace connected to the sternum by well visible chitinized, small bridges, splitting the bases of the coxae into single pits, which are bordered on all sides. Of the six eyes, two form the AER, four the PER. Eyes standing very close to each other. (subfamily Dysderinae) **2**
- 2 (5) All tarsi with two claws and a thick brush of setae. PLE at some distance from the ME. **3**
- 3 (4) Anterior parts of gnathocoxae pointed. 1. *Dysdera* (p. 78)
- 4 (3) Gnathocoxae not pointed. 2. *Harpactocrates* (p. 95)
- 5 (2) All tarsi with three claws, but without brush of setae. All PE almost touching. 3. *Harpactea* (p. 97)
- 6 (1) Dorsal part of the carapace not connected to the sternum via chitinized bridges. Eyes¹³ forming a weakly curved row. (subfamily Segestriinae) 4. *Segestria* (p. 100)

7.11.1 *Dysdera* Latreille, 1804

Key to species

Note: Several *Dysdera* species are not keyed. Compare species descriptions and note on p. 77.

- 1 (20) Males. **2**
- 2 (7) Femur IV with one, rarely 2–4 dorsal spines. **3**
- 3 (4) Basal part of tibia III und IV with one spine, distal part with two. Tibia I with 1.2 (or 2.2) spines. Femur III without spines. Basal part of femur IV with one or two spines. Carapace crimson-brown, dull, without foveae on its posterior or lateral slopes. Cephalic region with recognizable sharp furrow. Sternum red, shining, smooth, with scattered well-developed foveae with radially expanding short wrinkles; wrinkles not reaching adjacent foveae. Carapace length 4–5 mm. Copulation apparatus like Fig. 59. 1. *D. spasskyi* (p. 82)
- 4 (3) Leg armament, coloration and structure of carapace and sternum not like this. **5**
- 5 (6) Carapace surface smooth, silken and with small foveae. Marmorate markings weakly developed. Copulation apparatus like Fig. 61. Carapace length 3.5–5.0 mm; body length 11–15 mm. 2. *D. crocata* (p. 83)

¹³Mcheidze(1997) probably referred to the AE.

- 6 (5) Carapace surface finely granulated, rough; foveae sharply developed and forming longitudinal lines in the cephalic region. Marmorate markings of the of the sternum larger and coarse. Carapace length approx. 3.5–5 mm. Margin of the sail-like apical bulbus appendage with 5–6 teeth (Fig. 63). 3. *D. westringi* (p. 83)
- 7 (2) All femora without spines. 8
- 8 (11) Carapace dark brown, almost black. 9
- 9 (10) Armament of tibia III and IV characteristic: tibia III with 1.1 antero-lateral spines, 1 postero-lateral spine and 2 or 1.2 ventral spines; tibia IV with one antero-lateral spine, one postero-lateral spine and 2 or 1.2 ventral spines. Carapace surface granulated and with marmorate markings; with granulation being most distinct on the sides and marmorate markings being most distinct in the anterior part. Radial muscle lines weakly developed, posterior carapace edge rounded. Posterior sternum part with small protuberances and marmorate markings, anterior part sparsely covered with foveae (Fig. 65). Copulation apparatus like Fig. 65 a. Carapace length 3–4 mm. 4. *D. atra* (p. 85)
- 10 (9) Armament of tibiae III and IV somewhat different: tibia III with 1.1 antero-lateral spines, one postero-lateral spine and one ventral spine; tibia IV with one antero-lateral spine, one postero-lateral but 1.2 ventral spines. Anterior carapace sides in parts densely granulated; with a weblike, shagreen and dull surface. Cephalic region somewhat raised, radial muscle lines well developed. Sternum reddish-orange, shining, with 3–4 transverse folds and sparse radially directed foveae. Copulation apparatus like Fig. 66. Carapace length 4.1 mm. 5. *D. tkibuliensis* (p. 85)
- 11 (8) Carapace comparatively lightly colored (weakly dark, carmine-brown, brownish-red, brownish-orange or carmine-red). 12
- 12 (13) Carapace carmine-brown, finely shagreen, with silken shining, covered with large, coarse and sharply outlined foveae. Large and smaller foveae densely covering the lateral slopes, but rare in the cephalic region and in the median part of the slope on the posterior slope of the carapace; in the cephalic region forming longitudinal lines. Deep furrow not extending longitudinally beyond the posterior half of the cephalic region, which is formed by a small row of foveae.
- Chelicerae shining, their surface without discernible granulations. Sternum with coarse and large foveae, uniting with the radial folds. Tibia III with 2 ventral apical spines, lacking posterior spines but usually with 1.1 (or 1.2) anterior spines; sometimes even those completely absent. Tibia IV with 1 posterior spine in the basal half and with 2 ventral apical spines (sometimes with another spine in the basal half).

- Abdomen grayish–white with small, thick and brownish–red spots. Abdomen with a visible, white, antero-dorsal band and a white spot above the spinnerets. Copulation apparatus like Fig. 67. Carapace length 3–4.5 mm. 6. *D. punctata* (p. 86)
- 13 (12) Carapace and sternum without deep and coarse foveae. 14
- 14 (19) Carapace surface considerably raised. 15
- 15 (16) Sternum with pronounced marmorate markings. Tibia III and IV with 1.1 anterior and posterior spines. Distance between ME shorter than eye diameter. Copulation apparatus like Fig. 69. Carapace length approximately 4 mm. 7. *D. azerbaijdzhanica* (p. 88)
- 16 (15) Posterior half of sternum never with marmorate markings. Tibia III with 1 posterior spine in its distal part. Distance between AE greater than eye diameter. 17
- 17 (18) Sternum shining. Distance between AE almost equal to their diameter. Copulation apparatus like Fig. 71. Carapace length approximately 4 mm. 8. *D. armenica* (p. 88)
- 18 (17) Sternum shining only in its anterior third. Distance between AE shorter than their diameter. Tibia III without posterior spines; tibia IV in the basal part with one anterior spine. Copulation apparatus like Fig. 72. Carapace length 3.5–4.5 mm. 9. *D. erythrina* (p. 89)
- 19 (14) Carapace comparatively flat, carmine brown or shagreen. Carapace with a black fringe all around. Dorsal muscle lines originating from the dorsal furrow and not reaching the posterior carapace edge. Cephalic region towards the eyes comparatively brightly colored. Marmorate markings distinct. Sternum orange–brown and with marmorate markings, transversal folds well developed. Copulation apparatus like Fig. 73. Carapace length 4.2 mm. 10. *D. tbilisiensis* (p. 89)
- 20 (1) Females. 21
- 21 (22) Spermathecae ear-shaped. Endogyne like Fig. 68. Carapace and sternum with deep and coarse foveae. . . 6. *D. punctata* (p. 86)
- 22 (21) Spermathecae formed like a sombrero hat. Carapace and sternum without deep and coarse foveae. 23
- 23 (30) Femur IV in its basal part with one spine (rarely 2–3). 24
- 24 (27) External parts of endogyne similar to one another¹⁴. 25

¹⁴Sic Mcheidze (1997), possibly comparing the endogynes of *D. spasskyi* and *D. imeretensis*.

- 25 (26) Tibia III with 1 or 1.1 anterior spines, 1 posterior spine, 7¹⁵ ventral spines. Tibia IV with 1.1 anterior, 1.1 posterior and 1.2 ventral spines. Carapace carmine-brown, with foveae and folds. Abdomen grayish-yellow. Carapace length 5.2 mm. Endogyne like Fig. 60. *D. spasskyi* (p. 82)
- 26 (25) Tibia III with 1.1 anterior and posterior spines and 1.2 ventral spines. In this respect, it is similar to the species above but armament of the apical part of tibia IV is considerably different, with a total of 5 spines (2.1.2). Carapace black and covered by small protuberance-like structures and small foveae in between. Sternum dark brown and with deep foveae. Abdomen grayish yellow. Carapace length 4 mm. Endogyne like Fig. 75. 11. *D. imeretiensis* (p. 90)
- 27 (24) External parts of endogyne not like this. **28**
- 28 (29) Carapace orange-yellow, its surface smooth, slightly shagreen, often silky and developed in the cephalic region, which differs from the other part in being somewhat darker. Foveae small. Sternum orange-red, smooth, shining, rarely with small wrinkles. Abdomen grayish-whitish. Carapace length 4 mm, body length 9 mm. Endogyne like Fig. 62. 2. *D. crocata* (p. 83)
- 29 (28) Carapace dark brown, almost black, finely granulated and with a rough surface. Foveae well developed, forming longitudinal lines in the cephalic region. With thick marmorate markings and a longitudinal band on the carapace. Sternum orange-red, shining, towards the coxae with recognizable wrinkles. Sternum with coarse marmorate markings behind its central part. Foveae rare. Carapace length 5.2-5.8 mm, body length 10-12 mm. Endogyne like Fig. 64. 3. *D. westringi* (p. 83)
- 30 (23) All femora without spines. **31**
- 31 (32) Whole sternum with well developed marmorate markings. Tibiae III and IV with 1.1 anterior and posterior spines and 2 ventral spines. Distance between AE shorter than the eye diameter. Carapace length approximately 4 mm. Epigyne like Fig. 70. 7. *D. azerbaijdzhanica* (p. 88)
- 32 (31) Anterior half of sternum without marmorate markings. Tibia III with more than one posterior spine in the distal part. **33**
- 33 (34) Sternum in its anterior third shining. Distance between AE is shorter than eye diameter. Tibia III without posterior spines¹⁶. Tibia IV in its basal part with 1 anterior spine. Carapace length approx. 3.5-4.5 mm. 9. *D. erythrina* (p. 89)
- 34 (33) Entire sternum shining. **35**

¹⁵Sic Mcheidze (1997). Maybe this should read 1, see text of instance 26.

¹⁶Sic Mcheidze (1997), contra instance 32.

- 35 (38) Carapace dark brown. **36**
- 36 (37) Carapace finely granulated, with marmorate markings and with unrecognizable foveae. Sternum reddish light brown, with few foveae. Abdomen yellow, constricted and elongated, with reddish setae. Abdomen without a dark spot. Tibia III with 1.1.1 anterior and posterior spines and 1.1.2 ventral spines. Tibia IV with 1.1.1 anterior and posterior spines and 2.1.2 ventral spines. Carapace length 4.1 mm. Endogyne like Fig. 76. . . 12. *D. iberica* (p. 90)
- 37 (36) Carapace shagreen, marmorate markings distinguishable in its anterior part. Foveae few and dispersed. Sternum reddish-brown, shining, wrinkles well recognizable. Sternum with many foveae, extending to the ventral sides of the legs. Abdomen grayish-yellow, without dark spots. Carapace length 4.2 mm. Endogyne like Fig. 74. 10. *D. tbilisiensis* (p. 89)
- 38 (35) Carapace comparatively light carmine-brown. **39**
- 39 (40) Abdomen with dark spots. Sternum with many wrinkles. Tibia III with 1.1 anterior spines, 1 posterior spine and 2.1.2 ventral spines. Tibia IV with 2.2 anterior spines, 1 posterior spine and 2.2 ventral spines. Carapace length 4.2 mm. Endogyne like Fig. 77. 13. *D. meschetiensis* (p. 90)
- 40 (39) Abdomen without dark spots. Sternum with many wrinkles. Tibia III with one anterior spine, 1.1 posterior spines and 1.1.2 ventral spines. Tibia IV with 1.1.1 anterior and posterior spines and 2.1.2 ventral spines. Carapace length 4 mm. Endogyne like Fig. 78. 14. *D. charitonovi* (p. 92)

1. *Dysdera spasskyi* Charitonov, 1956

Description: Female carapace length 5.2 mm; male carapace length 4.1 mm, width 3.4 mm.

♀ Femur IV bears two spines instead of one. The distance between AE is approximately as long as their diameter. The other characteristics are similar to the male's. Endogyne like Fig. 60.

♂ The dull carmine-brown carapace is finely granulated; the lateral and posterior slopes of the cephalic region are without deep spots. The sides of anterior carapace have a fine small-sized granulation and round deep foveae; transversal wrinkles are formed like gaps. The shining carmine-red chelicerae have some granulation at their bases (from above).

The simple shining red sternum is without any marmorate markings. The foveae are fine, not deep and somewhat rare. Legs I and II are carmine-red and legs III and IV are red. Femur IV bears one basal dorsal spine. Copulation apparatus like Fig. 59.

Habitat: In forest habitats, in rock crevices and under rocks.

Distribution: In Georgia: Borjomi, Abastumani (Kaznakov 1891–1892), Kodzhori, Udzo, Tshakvi (Mcheidze 1962, 1967). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera spasskyi* Charitonov, 1956.

2. *Dysdera crocata* C. L. Koch, 1838

Description: Male carapace length 3.5–5 mm.

♀ Similar to male in coloration, size and leg armament. Patella III with 1.2 ventral spines. Endogyne like Fig. 62.

♂ The simple carapace bears a finely shagreen surface with a silky shine and small and shallow foveae. The sternum bears fine marmorate markings. Carapace, sternum and chelicerae are carmine-red. AE are of uniform size, their distance is somewhat larger than their diameter. The base of femur IV bears 1–3 dorsal spines. Legs are yellow to orange. The light yellow abdomen is covered with short setae. Copulation apparatus like Fig. 61.

Habitat: In rocky, barren places. Under rocks, in rock crevices, palm tree crevices in a silk cell or in cavities in the roots of *Platanus* trees. The egg sac contains up to 70 eggs. They feed on pest insects of plants.

Distribution: Mediterranean form. European part of the former USSR, Central Asia, Crimea, Transcaucasus. In Georgia: Poti (Simon 1899), Batumi (Spassky 1937), Tbilisi, Kodzhori, Gori (Ateni Cave), Telavi, Upper Tusheti (Tshigho), Lagodekhi, Adigeni, Zestaponi, Baghdati, Tshakvi, Batumi, Otshamtshire, Sukhumi (Kelasuri, Mcheidze 1939, 1970, 1974).

Taxonomy: Platnick (2013): *Dysdera crocata* C. L. Koch, 1838.

3. *Dysdera westringi* O. P.-Cambridge, 1872

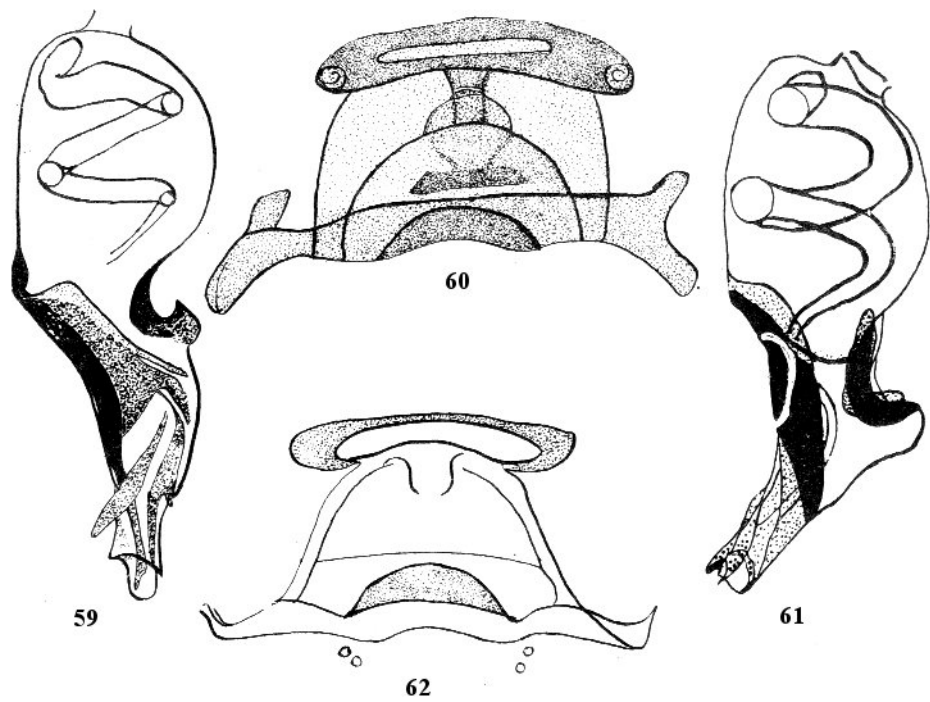
Description: Female carapace length 4 mm, width 3.5 mm; body length 12 mm. Male carapace length 3.5–4.5 mm.

♀ The carapace is almost black, shagreen, strongly marmorated and has a rough surface and few foveae. The chelicerae are of the the same coloration as the carapace and have thick calli. The sternum is dark brown, bears marmorate markings and a few large foveae. The abdomen is light yellow. Endogyne like Fig. 64.

♂ The carapace surface bears a fine granulation and calli. The foveae are well developed and extend longitudinally from the cephalic region. The marmorate markings on the sternum are thicker and more coarse. Femur IV bears one or two small dorsal spines. The abdomen is light yellow. The extended bulbus' basal part is shorter than the scapus¹⁷. The appendage of the sail-like scapus apophysis bears 4–5 teeth. Copulation apparatus like Fig. 63.

Habitat: Barren places, under rocks, in shanties, under bricks, with egg sac.

¹⁷Sic Mcheidze (1997).



Figs. 59–62. *Dysderidae*, *Dysdera* (in part.). *D. spasskyi*: 59 – bulbus; 60 – endogyne. *D. crocata*: 61 – bulbus; 62 – endogyne.

Distribution: Spain, Corsica, Algiers, Greece, Mesopotamia, Syria. In the former USSR: Crimea, Gelendzhik, Odessa. **In Georgia:** Abasha, Tbilisi (Mcheidze 1938, 1965). First record for Georgia.

Taxonomy: Platnick (2013): *Dysdera westringi* O. P.-Cambridge, 1872.

4. *Dysdera atra* Mcheidze, 1979

Description: ♂ Carapace length 4 mm, width 3 mm. Chelicere length 1.9–2 mm. The distance between the AE is almost as long as their diameter. The carapace is dark brown, almost black and covered with granules, which stand more dense near the outer edges. The entire carapace surface bears marmorate markings; weakly developed lines extend from the cephalic furrow. The posterior carapace edge is rounded.

The dark brown chelicerae are 1.9–2 mm long, appear long compared to the body and are sparsely covered with dorsal granules, forming longitudinal lines (Fig. 65). The edges of the orange-brown sternum are granulated and bear well-developed marmorate markings in the posterior half and few foveae in the anterior half of the sternum. The legs are orange–yellow and comparatively long compared to the body. All femora lack spines.

The light yellow abdomen bears pale spots and two round, dark, dorsal marks in its anterior part.

Copulation apparatus like Fig. 65 a. The local form is characterized by its dark coloration and the striking reduction of the leg spines. The female is unknown.

Habitat: Ground layer of forests, under rocks.

Distribution: Lagodekhi (Mcheidze, 1967). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera hungarica atra* Mcheidze, 1979.

5. *Dysdera tkibuliensis* Mcheidze, 1979

Description: Carapace length 4.5 mm, width 3.1 mm. Chelicere length 1.9–2 mm. The distance between the AE is somewhat larger than their diameter. The distance between the PME and PLE is shorter than the diameter of the PME. The carapace is dark brown, carmine–brown or almost black. The anterior and lateral margins of the carapace are covered with a dense granulation and unorderedly, dispersed foveae. Its surface is shagreen, the cephalic region is raised. The median furrow and muscle lines radiating from the furrow are well recognizable.

The chelicerae are of the same color as the carapace and are covered with a sparse thick granulation. The sternum is reddish–orange, shining, with 3–4 muscle lines and radially arranged sparse foveae. Legs I and II are reddish–orange, legs III and IV are lighter. All femora lack spines.

The light yellow abdomen bears two round brown marks in its anterior half and dark brown or gray–brown marks in its second half.

The local form is characterised by its dark coloration, leg armament and ornamentation of the carapace. Copulation apparatus like Fig. 66.

Habitat: In broad-leafed and coniferous forests under bark.

Distribution: Tqibuli, Nakerala Pass (1500 m a.s.l.) (Mcheidze 1961). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera meschetiensis* Mcheidze, 1979.

6. *Dysdera punctata* C. L. Koch, 1838

Description: ♂ Carapace length 3–4.5 mm, carmine–brown with a finely shagreen surface and silk-like shining. Thick and fine foveae are abundant on the lateral slopes of the carapace, rarely in the cephalic region or on the posterior slope, forming longitudinal rows in the cephalic region. Along these, a shallow furrow is situated towards the posterior half of the cephalic region.

The chelicerae have a shining surface. The sternum bears coarse thick foveae, which unite with the radial wrinkles. The femur lacks spines; tibiae III and IV each bear two ventral spines.

The abdomen is grayish–white with brown–red and bears dense and thin markings. The dorsum bears a recognizable longitudinal antero-dorsal band and a spot of the same color above the spinnerets.

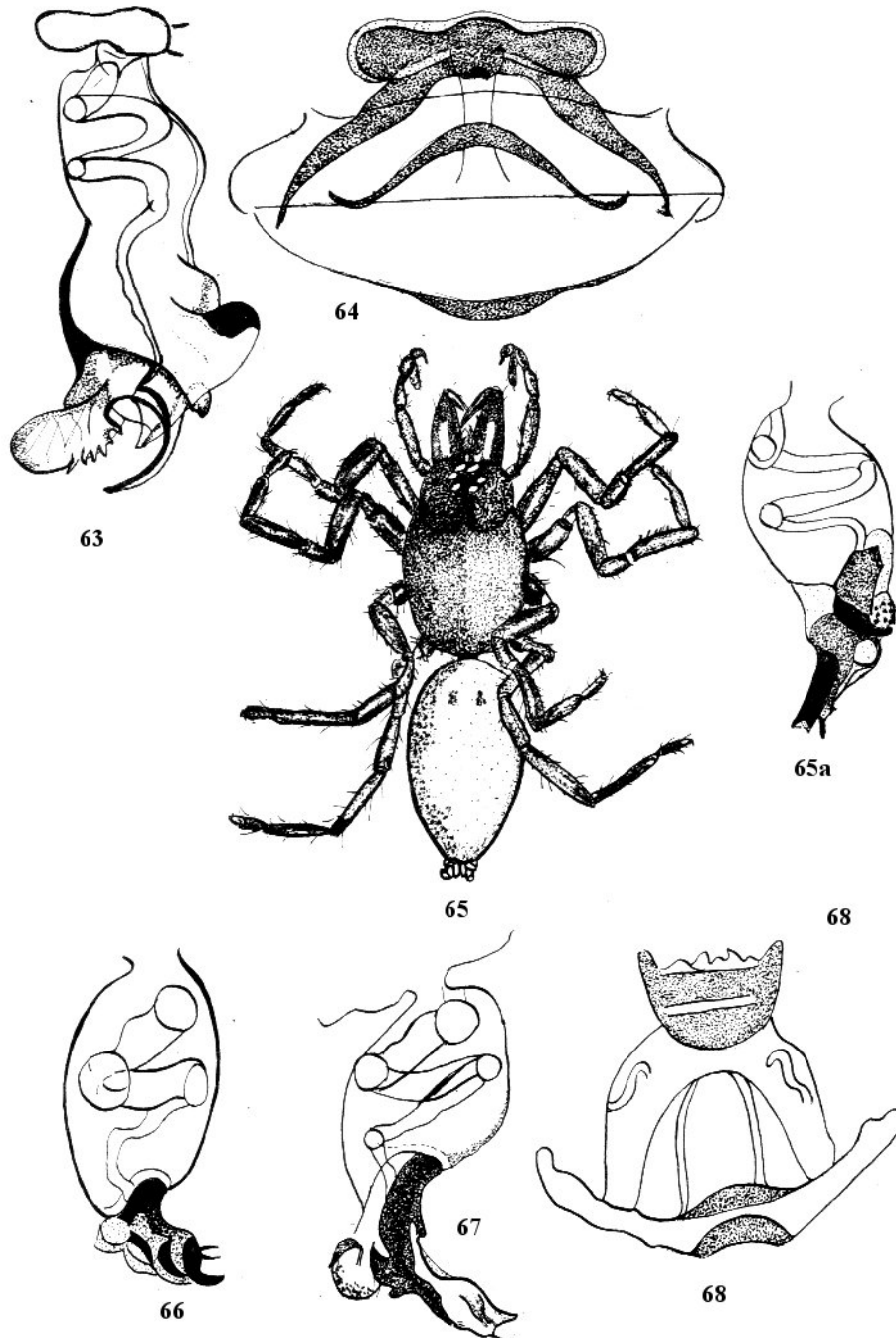
Male copulation apparatus like Fig. 67. Endogyne like Fig. 68.

In the Transcaucasus and especially in Georgia, *D. punctata* produces a number of local forms, which differ from the typical forms. They are comparatively dark with an almost black carapace. Other differences concern the size, number and arrangement of the foveae on the carapace, body size and leg armament. The leg armament of the local forms is simplified with a reduced number of spines. All femora lack spines. The abdomen is spotted. Concerning body size, one can distinguish small, medium and large forms.

Habitat: In rock crevices, under rocks, under bark (especially on palm trees), forest ground layer. Often at the end of fall, when temperature drops, they come into the houses and in the window frame they make a silk cell, in which they hibernate. In the spring, when temperature rises in March and April, they return to the outside. The silk cell is made of soft material and the spider uses it as a retreat and lays its eggs into it.

Distribution: This species is a mediterranean form, but we could also call it a Caucasian form because Koch described it for the first time from the Caucasus. It is also known from the Crimea. **In Georgia:** It is known from elevated localities as well as from the subtropical lowland regions: Batumi, Tshakvi, Mtirala, Khulo, Sairme, Zekari, Baghdati (Rokiti), Akhalkalaki, Gagra, Akhali Atoni, Mt. Khobi-Urtas, Kodzhori (Mcheidze 1946, 1960, 1965, 1972, 1973, 1979).

Taxonomy: Platnick (2013): *Dysdera punctata* C. L. Koch, 1838.



Figs. 63–68. *Dysderidae*, *Dysdera* (in part.). *D. westringi*: 63 – bulbus; 64 – endogyne. *D. atra*: 65 – habitus; 65 a – bulbus. *D. tkibuliensis*: 66 – bulbus. *D. punctata*: 67 – bulbus; 68 – endogyne.

7. *Dysdera azerbaijdzhanica* Charitonov, 1956

Description: Female carapace length 4.4 mm, width 3.4 mm; male carapace length 4 mm, width 3 mm.

♀ The marmorate markings of the cephalic region are poorly developed compared to the male and recognizable only near the sides. The sternum is shining and wrinkled. Leg armament is developed like in the male.

♂ The distance between the AE is somewhat shorter than their diameter. The brownish red and finely shagreen carapace bears shallow foveae. The cephalic region bears a longitudinal furrow, from which a curved thin band with a marmorated surface and lyriform arrangement extends to the sides.

The chelicerae are of the same color as the carapace, with a fine dorsal granulation in its basal part and on their median and lateral slopes. The sternum is brown–orange with its surface bearing marmorate markings except for its anterior part, which is wrinkled. The legs are yellow; legs I and II are darker than legs III and IV. The femora lack spines.

Copulation apparatus like Fig. 69.

Endogyne like Fig. 70.

Habitat: Under bark, between roots.

Distribution: Tbilisi (Botanical Garden), Kobuleti (Mcheidze 1959, 1960). Transcaucasian endemic species.

Taxonomy: Platnick (2013): *Dysdera azerbaijdzhanica* Charitonov, 1956.

8. *Dysdera armenica* Charitonov, 1956

Description: ♂ Carapace length 4.2 mm, width 3.2 mm. The distance between the AE is somewhat smaller than their diameter. The carapace is shingle-colored-brown, finely shagreen, dull and with silky shining. In addition to the foveae, the lateral slopes of the thoracic region bear a fine rough surface, which is more dense on the sides of the cephalic region and merges into a granulation at its posterior end. The cephalic region bears transverse wrinkles in its anterior part. The sternum is shingle-colored red, shining and bears fine wrinkles.

The shining chelicerae are of the same color as the carapace, bearing well visible foveae in their dorsal part and granulated lateral slopes. Legs I and II are dark brown, legs III and IV orange–red; the femora lack spines.

Copulation apparatus like Fig. 71. Female and male are of the same size, color and leg armament. The marmorate markings of the cephalic region are not well developed in the female.

Habitat: Under rocks, in barren places.

Distribution: Southern Elionovka and in the vicinity of Sevan Lake. **In Georgia:** Akhalkalaki (Mcheidze, 1972). Transcaucasian endemic species.

Taxonomy: Platnick (2013): *Dysdera armenica* Charitonov, 1956.

9. *Dysdera erythrina* (Walckenaer, 1838)

Description: ♂ Carapace length 3.5–4.5 mm. The carapace is of dark black color and bears small foveae. The dark sternum bears well-developed marmorate markings; in the female it is simple, shining, with few foveae and sometimes with a shagreen surface.

The legs of male and female are uniform, shingle-colored–reddish to yellow. Coxa and femur I are darker in the male. In the male, tibia IV bears one anterior spine in the basal half. The posterior parts of tibia III are without armament. The spoon-like structure of the bulbus is very long. Copulation apparatus like Fig. 72.

Habitat: Under the bark of *Platanus* trees and in crevices of palm trees. In a woven silk cell, together with the eggs.

Distribution: Europe. In the former USSR known only from the Crimea (Sevastopol, Alushta). **In Georgia:** Sukhumi, Akhali Atoni, Batumi, Tbilisi (Mcheidze 1938, 1939, 1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Dysdera erythrina* (Walckenaer, 1802).

10. *Dysdera tbilisiensis* Mcheidze, 1979

Description: Female carapace length 4.3 mm, width 3.3 mm. Male carapace length 4.2 mm, width 3.2 mm.

♀ Chelicere length 2 mm. It is similar to the male in body coloration, surface structure and leg armament but differs in the structure of the sternum. In the female it is reddish, shining and with well-visible wrinkles and a number of foveae. Endogyne like Fig. 74.

♂ The distance between the ME is as long as their diameter. PME are almost touching each other. The carapace is flat, dark brown or carmine–brown with a shagreen surface and almost invisible foveae, all around with a black edge. The cephalic region towards the eyes is comparatively bright. Radially directed muscular wrinkles extend from the fovea on the carapace. The posterior edge of the carapace is concave. Marmorate markings are well developed. Two arcuate bands are directed towards the eyes.

The chelicerae are 2 mm long, of the same color as the carapace and their inner and outer edges bear a granulation. The sternum is orange–yellow or brown with easily discernible marmorate markings and well-developed transversal muscular wrinkles. Foveae are not visible. Legs I and II are orange–yellow, legs III and IV are brighter. All femora are without spines.

The abdomen is of a characteristic yellow color; the anterior part of its dorsal region bears three dark marks, the sides have wrinkles. Copulation apparatus like Fig. 73.

Habitat: In rock crevices and under rocks.

Distribution: Tbilisi (village Dighomi; Mcheidze, 1966). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera tbilisiensis* Mcheidze, 1979.

11. *Dysdera imeretiensis* Mcheidze, 1979

Description: ♂ Carapace length 4.0 mm, width 3.0 mm. The carapace is dark, almost black, thickset, comparatively short and broad; its cephalic region is raised. The carapace is densely covered with a thick granulation. Marmorate markings are well developed; the grains form parallel rows towards the eyes, with a small number of scattered foveae between the eyes.

The distance between the AE is somewhat shorter than their diameter. The sternum is dark brown with sparse foveae, which are more dense at the sides. The chelicerae are of the same color as the carapace.

The abdomen is grayish–yellow and densely covered with setae, which are long on the venter near the spinnerets, where there are also two large dark marks. Legs I and II are dark brown, III and IV light brown. Femur IV on the right¹⁸ side with one spine, on the left side without spines.

Endogyne like Fig. 75. Male unknown.

Habitat: In forests in the ground layer between plant roots.

Distribution: Baghdati, Rokiti (Mcheidze, 1972). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera imeretiensis* Mcheidze, 1979.

12. *Dysdera iberica* Mcheidze, 1979

Description: ♂ Carapace length 4.1 mm, width 3.1 mm. The carapace is dark brown with black coloration, shagreen; foveae are not visible and its surface bears marmorate markings. The chelicerae are of the same color as the carapace, foveae stand basally dense and sparse from above. The sternum is light brown, reddish, with shagreen sculpture and few foveae.

All femora are without spines. Tibia III bears 1.1a spines or 1.1.1 (to the left), with 1.1p spines, 1.2v or 1.1.2v (to the left). Tibia IV with 1.1.1a or 1.1.1a¹⁹ (to the left), with 2.1p (basally), 1.2v or 2.1.2v (to the left).

The abdomen is constricted, elongated, without yellow marks and covered with short yellow setae. Endogyne all around with wrinkles.

Epigyne like Fig. 76. Male unknown.

Habitat: In rock crevices.

Distribution: Akhaltsikhe (Mcheidze, 1939). Georgian endemic species.

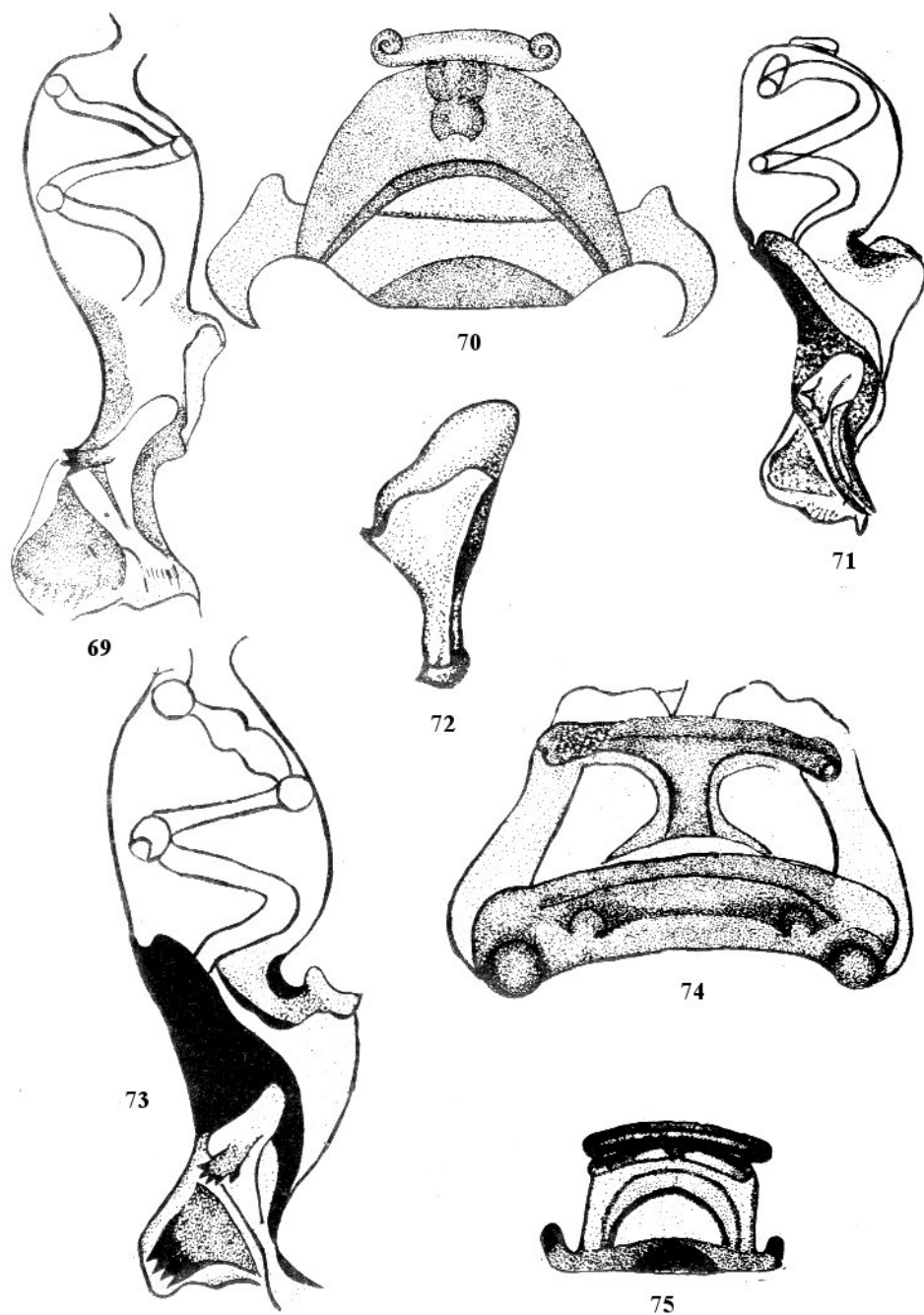
Taxonomy: Platnick (2013): *Dysdera meschetiensis* Mcheidze, 1979.

13. *Dysdera meschetiensis* Mcheidze, 1979

Description: ♂ Carapace length 4.2 mm, width 3.2 mm. The carapace is dark brown, shagreen; the anterior part of the cephalic region bears marmorate markings with scattered irregular rows. The cephalic furrow is deep.

¹⁸Sic Mcheidze (1997).

¹⁹Sic Mcheidze (1997).



Figs. 69-75. *Dysderidae*, *Dysdera* (in part.). *D. azerbaijdzhanica*: 69 – bulbus; 70 – endogyne. *D. armenica*: 71 – bulbus. *D. erythrina*: 72 – bulbus. *D. tbilisiensis*: 73 – bulbus; 74 – endogyne. *D. imeretiensis*: 75 – endogyne.

The chelicerae are long and of the same color as the carapace. The PLE are situated close to the ME. The sternum is light brown with an average number of foveae and a wrinkled surface.

All femora are without spines. Leg armament: Tibia III with 1.1.1a spines or one spine (to the right), one or two at the apex (to the right), 1.2v or 2v at the apex (to the right); tibia IV with 1.1a, with 1.3v or 2.1.2v spines (to the right).

The yellow abdomen is covered with short reddish setae and lacks any marks. It bears two foveae in its anterior part. The venter bears two dark marks in front of the spinnerets. The area around the endogyne is wrinkled.

Endogyne like Fig. 77. Male unknown.

Habitat: Under rocks in barren places

Distribution: Adigeni, around Zarzma Monastery (Mcheidze, 1939). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera meschetiensis* Mcheidze, 1979.

14. *Dysdera charitonovi* Mcheidze, 1979

Description: ♀ Carapace length 4 mm, width 3 mm. The carapace is brown, shagreen. The inner part of the cephalic region is marmorated with rare, deep foveae in irregular rows. The median furrow is deep. The PLE are situated at a distance from the LE of the second row.

The chelicerae are long, of the same color as the carapace and with a weak dorsal granulation; their inner part near the basis bears a denser granulation. The foveae are somewhat isolated from one another. The sternum is light brown, orange and with a median number of foveae.

Legs I and II are of the same color as the carapace. Legs III and IV are of a weak light color.

The abdomen is yellow, constricted, long and covered with dark marks. Endogyne like Fig. 78. Male unknown.

Habitat: Under rocks.

Distribution: Adigeni (Utqisi) (Mcheidze, 1939). Georgian endemic species.

Taxonomy: Platnick (2013): *Dysdera charitonovi* Mcheidze, 1979.

15. *Dysdera ucrainensis* Charitonov, 1956

Description: Female carapace length 4.7 mm. Male carapace length 4.2 mm, width 3.2 mm.

♀ Similar to the male in coloration, integument sculpture and leg armament.

♂ The distance between the AE is larger than their diameter. The carapace is carmine-red, finely shagreen and with silk luster. The median furrow of the cephalic region bears a few foveae. The lateral band forms a furrow-

like pattern with weakly developed marmorate markings. The sternum is orange–red and bears more or less developed marmorate markings.

The legs are yellow to orange. Legs III and IV are of lighter color than the others. All femora are without spines. Copulation apparatus like Fig. 79.

This species belongs to the group of *D. azerbaijdzhanica*²⁰ and *D. armenica*. According to the structure of the copulation apparatus it is especially close to *D. azerbaijdzhanica*.

Distribution: Ukraine. **In Georgia:** Kodzhori, Kobuleti (Mcheidze 1974). First record in the Caucasus.

Taxonomy: Platnick (2013): *Dysdera ukrainensis* Charitonov, 1956.

16. *Dysdera richteri* Charitonov, 1956

Description: ♂ Carapace length 2.9 mm, width 2.15 mm. The carapace is carmine–red, dull, very thinly shagreen. The foveae are hardly discernible, not deep and of irregular form. The longitudinal cephalic furrow is rather wide. The lateral slopes of the carapace bear a thin band of dark gray color, which is elongated to the black line of the edge. When viewed from the front, a group of blackish granules is visible.

The distance between the AE reaches two thirds of their diameter. The chelicerae are of the same color as the carapace. The sternum is reddish–orange, with weakly developed wrinkles at its anterior sides and a plain center; it partly changes into weakly developed marmorate markings. The legs are reddish–orange. Femora III and IV bear dorsal spines.

Copulation apparatus like Fig. 80. Epigyne like Fig. 81.

Habitat: Under rocks, in leaf litter.

Distribution: Erevan, Ashtari Road (Richter 1936). **In Georgia:** Tbilisi (Shavnabada), Lagodekhi (Mcheidze 1940). Transcaucasian endemic species.

Taxonomy: Platnick (2013): *Dysdera richteri* Charitonov, 1956.

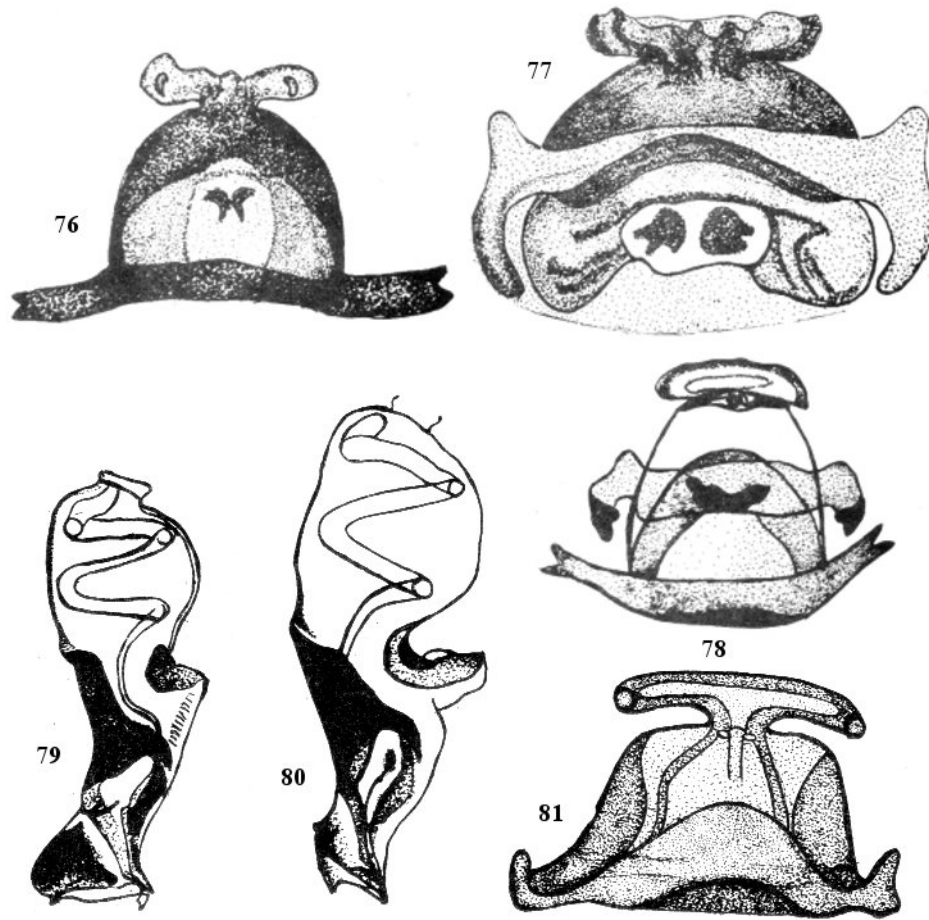
17. *Dysdera cribrata* Simon, 1882

Description: ♀ Carapace length 4 mm, width 3 mm; abdomen length 5.5 mm, width 3 mm. Carapace with dark, blackish coloration and lattice-like (sieve-like) sculpture. Mostly the sides bear unevenly formed depressed spots (foveae). The sternum is yellow, mostly shagreen. The chelicerae are dark brown.

♂ The spoon-like structure of the bulbus is long, almost cylindrical. The legs are yellow; tibia IV in two areas with separate strong and small ventral spines (often reduced.), although one small apical spine can be found in the basal half. Abdomen yellowish–greenish.

Habitat: In silk cells in crevices of trunks of palm-trees.

²⁰Sic Mcheidze (1997): *D. azerbaijdhanica*.



Figs. 76–81. **Dysderidae, *Dysdera* (in part.)**. *D. iberica*: 76 – endogyne. *D. meschetiensis*: 77 – endogyne. *D. charitonovi*: 78 – endogyne. *D. ucrainensis*: 79 – bulbus. *D. richteri*: 80 – bulbus; 81 – endogyne.

Distribution: Canary Islands. **In Georgia:** Akhali Atoni, Sukhumi (Mcheidze, 1938). First record for the former USSR.

Taxonomy: Platnick (2013): *Dysdera cribrata* Simon, 1882.

7.11.2 *Harpactocrates* Simon, 1914

Key to species

- 1 (2) Femur I with 2 anterior spines in the distal half and 1 spine on the inner side of femur II. Distance of AME shorter than eye diameter. Distance between PME and PLE shorter than ME diameter. Carapace dark brown to almost black. Carapace length 3.1 mm, width 2.1 mm. Sternum dark brown, shagreen. Furrows near the edge hardly visible. Endogyne like Fig. 82. . . 1. *H. georgicus* (p. 95)
- 2 (1) Number of spines on femora I and II, ratio of eye distance and diameter, color of carapace, length, width and color of sternum and habitus not like this. 3
- 3 (6) Femur I in its distal part with 5–7 or 7–8 spines. 4
- 4 (5) Femur I in its distal part with 7 or 8 spines. Inner sides of femur II with 6 spines. Carapace orange–dark brown, length 5.9 mm, width 4 mm. Sternum orange–yellow, shagreen, its center yellow. Endogyne like Fig. 83. 2. *H. charitonovi* (p. 96)
- 5 (4) Number of spines in the distal part of femur I between 6 and 7. Number of spines on the inner side of femur II between 5 and 7. Carapace reddish–light brown, dull, finely granulated shagreen. Carapace length 5.1–5.6 mm, width 4.1 mm. Sternum light brown, its center brown–yellow. Endogyne like Fig. 84. 3. *H. fedotovi* (p. 96)
- 6 (3) Number of spines in the distal part of femur I not like this. . . . 7
- 7 (3) Femur I in its distal part with 5–7 spines.²¹ Inner side of femur II with 4 spines. Carapace brown, shagreen. Carapace length 3–3.5 mm, width 2–2.2 mm. Sternum yellow and shining. Endogyne like Fig. 85. 1. *H. trialetiensis* (p. 97)

1. *Harpactocrates georgicus* Mcheidze, 1972

Description: Carapace length 3.1 mm, width 2.1 mm; width of cephalic region 1.8 mm. Distance between AME shorter than their diameter. Distance between the PME and PLE shorter than the diameter of the ME.

The carapace is of hexagonal shape with a dark brown posterior edge and an almost black shining shagreen surface; deepened foveae are very sparsely dispersed in the anterior part. The carapace is bulged upward, with a longitudinal furrow and short angular lines extending from it. The height of the clypeus does not reach the size (diameter) of the AE.

The sternum is bulged and dark brown. Furrows are hardly discernible near the edge; its surface is shagreen, like the carapace with a weak granu-

²¹Contra instance 6. Lapsus?

lation, at the edge near the legs rarely with granulation. Larger, deepened foveae (marks) are not visible.

Chelicere length 1.6 mm; their coloration is comparable to the carapace coloration, covered with thick granulation and bearing long setae. Labium and gnathocoxae are dark brown, tarsi and femora brown. The other leg segments are somewhat brighter.

Habitat: Under rocks in wooded places.

Distribution: Kodzori (Mcheidze 1962). Georgian endemic species.

Taxonomy: Platnick (2013): *Hygrocrates georgicus* (Mcheidze, 1972).

2. *Harpactocrates charitonowi* Mcheidze, 1972

Description: Carapace length 5.9 mm, width 4 mm; width of cephalic region 2.1 mm. Distance between AE 1.5 mm and larger than their diameter. The distance between the PME and PLE is larger than the diameter of the ME.

The carapace is of hexangular shape with a straight posterior edge, its surface is orange or dark brown, dull and bears a fine granulation and a few impressed marks (foveae). A longitudinal furrow is visible on the carapace and angular lines extend from it. The clypeus is high; its height reaches the length of the eye diameter.

The sternum is shining, orange–yellow and yellow in its center. Short furrows are well visible near the legs. Impressed marks are rare in the center but more dense towards the edge. The chelicerae are of the same color as the carapace and bear a thick and dense granulation. Labium and gnathocoxae are brown. Palpus and femur I are brown, the other segments are brighter.

Habitat: Under rocks in forests.

Distribution: Kiketi (Mcheidze 1963). The genus is new to the former USSR and the species is a Georgian endemic species.

Taxonomy: Platnick (2013): *Cryptoparachtes charitonowi* (Mcheidze, 1972). In Mcheidze (1997) sic: 'Harpactocrates charitonovi', lapsus.

3. *Harpactocrates fedotovi* Charitonov, 1956

Description: Carapace length 5.1–5.6 mm, width 4.1 mm; width of cephalic region 2.6 mm. The distance between AME is larger than the eye diameter (ratio 5:4). The distance between PME and PLE is larger than ME diameter (ratio 6:5).

The carapace is of hexagonal shape and has a straight posterior edge; its coloration is reddish–light brown with a dull shagreen surface and small, dispersed and deepened marks (foveae). Its evenly bulged surface bears a short longitudinal furrow, from which extend short and weakly notch-like radial angular lines.

The clypeus, whose height reaches the length of the diameter of the AE, is shining stronger than the remaining surface of the carapace. The sternum is shining, light brown, with strong, small furrows on its surface.

Chelicere length 2.4 mm; their coloration is comparable to the carapace coloration, with small granulation and long setae. Labium and gnathocoxa are light brown, palpus and femur are of the same color as the carapace.

Habitat: In forest habitats.

Distribution: Lagodekhi Reserve (Ph. Zaitsev 1937), Zedazeni, Lagodekhi (Shromi Valley, Mcheidze 1938, 1964, 1967).

Taxonomy: Platnick (2013): *Cryptoparachtes fedotovi* (Charitonov, 1956).

4. *Harpactocrates trialetiensis* Mcheidze, 1997

Description: ♀ Carapace length 3–5 mm, width 2–3 mm. The distance between the AE is larger than the eye diameter; the distance between the PME and PLE is larger than the diameter of the ME. The carapace is of hexagonal shape with a straight posterior edge, brown, shining or dull, with shagreen sparse foveae. The thoracic surface bears a longitudinal furrow, from which extend radial angular lines. The clypeus height does not reach the length of the diameter of the AE.

The sternum is yellow, shining, in its anterior half with five pairs of radially directed angular lines. Its surface bears scattered thick foveae, but at the edges near the extremities it bears a thick granulation.

Chelicere length 1.2 mm, of the same color as carapace, with thick granulation and long setae, their bases are bulged. Labium and gnathocoxae are yellow, the femur is light brown, the other segments somewhat brighter.

Leg armament: **Femur** I: from the inner region to the tip with 5–7 spines; II: from the inner region to the tip 1.3; III: 1.1d, 1.1.1a; IV: 1.2.1d spines. **Patella** III: at the tip with 2a, 1p; IV: 1p, 1.1.1d spines. **Tibia** III: 1.1d, 2.2.2a, 2.2.2p or 1.2.1, 1.2.2v or 1.1.2v; IV: 1.1d, 2.2.2a and 2.2.2p and 1.1.2v spines.

The abdomen is light yellow, shining, with a characteristically formed surface. The entire abdomen is covered with yellowish gray marks. A large, oval and orange mark and four pairs of small, longitudinal, brown bands are situated in front of the spinnerets on the venter. Endogyne like Fig. 85.

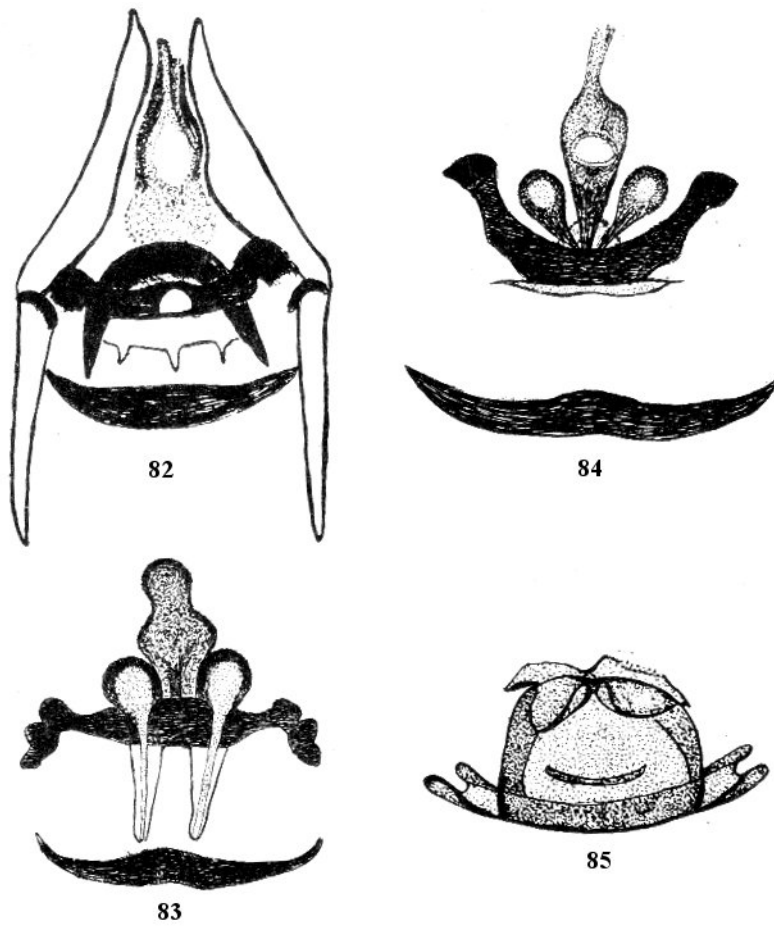
Habitat: Under rocks in forests.

Material: 1 ♀ (holotype), Keda (Adjara), 31. VII. 1939. 1 ♂ (paratype), Kodzhori (Udzo), 1400 m a.s.l., 21. VI. 1964 (T. Mcheidze). Georgian endemic species.

Taxonomy: Platnick (2013): *Harpactocrates trialetiensis* Mcheidze, 1997.

7.11.3 *Harpactea* Bristowe, 1939

Key to species



Figs. 82–85. **Dysderidae, *Harpactocrates***. *H. georgicus*: 82 – endogyne. *H. charitonovi*: 83 – endogyne. *H. fedotovi*: 84 – endogyne. *H. trialetiensis*: 85 – endogyne.

- 1 (2) Carapace length approx. 2 mm. Femora I and II with 1.2a spines, femur III with up to 5, femur IV with up to 7. Copulation apparatus like Fig. 86. 1. *H. caucasia* (p. 99)
- 2 (1) Carapace length 1.7–2 mm. Number of spines on femora and copulation apparatus not like this. **3**
- 3 (4) Sternum smooth, shagreen, without reticulate structure. Femur I with 3–4ad spines. Carapace length 1.7–2 mm. Copulation apparatus like Fig. 87. 2. *H. zaitzevi* (p. 99)
- 4 (3) Sternum not smooth and shagreen. Femur I with 1–2ad spines. Carapace length 1.7–2 mm. Copulation apparatus like Fig. 88. 3. *H. charitonovi* (p. 100)

1. *Harpactea caucasia* (Kulczyński, 1895)

Description: Carapace length 2 mm, width 1.6 mm; abdomen length 2.1 mm, width 1.2 mm The anterior part of the carapace is weakly arcuate with strongly rounded sides. The carapace is flat with a reticulate surface; the cephalic region is shining. Carapace and chelicerae are dark auburn.

The PE nearly touch each other, the LE are round and somewhat small. The AE are round, comparatively large and almost touch the LE. Gnathocoxa and labium are of the usual form. The brick-colored sternum is longer than wide, with a reticulate and shining surface. The lateral surface of the gnathocoxae is granulated.

Palpus and legs are shingle-colored and somewhat dark. All femora bear spines: I and II with 1.2a spines, III: with nearly 5 spines, IV: with nearly 4 spines. All tarsi with three claws.

The abdomen is elongated, wider in its posterior part and of ashen–yellow color. Copulation apparatus like Fig. 86.

Habitat: Under rocks on the forest floor.

Distribution: Gelati (Kulczyński, 1895). Georgian endemic species.

Taxonomy: Platnick (2013): *Harpactea caucasia* (Kulczyński, 1895).

2. *Harpactea zaitzevi* Charitonov, 1956

Description: Female carapace length 1.8 mm, abdomen length 2.3 mm; body length 4 mm. Male carapace length 1.7 mm, width 1.35 mm.

♀ The female is similar to the male but differs somewhat in leg armament.

♂ The distance between AME is approximately one fourth of the eye diameter. PME touch each other. The carapace is light brown, the anterior part of the cephalic region is rounded; its posterior part is straight. The thoracic furrow is formed like a short line. The dorsal part of the carapace is dull, finely shagreen and bears a few foveae.

The chelicerae are of the same color as the carapace. The sternum is brown–yellow with thin wrinkles and more or less developed foveae. The

legs are yellow. Femur, patella and tibia of legs I and II are darker; the palpus is brown–yellow. All femora bear dorsal spines.

Copulation apparatus like Fig. 87.

Habitat: Under rocks and leaves in forests.

Distribution: Lagodekhi Reserve (Ph. Zaitzevi 1936), Tshiauri Forest (Mcheidze, 1958). Caucasian endemic species.

Taxonomy: Platnick (2013): *Harpactea zaitzevi* Charitonov, 1956.

3. *Harpactea charitonowi* Mcheidze, 1972

Description: ♂ Carapace length 1.9–2 mm, width 1.4 mm; abdomen length 2.2 mm, width 1.2 mm. Body length 4.1 mm. The distance between the AME is approximately one fourth of the eye diameter. The PME stand close to one another. The distance between the PME and PLE is somewhat shorter than the ME diameter.

The carapace is dark brown with a black coating. The anterior part of the cephalic region is rounded but has a straight posterior edge. The thoracic furrow is short and formed like a line. The surface is dull and shagreen with scattered small foveae.

The chelicerae are dark brown. The sternum has a brown shagreen surface. The legs are yellow. Femur, patella and tibia I and II are darker. The bulbus is light yellow, its distal appendage dark, almost black (Fig. 88).

The bright abdomen is of grayish color and densely covered with short setae.

Habitat: Under rocks in forest habitats.

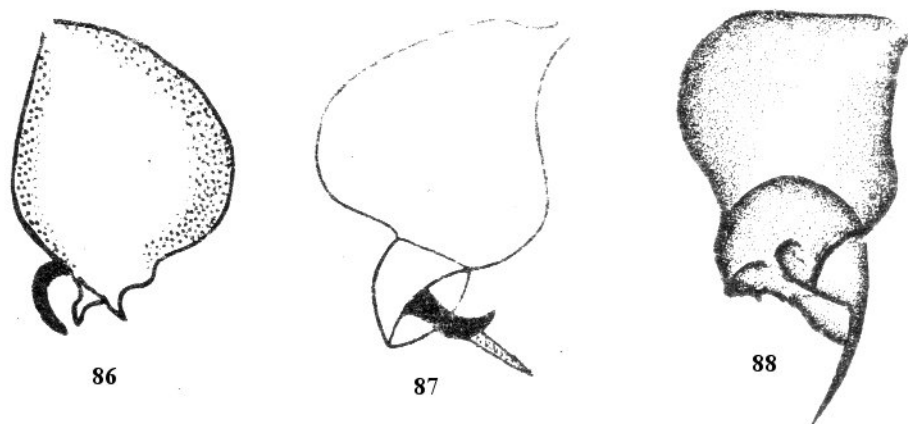
Distribution: Lagodekhi Reserve (Mcheidze, 1972). Georgian endemic species.

Taxonomy: Platnick (2013): Nomen dubium. In Mcheidze (1997) sic: 'Harpactea charitonovi', lapsus.

7.11.4 *Segestria* Latreille, 1804

Key to species

- 1 (2) Carapace length in male and female 6–8 mm. Chelicerae with metallic iridescence, in females green and in males bronze-colored. Legs without dark annulation. 1. *S. florentina* (p. 101)
- 2 (1) Carapace length in male and female 3–4.5 mm. Chelicerae without iridescence. Legs annulated and with dark marks. 3
- 3 (4) Metatarsi I and II with 3 pairs of ventro-lateral spines. Sternum somewhat dark near the coxae. Female body length 7–10 mm, males 5.6–7.5 mm. 2. *S. senoculata* (p. 102)
- 4 (3) Metatarsi I and II with 1 pair of ventro-lateral spines. Sternum markedly dark near the coxae. Female body length 10–14 mm, males 7–8 mm. 3. *S. bavarica* (p. 102)



Figs. 86–88. **Dysderidae, *Harpactea***. *H. caucasia*: 86 – bulbus. *H. zaitzevi*: 87 – bulbus. *H. charitonovi*: 88 – bulbus.

1. *Segestria florentina* (Rossi, 1790)

Description: Body length 12–21 mm. The carapace is brown or black and covered with setae. The chelicerae show a metallic iridescence - in males bronze-colored, in females greenish. The chelicerae of the male are armed with numerous irregular, elongated and blunt spines.

The legs are not annulated. Legs I are blackish, legs IV are brownish–red. Metatarsus II is in some areas armed with basal lateral spines. The bulbus is narrowed (Fig. 89).

The abdomen is cylindrical, uniformly black or purple. Juveniles are colored like *Segestria bavarica*, often complicating determination. Sometimes adult males retain this coloration.

They make a tube-like retreat with a funnel-like widened opening. The retreat is lined with silk; numerous radial lines extend from it for tripping and other purposes. When an insect touches the trip thread the spider immediately rushes from the retreat along the trip thread and catches the prey. It feeds on pest insects of houses and the outside.

Habitat: In holes of stone houses, underneath tree bark, on plants, in tree hollows, among the roots, in crevices of palm trees, in forests among leaves or under bark.

Distribution: This Mediterranean form is spreading to subtropical and tropical zones. It is not registered in the North. Ukraine (Crimea). **In Georgia:** Poti (Simon 1899). Sukhumi, Batumi (Spassky 1937), Batumi, Kobuleti, Keda, Kelasuri, Sukhumi, Psirtskha Valley, Otshamtshire, Zugdidi, Tsalendzhikha (Obudzhi), Tqibuli (Nakerala Pass, 1500 m a.s.l.), Oni, Kutaisi (Gelati) (Mcheidze 1939, 1950, 1955, 1961, 1962, 1965, 1972).

Taxonomy: Platnick (2013): *Segestria florentina* (Rossi, 1790).

1. *Segestria senoculata* (Linnaeus, 1758)

Description: Carapace length 3–4.5 mm, blackish, eye region darker. The sternum is brown and darkened in its anterior part like the coxae.

The metatarsi I and II are armed with three pairs of long lateral spines and with one ventral median spine in the basal half. The legs bear a dark annulation.

The abdomen is yellowish; its dorsal side along the whole length bears dots forming 4–5 large leaf-shaped marks. These are bordered by an area of thin, black chain-like lines. The venter is black or brown. The eggs are situated in a lentiform silk cell together with the female.

The male bulbus tip is almost straight, rarely curved apically (Fig. 90).

Habitat: In tree hollows, rock crevices, under rocks in montane forests.

Distribution: Mediterranean form. Europe, Iran. In the former USSR: Crimea, Caucasus, a single specimen from St. Petersburg. **In Georgia:** Batumi, Kobuleti, Zugdidi, Tsalendzhikha, Senaki, Tshiatura (Mcheidze 1960, 1964, 1965).

Taxonomy: Platnick (2013): *Segestria senoculata* (Linnaeus, 1758). In Mcheidze (1997) sic: '*Segestria senoculata* (C. L. Koch, 1843)', lapsus.

3. *Segestria bavarica* (C. L. Koch, 1843)

Description: Carapace length 3–4 mm, dark brown. The chelicerae are black or brown, simple, with irregular setae. The sternum is blackish and darker than the coxae.

Metatarsi I and II are without lateral spines and metatarsus II bears one single spine on the inside. The male bulbus bears a doubled tip (Fig. 91).

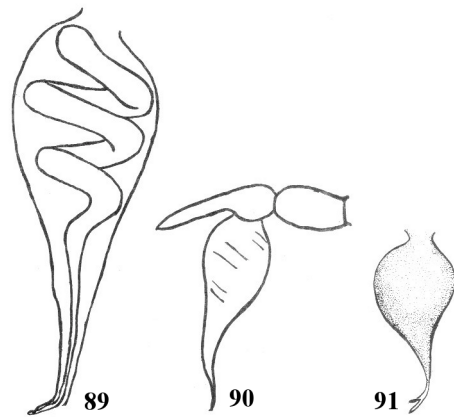
The dorsum of the dark gray abdomen, from the center along the whole length, bears dark brown spots, which form wide marks. The abdomen is bordered by black chain-like dorsal and ventral lines.

The female makes a silk cell which accommodates the spider and its eggs.

Habitat: In hollows under the roots of plants, in rock crevices, in mountain forests, under rocks, among leaves.

Distribution: Central Europe, Switzerland, England, Italy, Sicily, North America. In the former USSR: Central Asia, Transcaucasus. **In Georgia:** Batumi, Sukhumi (Spassky 1937), Keda, Adigeni, Kobuleti, Tsalendzhikha, Gudauta, Otshamtshire, Ambrolauri, Khotevi, Aspindza (village Ota), Kodzhori (Mcheidze 1939, 1964, 1965, 1972).

Taxonomy: Platnick (2013): *Segestria bavarica* C. L. Koch, 1843.



Figs. 89-91. **Dysderidae (Segestriidae), *Segestria***. *S. florentina*: 89 – bulbus. *S. senoculata*: 90 – bulbus. *S. bavarica*: 91 – bulbus.

7.12 Salticidae

The anterior half of the carapace is distinctly raised; its posterior half is flattened and its length exceeds its width. The cephalic and thoracic regions are usually divided by a shallow transversal furrow. The spiders have eight day eyes, which are arranged in three rows; with four large eyes in the front row, two intense small eyes in the middle row and two larger eyes in the posterior row. They are separated from the posterior edge of the cephalic region.

The clypeus and the eye region are usually white or brightly colored. The chelicerae are vertical, except in *Myrmarachne*, where they are directed forward. Sometimes the chelicerae are armed with teeth.

The legs are strong and short, often the front legs are enlarged and help in catching prey. In contrast, the long hind legs are used for jumping. The tarsus bears a scopula and is armed with two tarsal claws. The male palps are without an apophysis but the tibia and femur have apophyses.

The abdomen is relatively small, round and elongated; its integument is rarely bare but covered with simple setae, which often show a metallic iridescence. Males are characterized by a light coloration, whereas the females are of darker colors. They have six spinnerets situated at the end of the abdomen. The anterior spinnerets are conical, situated close to each other and pointed. The epigyne is flat, without a scapus and with 1–2 pits. There is no colulus.

The spiders do not make a web to catch prey. They move about jumping very quickly, recognizing the prey at a long distance and catching it at a distance larger than 2–3 times their body length. They feed on flies, grasshoppers, hymenoptera, aphids and others.

The majority of species is stenochronous and mates only in spring and early summer. Some species (e. g. *Euophrys erratica*) have two mating periods: spring and early fall. Some species, like *Aelurillus v-insignitus*, are characterized by eurychronous females and stenochronous males. Their copulation occurs only from April to May. The mating behavior of all salticids involves a complicated mating dance.

The impregnated female constructs a retreat under rocks, in soil crevices or under plant roots and starts to lay eggs in an egg sac, guarding them afterwards. There are one or more egg sacs in the retreat. It is often the case that up to 20 females together construct one single nest. The spiders of this family are active during the day; they are found on grass, on trees and on sunlit walls of buildings. Many of the species are distributed in tropical countries.

A total of 3000 species is known in this family, 150 in the former USSR and 30 are found in Georgia, which are combined in 19 genera. Of these, three species are not keyed: *Aelurillus concolor* (Tbilisi), *Sitticus pubescens* (Lagodekhi on Mt. Ninigori, 2200 m a.s.l.) and *Heliophanus nigriceps*

(Sukhumi) (Spassky 1937).

Key to genera

Note: the genus *Sitticus* (p. 128) is not keyed.

- 1 (4) Cheliceral furrow somewhat toothed. **2**
 2 (3) Petiolus covered by the abdomen, therefore not visible from above.
 Body outline like Fig. 92. 1. *Ballus* (p. 107)
 3 (2) Petiolus not covered by abdomen, well visible from
 above. 2. *Myrmarachne* (p. 107)
 4 (1) Cheliceral furrow with one tooth or without teeth. **5**
 5 (8) Coxae II and III broadened. Petiolus not covered by abdomen,
 well visible from above. **6**
 6 (7) Inner edge of cheliceral furrow without teeth. Tibia I thin and
 long. **7**
 7 (6) Inner edge of cheliceral furrow with one tooth. Tibia I short and
 thick. 3. *Synageles* (p. 108)
 8 (5) Coxae II and III touching or nearly touching each other. Petio-
 lus usually covered by the abdomen and usually not visible from
 above. **9**
 9 (16) Inner edge of cheliceral furrow with one very small tooth or without
 teeth. **10**
 10 (13) Tibia and patella III longer than tibia and patella IV. **11**
 11 (12) Distance between PLE longer than between ALE.
 4. *Pellenes* (p. 109)
 12 (11) Distance between ALE and PLE of comparable length.
 5. *Aelurillus* (p. 109)
 13 (10) Tibia and patella III shorter compared to tibia and patella IV. **14**
 14 (15) Tarsi I and II with a ventral scopula, extending over half of its
 length or more. Inner edge of cheliceral furrow with one and outer
 edge with two small teeth. 6. *Phlegra* (p. 112)
 15 (14) Tarsi I and II without ventral scopula; if with scopula, then not
 extending over more than one quarter of the tarsus. **16**
 16 (9) Inner edge of cheliceral furrow with one thick tooth. **17**
 17 (22) Tibia and patella III markedly longer than tibia and patella IV. **18**
 18 (19) Metatarsus I with two pairs of ventral spines but never with lateral
 spines. 7. *Evarcha* (p. 112)
 19 (18) Metatarsus I always with ventral and lateral spines. **20**
 20 (21) Metatarsus II and IV with three large spines.
 8. *Philaeus* (p. 113)
 21 (20) Metatarsus III with two spines and metatarsus IV with three
 spines. 9. *Carrhotus* (p. 114)
 22 (17) Tibia and patella III distinctly shorter than length of tibia and
 patella IV. **23**

- 23 (24) Tibia I without spines. Metatarsus I of the male without spines, but with one spine in the female (rarely entirely without spines). 10. *Salticus* (p. 114)
- 24 (23) Tibia I with spines (sometimes very short), if without spines, then metatarsus I of male and female with two pairs of spines. . . . **25**
- 25 (28) Coxae of legs I touching each other or almost touching each other. Body usually elongated. **26**
- 26 (27) AME and ALE clearly separated. Basis of the ALE-PLE quadrangle up to 3x wider than long. Width of male pedipalpus tibia at least 1.5x longer than thick. 11. *Marpissa* (p. 115)
- 27 (26) AME and ALE almost touching each other. Basis of the ALE-PLE quadrangle 1/4 longer than high. Male pedipalpus tibia less than 1.5x as long as thick. 12. *Mithion* (p. 118)
- 28 (25) Coxae I approximated at a distance equal to or larger than labium width. **29**
- 29 (36) MER situated at similar distance from both AER and PER. **30**
- 30 (35) Distance between coxae I larger than labium width. **31**
- 31 (32) Legs with numerous spines. Carapace with a weakly developed furrow, separating the cephalic region from the thoracic region. Male palpus femur never with an apophysis. 13. *Euophrys* (p. 118)
- 32 (31) Legs rarely with spines. Carapace with a well developed furrow, separating the cephalic region from the thoracic region. Male palpus femur usually with an apophysis. **33**
- 33 (34) Distance between PLE larger than between ALE. Metatarsus IV with median and apical spines. 14. *Telamonia* (p. 119)
- 34 (33) ALE and PLE spaced at comparable distances. Metatarsus IV with an apical spine but without median spine. 15. *Heliophanus* (p. 121)
- 35 (30) Distance between coxae I not larger than labium width. 16. *Menemerus* (p. 125)
- 36 (29) AER and MER approximated. **37**
- 37 (38) Thoracic region of carapace distinctly shorter than cephalic region. 17. *Bianor* (p. 127)
- 38 (37) Thoracic region not shorter than cephalic region. **39**
- 39 (40) Lateral part of basal parts of male chelicerae rounded and blunt, but not band-like. In anterior view, upper part of female ALE situated below upper part of AME. 18. *Dendryphantès* (p. 127)
- 40 (39) Structure of chelicerae and eye arrangement not like this.²²

²²Key in Mcheidze (1997) ends here. Possibly, instance 40 should refer to the genus *Sitticus* (p. 128), which is not referred to in the original key.

7.12.1 *Ballus* C. L. Koch, 1850²³

1. *Ballus depressus* (Walckenaer, 1802)

Description: ♂ Both parts of the carapace slope bear a submarginal band consisting of white setae. Legs I and trochanter are black; the tips of femur and patella are brown or dark brownish reddish. The metatarsus is colored white-yellowish. The remaining legs are lightly colored white-yellowish and more or less annulated black (Fig. 93).

The abdomen is brown or tarry and covered by a gray-yellow pubescence, shading into white in the posterior part.

♀ Body length 4 mm. The legs are light yellow and annulated black. The palpus is dark shingle-colored and colored with white setae.

The dorsum is pale brown with darkened sides. The basal two thirds of the abdomen bear an elongated line, which is bordered by a transverse, wave-like or dentate band. Its end bears a transverse line, which is formed by brown or black spots.

Habitat: In grass and shrubs of mixed forests. The female with the eggs can be found under rocks, between roots or hidden in leaf litter.

Distribution: European part of the former USSR up to the Northern Moscow district. From Belarus east to the Urals. North Caucasus, Mikhailovski Pass **In Georgia:** Sukhumi (Spassky 1937), Shovi, Senaki (Mcheidze 1965).

Taxonomy: Platnick (2013): *Ballus chalybeius* (Walckenaer, 1802). Mcheidze (1997) also lists the name *Ballus chalybeius* Walckenaer, 1802 as a synonym.

7.12.2 *Myrmarachne* MacLeay, 1839²⁴

1. *Myrmarachne joblotii* (Scopoli, 1763)

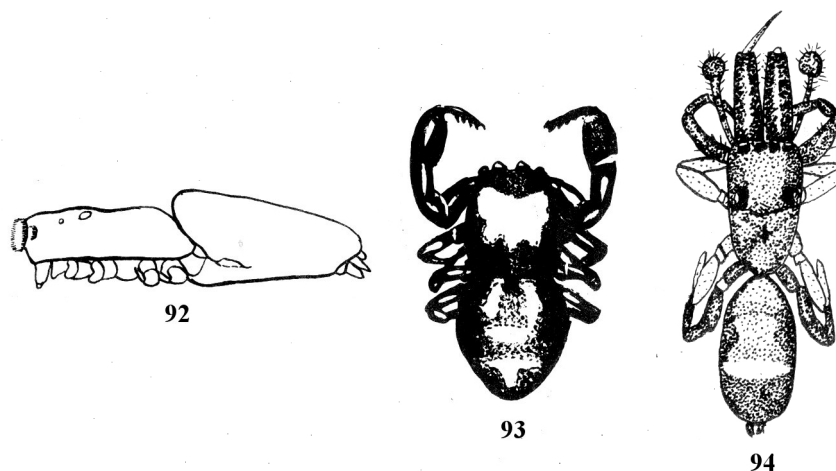
Description: Female body length 5.5 mm, male 4.5 mm. The cephalic region in both female and male is blackish, and the thoracic region is brown-red or brown.

The legs are light yellow, shingle-colored and outlined black. The metatarsus is black. The palpus bears a dark-colored femur. The other leg segments are black. The males have very long chelicerae, which are curved, flattened and rough, in dorsal view with copper color. The claws are very long with a basal, ventral tooth and two to twelve dorsal teeth. The venter bears four to seven teeth. Femur I is black.

The dorsum is dark, often varying in color; its anterior part is brown, its posterior part is black. These two areas are separated from each other by a white zone (Fig. 94). The venter is brown, shingle-colored, its posterior

²³In Mcheidze (1997) with author 'C. L. Koch, 1851', lapsus.

²⁴In Mcheidze (1997) with author sic: 'Mac., Leay, 1839', lapsus.



Figs. 92–94. **Salticidae**, *Ballus*, *Myrmarachne*. *B. chalybeius*: 92 – lateral habitus; 93 – dorsal habitus. *M. joblotii*: 94 – habitus.

part bears a narrow, median, blackish band, which sometimes reaches the epigastric furrow.

Habitat: In sunny and dry places. Sometimes also on the forest floor.

Distribution: In the former USSR: regions of Moscow, Kiev, Rostov; Khosta.

In Georgia: Kutaisi (Gelati, Kulczyński 1895), Sukhumi (Spassky 1937), Tsalendzhikha (Mcheidze 1964).

Taxonomy: Platnick (2013): *Myrmarachne formicaria* (De Geer, 1778). In Mcheidze (1997) sic: 'M. joblottii', lapsus.

7.12.3 *Synageles* Simon, 1876

1. *Synageles venator* (Lucas, 1836)

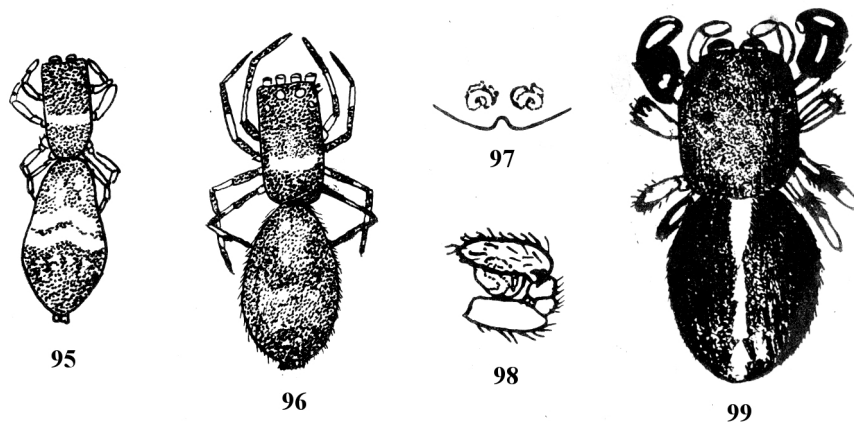
Description: Female body length 4 mm, male 2.5 mm. The black carapace bears bright transversal lines behind the eyes. The carapace is twice as long as wide. The sternum is black and shining.

The anterior part of the dark brown abdomen is somewhat brighter; it bears two transversal bands, which are situated close together in the female (Fig. 95), whereas in the male they are situated far apart from each other (Fig. 96). Epigyne like Fig. 97. Male palp like Fig. 98.

Habitat: In grass, on stems of woody plants, on walls and guardrails of buildings. Thermophilous species.

Distribution: Algiers, Western European countries. In the former USSR: European part (Moscow and Rostov regions, Lithuania). **In Georgia:** Sugdidi, Baghdati (Mcheidze, 1958). First record in the Caucasus.

Taxonomy: Platnick (2013): *Synageles venator* (Lucas, 1836).



Figs. 95–99. Salticidae, *Synageles*, *Pellenes*. *S. venator*: 95 – female habitus; 96 – male habitus; 97 – epigyne; 98 – male palpus. *P. seriatus*: 99 – habitus.

7.12.4 *Pellenes* Simon, 1876

1. *Pellenes seriatus* (Thorell, 1875)

Description: Female body length 8–9 mm, male 5–6 mm, with bright coloration. A thick bright spot with red setae is situated near the AME. The clypeus is covered with long and dense setae. The apical part of the femur and patella of the male palpus bears white scale-like setae. The distal segment of the palpus bears two tooth-like apophyses on its basis.

The dorsum bears a median band, which is not cut by a transversal white band in the posterior half of the abdomen (Fig. 99).

Ecology: They run around on the ground and do not construct webs.

Distribution: Saratov region, Crimea. **In Georgia:** Ambrolauri (Khotevi, Mcheidze 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pellenes seriatus* (Thorell, 1875).

7.12.5 *Aelurillus* Simon, 1884

Key to species

Note: *Aelurillus concolor* is not keyed.

- 1 (2) Male palpus femur with a black protuberance. Dorsum black, with a longitudinal white band. Epigyne with triangular opening (Fig. 100). Eye region brown or grayish blue, near the center with a brownish black mark. Female body length 7 mm, male 5 mm. 1. *A. v-insignitus* (p. 110)

- 2 (1) Male palpus femur without protuberance. Epigynal plate situated on the posterior epigyne edge and with a depression in each of its two parts (Fig. 102). Female body length 9–10 mm, male 6–7 mm. **2. *A. festivus* (p. 110)**

1. *Aelurillus v-insignitus* (Clerck, 1757)

Description: Female body length 6–7 mm, male 5 mm.

♀ The dorsal carapace of the female is covered by grayish-white or pinkish-brown setae (pubescence). Similar to the male, the female always shows traces of concentric bands in its cephalic region.

The dorsum is decorated with two small white marks; they are arranged in approximated rows, which are more proximate in the posterior part (Fig. 101). The epigynal plate is deepened and is closely outlined (Fig. 100).

♂ The carapace is black with a strong marginal white line. The cephalic region is covered by a velvety black pubescence and decorated by two whitish-pink concentric lines, which are strongly curved in the posterior part. The inner line is formed V-like, the outer line is widely semicircular.

The yellow leg I is darkened on the tibia and with black metatarsus and tarsus. The other legs are dark. The palpus femur bears a simple blunt, black protuberance on the ventral inner side. The tibial apophysis is divided into two branches, which are neither uniform nor similar to each other.

The black dorsum bears a black fringe and a very white continuous median band.

Habitat: Under rocks, in grass, in rock walls or leaf heaps. This thermophilic species can be found everywhere during the day.

Distribution: Crimea, Rostov region, Caucasus. **In Georgia:** Kaspi (Ertatsminda), Gariqula, Tbilisi (Botanical Garden) (Mcheidze 1939, 1960). First record for Georgia.

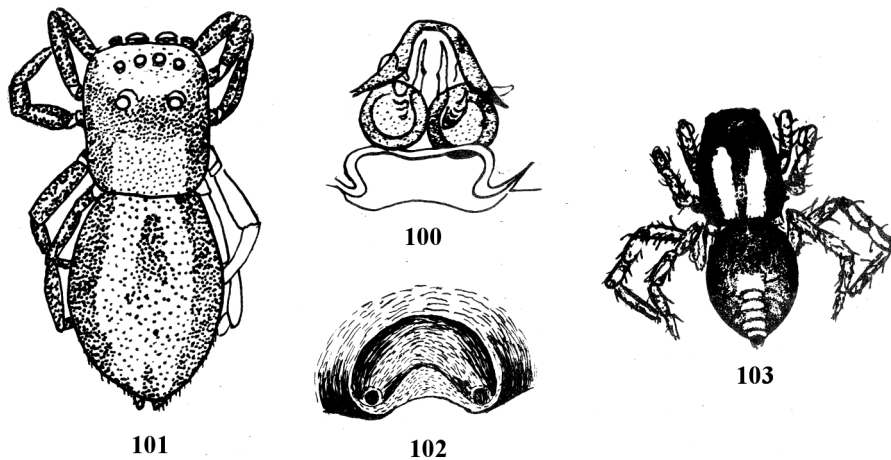
Taxonomy: Platnick (2013): *Aelurillus v-insignitus* (Clerck, 1757). Mcheidze (1997) sic: 'Aelurilu v-insignitus', lapsus.

2. *Aelurillus festivus* (C. L. Koch, 1834)

Description: Female body length 6–7 mm. The carapace of both female and male is covered by a gray-greenish pubescence. The thoracic region is lined with two longitudinal, white, vague lines of setae.

The dorsum is covered by a gray-white pubescence and bears two elongated, parallel marks in its center (Fig. 103). The epigynal plate bears a shallow semicircular pit (Fig. 102).

♂ The palpus is covered by white setae, its tibial apophysis has two similar branches. The bulbus is broad and cut off at its basis. The legs are brown to dark red. Coloration is very similar to *A. v-insignitus*.



Figs. 100–103. **Salticidae, *Aelurillus***. *A. v-insignitus*: 100 – epigyne; 101 – female habitus. *A. festivus*: 102 – male palpus; 103 – habitus.

Habitat: In grass, in rocky places, rock crevices. We encounter these active spiders everywhere during the day. They love bright sun-lit places.

Distribution: Central and Western Europe. In the former USSR in the regions of Moscow, Perm, Saratov, Belgorod and Ukraine, Moldova, Transcaucasus, Siberia. **In Georgia:** Tbilisi (Vera Park) (Kulczyński 1895), Borjomi (Mcheidze 1959).

Taxonomy: Platnick (2013): *Asianellus festivus* (C. L. Koch, 1834).

3. *Aelurillus concolor* (Kulczyński, 1901)

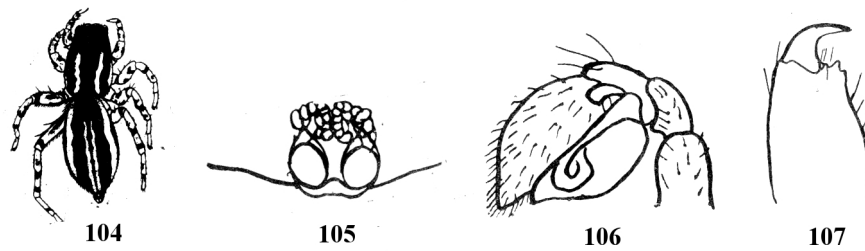
Description: ♀ Carapace length 3.5 mm, width 2.5 mm; abdomen length 3.4 mm, width 2.6 mm. The carapace is of almost uniform color; its anterior part is somewhat bulged, the median part almost alike. The sides are bordered with a broad band of densely standing white setae. The chelicerae are fuliginous black, their dorsal sides are hardly sloped and are densely covered with long whitish setae.

The ventral carapace is shining and wrinkled; the sternum is fuliginous brown. The palpi are long, pale yellow and without spines. The epigynal plate is horned, laterally deep and divided by a thin septum. The male is not known.

Habitat: Grassy and rocky places.

Distribution: Anatolia. **In Georgia:** Tbilisi (Kulczyński 1901). First record in the former USSR.

Taxonomy: Platnick (2013): *Aelurillus concolor* Kulczyński, 1901.



Figs. 104-107. **Salticidae, *Phlegra*. *P. fasciata***: 104 – habitus; 105 – epigyne; 106 – palpus; 107 – ventral side of the chelicerae.

7.12.6 *Phlegra* Simon, 1876

1. *Phlegra fasciata* (Hahn, 1826)

Description: Female body length 7 mm, male 5.5 mm. The black carapace bears shining yellow markings with two imprinted bands and a broad fringe. Ventral side of the chelicerae like Fig. 107.

The bright yellow abdomen bears two broad black bands along the dorsum and a black lateral band (Fig. 104). The epigyne bears two wide depressions (Fig. 105). Palpus like Fig. 106.

Habitat: In sunlit and dry habitats with short grass vegetation. The female of this steppe species lives under rocks, together with its egg sac.

Distribution: In Western European countries, Anatolia, SE Asia, USA. In the former USSR: Ukraine (Crimea), North Caucasus (Khosta), Southern Urals, Western steppes of Siberia in the European part of the USSR. **In Georgia:** Sukhumi (Gulripshi) (Mcheidze 1960). First record in Georgia.

Taxonomy: Platnick (2013): *Phlegra fasciata* (Hahn, 1826).

7.12.7 *Evarcha* Simon, 1902²⁵

1. *Evarcha arcuata* (Clerck, 1757)

Description: Female body length 6–7 mm, male 5–6.5 mm. The anterior part of the brown carapace is black; it bears a broad transversal bright band.

The gray yellowish abdomen bears longitudinal lines, which consist of black markings. A lateral band is situated at an acute angle in the anterior half, and two longitudinal curved bands are in the posterior half (Fig. 108). Epigyne like Fig. 109.

♂ Compared to the female the male is of darker color, except for the markings on the abdomen. Palpus like Fig. 110.

²⁵Mcheidze (1997) also lists the synonym *Maturna* C. L. Koch, 1851, Part.

Ecology: We find this hygrophilous species on meadows with sparse grass vegetation and on forest edges in rocky and lowland places, where the substrate is suitable. They move like locusts and feed on flies, midges and bugs.

Distribution: European countries, with a wide distribution in all former countries of the USSR, except for the extreme North: Kazakhstan, Siberia. **In Georgia:** Kutaisi (Kulczyński, 1889), Sukhumi (Spassky 1937), Telavi (Tsinandali), Eldari, Borjomi, Bakuriani, Adigeni (Utqisi, Zarzma Monastery), Baghdati, regions of Kobuleti and Batumi (Mcheidze 1940, 1959, 1972, 1974).

Taxonomy: Platnick (2013): *Evarcha arcuata* (Clerck, 1757). Mcheidze (1997) also lists the synonym *Aranea maragravii*, sic: 'E. maragravi Scop., 1763', lapsus.

7.12.8 *Philaeus* Simon, 1869²⁶

1. *Philaeus chrysops* (Poda, 1761)

Description: Female body length 8–12 mm, male 7–11 mm.

♀ The black carapace bears dark brown-reddish setae, which blend into white on the sides. Sometimes the cephalic region bears two small marks, but the thoracic region has two larger white bands and an anterior mark. The black legs bear gray-white setae.

The sides of the black dorsum bear cinereous, white setae and often a mixed brown band. The pear-shaped epigynal opening is longer than wide.

♂ The blackish-brown carapace bears dark green setae of silky shining. The cephalic region is sometimes separated from the thoracic part by two approximated white bands.

The black legs bear white setae. Patella and tibia I are bright and covered with thick orange setae. The chelicere is long and curved downwards, bearing a shagreen surface. The bulbus is small, half of the basal part of its tarsus is covered; its distal part is raised.

The abdomen is shining red; the dorsum bears a continuous longitudinal black band (Fig. 111). The ventral epigaster and the spinnerets are black.

Ecology: In scrubbery, in rocky and bare places. They feed on large insects.

Distribution: Algiers, Southern regions of the European part of the former USSR: Crimea, Caucasus, Pyatigorsk, Bessarabia (Ismaily), Turkmenistan, Kazakhstan, SW-Asia, Siberia. **In Georgia:** Tbilisi, Vera Park, (Kulczyński 1901). Tbilisi (Lake Kus), Lake Lisi, Zedazeni, Mukhrani, Gori (Mcheidze 1941, 1965).

Taxonomy: Platnick (2013): *Philaeus chrysops* (Poda, 1761). Mcheidze also lists the synonym *Philaeus sanguinolentus* (L., 1767), referring to *Aranea sanguinolenta* Linnaeus, 1767.

²⁶Mcheidze (1997) also lists the synonym *Philia* C. L. Koch, 1846.

7.12.9 *Carrhotus* Thorell, 1891

1. *Carrhotus bicolor* (Walckenaer, 1802)²⁷

Description: Female body length 5–7 mm, male 4–6 mm.

♀ The black carapace bears a broad marginal band and two dorsal bands, which unite in the posterior part and are covered with brown dorsal setae.

The abdomen bears somewhat variable markings. Often it is half round in the anterior part, with two rows of small marks and in each area with inclined brown as well as gray-white lines. Rarely it bears two thin longitudinal white and parallel bands with gray-brown bases as well as very broad median black bands.

The small epigyne bears deep transversal pits; its anterior part is separated and partitioned by a thin triangular septum (Fig. 112).

♂ The anterior surface of the bulged chelicere is of very simple structure. The palpus is thin and long, its simple tibia bears a long apophysis. The tarsus is small, but larger near the bulbus. The bulbus is oval; its dorsal part is almost round.

The sides of the abdomen are covered with brown–orange setae, which blend into white in the anterior part; short setae are mixed with long thin spine-like setae.

Habitat: In sunlit places in high grass, scrubbery and under rocks.

Distribution: In the former USSR: Voronezh and Saratov regions, Belarus, Ukraine, Crimea, Transcaucasus. **In Georgia:** Batumi (Simon 1899), Sukhumi (Mikhailovski Pass) (Spassky 1937), Gagra (Bitshvinta) (Mcheidze 1963).

Taxonomy: Platnick (2013): *Carrhotus xanthogramma* (Latreille, 1819).

7.12.10 *Salticus* Latreille, 1804²⁸

1. *Salticus mutabilis* (Lucas, 1846)

Description: ♀ Carapace length 2 mm, width 1 mm; abdomen length 2.5 mm, width 1.5 mm. The center of the black carapace bears white setae. The legs are uniformly colored.

The light brown abdomen bears dense white–yellowish spines and three shortened inclined lines on each side, which meet each other in the anterior part (Fig. 113). The brown epigynal plate bears two broad pits at its basis, which are divided by a soft septum.

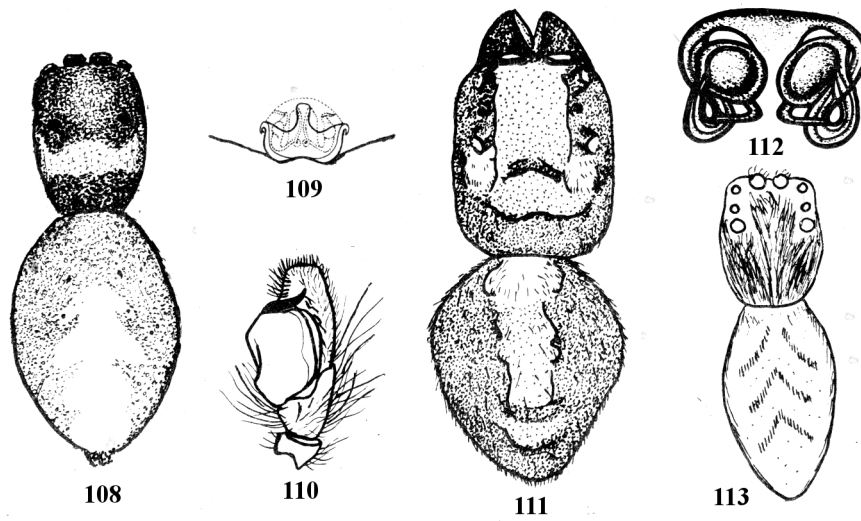
Habitat: On trees, in plant leaves.

Distribution: Sukhumi (Agudzera) (Mcheidze 1938). First record in the former USSR.

Taxonomy: Platnick (2013): *Salticus mutabilis* Lucas, 1846.

²⁷This is an incorrect citation of *Aranea bicolor* Walckenaer, 1802

²⁸Mcheidze (1997) also lists the synonym *Epiblemum* Hentz, 1832.



Figs. 108-113. Salticidae, *Evarcha*, *Philaeus*, *Carrhotus*, *Salticus*.
E. arcuata: 108 – habitus; 109 – epigyne; 110 – palpus. *P. chrysops*: 111 – habitus. *C. bicolor*: 112 – epigyne. *S. mutabilis*: 113 – habitus.

7.12.11 *Marpissa* C. L. Koch, 1846²⁹

Key to species

- 1 (2) Carapace orange–yellow. Metatarsus with three ventral, apical spines. Female body length 10–11 mm. Epigyne like Fig. 114. 1. *M. radiata* (p. 116)
- 2 (1) Carapace light yellow. Metatarsus with two ventral, apical spines. Female body length 4.6 mm. Epigyne like Fig. 115. 2. *M. zaitzevi* (p. 116)
- 3 (3)³⁰ Carapace blackish brown. Female body length 10–12 mm, male 6–7 mm. 3. *M. muscosa* (p. 117)

²⁹In Mcheidze (1997) author without year and with the listed synonym *Marptusa* Thorele [sic!], 1877, lapsus.

³⁰Sic Mcheidze (1997).

1. *Marpissa radiata* (Grube, 1859)

Description: Female body length 7–9 mm, male 6 mm.

♀ The posterior part of the thoracic region is somewhat broadened, with a superficial transversal pit and a square brown or black cephalic region. The dark thoracic region bears white setae mixed with brown color. The sternum is narrowed and elongated. The legs are brown.

The yellowish gray abdomen bears two longitudinal bands; it is elongated and more or less flattened. The epigyne bears blackish lamella (Fig. 114).

♂ Body color black. The sides of the thoracic region are dark yellow with black marks and dots. The dorsal setae are yellow; the lateral setae are white. The eyes have a green shining. The sternum is brown with a black margin. Chelicerae are brownish. Palpus like Fig. 114 a.

The venter is black and covered with yellow shining setae; it is elongated and more or less flattened.

Habitat: This hygrophilous species lives near the shores of lakes and swamps. It makes its retreat in twisted leaves of gramineous plants, on the dry panicle of *Phragmites* sp. reeds, on seeds of rushes (*Juncus fuscus*) or in coiled leaves (on the shores of Lake Paliastomi). In the retreat we often find the female together with its young offspring, which reach the size of their mother. They are quickly recognized by their jumping movements. They often feed on insects, which are larger than themselves.

Distribution: Europe, Siberia, Altai, Kamchatka Peninsula. **In Georgia:** Poti (near Lake Paliastomi), Tshakvi, near Lake Bebesiri (Mcheidze 1946). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Marpissa radiata* (Grube, 1859). In Mcheidze (1997) sic: 'Marpisa radiata', lapsus.

2. *Marpissa zaitzevi* Mcheidze, 1997

Description Female: Carapace length 2 mm, width 1.3 mm; abdomen length 2.6 mm (including spinnerets), width 1.1 mm. The carapace is brown-yellow; the cephalic region is dark brown to brown. The majority of the carapace is bordered by a thin fringe. Three longitudinal lines lead to the center of the carapace; of these the central line originates from the dark mark in the cephalic region and extends to the posterior margin of the carapace. This band is completely black in its anterior part and broader towards the end. The two lateral lines are curved like brackets.

The thoracic part originates near the PE. Almost the entire carapace is covered by short adjacent white setae. Towards the lateral marks, these white setae form lines. The sternum is light brown and covered with rather sparse short, reddish brown setae. Labium, pedipalpus coxa and the chelicerae are yellowish brown. Legs II–IV are light yellow. Leg I bears long and thick apophyses.

Leg Armament: **Leg I:** Femur with thin short 1.1.2d spines. Patella with short 1d spine. Tibia with 2.2.2.2v spines. Metatarsus with 2.2v spines. **Leg II:** Femur with thin short 1.1.2d spines. Tibia near the tip with long 1.1.1v spines and short 1d spine in the distal half. Metatarsus with 2.2v spines. **Leg III:** Femur with 1.1.2d spines. Metatarsus with distal 2v and 2d spines. **Leg IV:** Femur with thin 3d spines. Tibia with distal 2v spines. Metatarsus distally with 2v and 2d spines. Total length of the legs: I – 4 mm, II – 2.95 mm, III – 2.5 mm, IV – 3.5 mm.

The yellowish or pinkish abdomen bears black, dorsal and lateral markings, which consist of median lines and marks. The central line in the anterior part does not reach the center of the abdomen. Two curved, broken lines are situated next to the central anterior line. Each line is made up of six marks. 5–6 pairs of fine marks or spots can be noticed near the posterior end. The sides of the abdomen are decorated with fine spots (Fig. 116).

The venter is whitish–yellow, at the posterior end with black–gray marks and on the sides with blackish spots. The spinnerets are yellow with black dorsal marks. Epigyne like Fig. 115.

♂ The male is unknown.

Material: 1 ♀ (holotype), 1 ♀ (paratype). Lagodekhi Reserve, 5. VIII. 1946. Matsimi Valley, 900–1100 m a.s.l., in grass of a beech forest. New species.

Taxonomy: Platnick (2013): *Marpissa zaitzevi* Mcheidze, 1997.

3. *Marpissa muscosa* (Clerck, 1757)

Description: Female body length 10–11 mm, male 7 mm. The sternum of both male and female is uniformly brown or black. Leg I of the male is dark brown. With exception of the metatarsus and the tarsus, the remaining legs are annulated dark brown. The lateral tibia apophysis of the male is black and tapering semicircularly. It ends dorsally very steep. The tarsal needle³¹ is shorter than the bulb.

Habitat: Under wood fibres in a silk retreat or without a cocoon. Moves about jumping. Hygrophilous.

Distribution: Regions of Moscow, Voronezh, Rostov. Ukraine, Khosta. **In Georgia:** Samegrelo (Tsalendzhikha), Obudzhi, Dzhvari, Atshigvara (Mcheidze 1964–1966). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Marpissa muscosa* (Clerck, 1757). Mcheidze (1997) also lists the synonyms (sic) *M. rumpfi* (Scop. 1763) and *M. tardigrada* (Walck. 1802), which are incorrect citations of *Aranea rumpfi* Scopoli, 1763 and *Aranea tardigrada* Walckenaer, 1802.

³¹Possibly Mcheidze refers to the embolus here.

7.12.12 *Mithion* Simon, 1884³²**1. *Mithion canestrini* (Ninni, 1868)**

Description: Female carapace length 3.5 mm. Male body length 6–9 mm. ♀ The black carapace is outlined brown–reddish. The setae are short, scale-like, cupreous, shining and broken by a median line near white nacreous setae, at the sides and on the ventral side with shingle-colored dark setae. The sternum bears three very narrow black lines. The legs are brown.

The epigynal plate is triangular or semicircular with two dot-like pits.

♂ The dorsal body is black with cupreous coloration and covered with scale-like setae.

The anterior part of the elongated abdomen bears dull white setae; its center bears small and shining scales (Fig. 117). Leg I is very thick, the remaining legs are thin. The bulb is elongated and thick, conoid.

Habitat: Under bark (palms, plane).

Distribution: Spain, Corsica, Sardinia, Hungary, Turkey. In the former USSR: Crimea, Transcaucasus, Ismaily. **In Georgia:** Gagra (Simon 1899), Khobi, Poti, near Lake Paliastomi (Mcheidze 1959).

Taxonomy: Platnick (2013): *Mendoza canestrinii* (Ninni, 1868).

7.12.13 *Euophrys* C. L. Koch, 1834³³

Key to species

- 1 (2) Male tibia and last palpus segment with long white setae. Female abdomen pale yellow, with blackish-gray markings. Female body length 4 mm, male 3 mm. 1. *E. frontalis* (p. 118)
- 2 (1) Male tibia and last palpus segment without long white setae. Tibia with apophysis; palpus tip like Fig. 119. 3.5 mm. Female abdomen blackish-gray with bright markings. Body length 5 mm. Epigyne like Fig. 118. 2. *E. erratica* (p. 119)

1. *Euophrys frontalis* (Walckenaer, 1802)³⁴

Description: Female body length 4 mm, male 3 mm. Patella and the inner sides of the tibia bear dense, strong, white setae, which are very long on the tibia and formed like brushes. The fine pubescence is red orange, the band is somewhat simple; in the center it bears a number of separate white brushes or red cilia. Leg I is black; its white tarsus bears a very small basal mark. Tibia II always bears a lateral outer row of three spines.

³²In Mcheidze (1997) with author 'Simon, 1868'.

³³Mcheidze (1997) sic: 'Evophrys', probably lapsus.

³⁴In Mcheidze (1997) sic: 'Evophrys frontalis', probably lapsus.

The dorsum is white, shingle-colored, with three rows of small black marks. The central mark is triangular, the lateral marks are formed like a dot or a line.

Habitat: Under rocks, in leaf litter, in mosses, among plant roots.

Distribution: Crimea, North Caucasus, Kazakhstan, Central Asia. **In Georgia:** Telavi, Lagodekhi, Kobuleti (Mcheidze 1945–50). First record in Georgia.

Taxonomy: Platnick (2013): *Euophrys frontalis* (Walckenaer, 1802). Mcheidze (1997) also lists the synonym (sic) 'E. maculatus Walck. 1826'.

2. *Euophrys erratica* (Walckenaer, 1825)³⁵

Description: ♀ Carapace length 2 mm, width 1.5 mm; abdomen length 3.4 mm, width 2.5 mm. The black carapace is covered with long, shining and mixed light red and white setae, which form a large thoracic mark and a fringe. The AE are weakly separated from each other. The sternum is black.

The legs are dark brown; the femora have a darkened basis and a fine light ring near the tip. The other segments have a distinct black ring. The palpus is light yellow.

The dorsum bears blackish brown dots and, towards the center, a large transversal shingle-colored mark as well as a posterior, broad, longitudinal band with small dots and black triangles.

♂ Carapace length 2.2 mm, width 1.5 mm. The carapace is black, with long, mixed white or brown setae; it is square, almost flat, its horizontal flattening is hardly recognizable. The legs are brown with coffee-brown rings. The palpus is white with dense setae and a black tarsus. The femur is thick, with a small comb. The black bulbus bears a bloated ventral spoon-like structure (Fig. 119).

The blackish abdomen is decorated with blurred dark brown markings. The setae are white and very long.

Habitat: Herbaceous plants, under rocks, mixed beech forests.

Distribution: Corsica, Central Europe, Marocco, Tunis, Palestine, Anatolia, Syria. In the former USSR: In the whole European part, North Caucasus.

In Georgia: Sakao (Tshiora, Upper Ratsha) (Mcheidze, 1974). First record for the Transcaucasus.

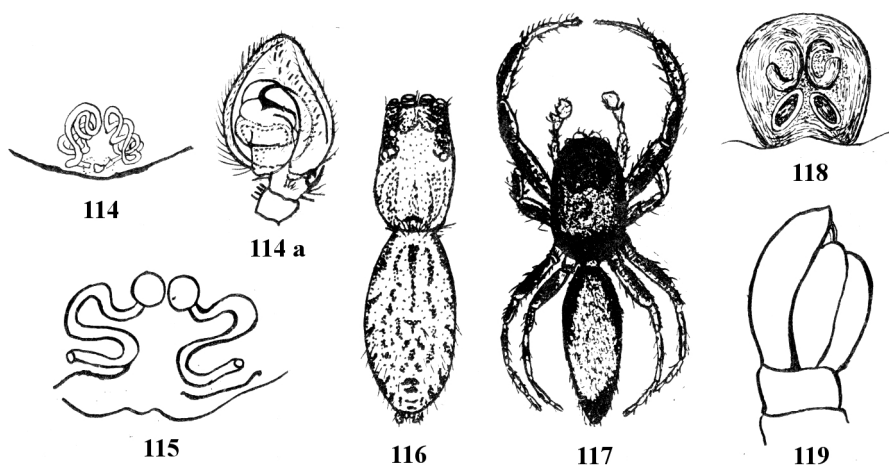
Taxonomy: Platnick (2013): *Pseudeuophrys erratica* (Walckenaer, 1826).

7.12.14 *Telamonia* Thorell, 1887

1. *Telamonia castrisiana* (Grube, 1861)

Description: ♀ The body is yellowish-brownish with fine scale-like, silvery shining setae. The cephalic region is weakly olive-colored and with a broad

³⁵In Mcheidze (1997) sic: 'Evophrys erratica'. Probably lapsus.



Figs. 114-119. **Salticidae**, *Marpissa*, *Mithion*, *Euophrys*. *Marpissa radiata*: 114 – epigyne; 114 a – palpus. *Marpissa zaitzevi*: 115 – epigyne; 116 – habitus. *Mithion canestrini*: 117 – male habitus. *E. erratica*: 118 – epigyne; 119 – palpus.

border all around.

The basal half of the abdomen bears two transversal, dorsal brown dots; the apical part of each side bears two fine black lines, which unite in the front. The epigynal plate is deepened and bears superficial, large, wide, oval, yellow pits, which are armed with setae in their anterior part.

♂ The body is covered with white scale-like setae. The carapace is brown-shingle-colored, darker at the slope. The eye region is bordered black, sometimes completely darkened. The posterior part bears a separate square mark.

Sternum, chelicerae and palpi are black. The palpus tibia is short. The bulbus base is bloated and cut-off diagonally in an obtuse angle.

The dorsum is black; its basal part bears two small marks. The apical part bears broad, elongated, toothed wing-like bands.

Habitat: Thermophilous species, in grassy places.

Distribution: This species is distributed in the former USSR and only recorded from the Caucasus: Khosta (Spassky 1937), North Caucasus (Ovtsharenko 1978). **In Georgia:** Batumi, Tbilisi (Kulczyński 1899), Poti (Mcheidze 1959). Caucasian endemic species.

Taxonomy: Platnick (2013): *Phintella castrisiana* (Grube, 1861). In Mcheidze (1997) sic: 'Telamonia castreisiana', lapsus.

7.12.15 *Heliophanus* C. L. Koch, 1833

Key to species

Note: *Heliophanus nigriceps* (p. 124) is not keyed.

- 1 (10) Males. **2**
- 2 (3) Male palpus femur apophysis tip divided into two teeth; the upper tooth curved stronger (Fig. 120). 1. *H. melinus* (p. 122)
- 3 (2) Upper apophysis tooth weakly curved. **4**
- 4 (5) Apophysis teeth far apart from each other: one separate at the apophysis base, the other at the apophysis tip (Fig. 121). Carapace edge reddish-red. Body length 4 mm. 2. *H. tribulosus* (p. 122)
- 5 (4) Apophysis teeth approximated (Fig. 122.). Carapace edge usually black. **6**
- 6 (7) Abdomen covered with several shining dorsal scales. Palpus like Fig. 123. Body length 3.5 mm. 3. *H. flavipes* (p. 123)
- 7 (6) Abdomen without such scales. **8**
- 8 (9) Carapace edge white. Body length 4 mm. Palpus like Fig. 125. 4. *H. cupreus* (p. 123)
- 9 (8) Carapace edge reddish-red. Body length 5.5 mm. 5. *H. patagiatus* (p. 124)
- 10 (1) Females. **11**
- 11 (20) Palpus femur yellow. **12**
- 12 (13) Epigynal opening longitudinal, triangular, without median lamella (Fig. 126). Body length 6.5 mm. 4. *H. cupreus* (p. 123)
- 13 (12) Epigynal opening transversal, inside with a median lamella. Sometimes epigyne with two openings. **14**
- 14 (16) Carapace edge yellowish-red, center black. **15**
- 15 (17) One epigynal opening, with a median lamella. Body length 5.5 mm. 2. *H. tribulosus* (p. 122)
- 16 (14) Carapace edges and center black. **17**
- 17 (15) Two epigynal openings. **18**
- 18 (19) Dorsum with a broad transversal white fringe and two parallel white bands occupying the posterior 3/4 of the abdomen. Body length 5–6 mm. 1. *H. melinus* (p. 122)
- 19 (18) Abdomen without such fringe nor parallel white bands. Body length 5.5 mm. Epigyne like Fig. 124. 3. *H. flavipes* (p. 123)
- 20 (11) Palpus femur black. Carapace edge yellowish-red, in the center black. Body length 5.5 mm. 5. *H. patagiatus* (p. 124)

1. *Heliophanus melinus* (L. Koch, 1867)

Description: Female body length 8 mm, male 5.5 mm. ♀ The anterior part of the cephalic region is somewhat constricted and not separated by a deep band. The black sternum bears no fringe. The clypeus and the edges of the eyes are covered with yellowish setae.

The dark abdomen is bordered with a white band, which continues to the sides and almost reaches the spinnerets. The coloration of the center is comparable to the male.

♂ The short palpus femur is somewhat broad; its ventral surface is somewhat curved and forms a small ledge at its base (Fig. 120). The cephalic region is short; the elevation of the eyes is well discernible. The black sternum bears no fringe. A white triangle is situated at the ventral region of the eyes. The somewhat long legs have black femora, which are covered with white setae.

The upper edge of the dull abdomen bears a broad white band, which does not continue towards the sides. The central part bears two parallel white lines. The posterior part of the yellow venter bears two large white dots.

Habitat: Shrubs.

Distribution: Western European countries, Anatolia, Syria. In the former USSR: Caucasus, Kazakhstan. **In Georgia:** Tbilisi (Kulczyński 1899), Mtskheta, Armazi (Mcheidze 1958).

Taxonomy: Platnick (2013): *Heliophanus melinus* L. Koch, 1867.

2. *Heliophanus tribulosus* (Simon, 1868)³⁶

Description: Body length 4 mm. The carapace edges are reddish-red. The palpi are brown with darker and reddish ventral sides of the tip.

The epigynal opening is twice as wide as long; its posterior semi-circle is not flattened, but somewhat swollen and shading into a brown olive color in its posterior part. The outer branch of the femoral apophysis of the male palpus is prominent, conical, tapering and straight; its inner branch is often long, askew, thin but apically broadened, where it is shaped like a blunt, hammer-formed, light yellow apophysis (Fig. 121).

Habitat: Rocky places, under bark of plants.

Distribution: Caucasus, Kazakhstan, Central Asia. **In Georgia:** Kutaisi (near Tsqaltsiteli) (Mcheidze 1943). First record in Georgia.

Taxonomy: Platnick (2013): *Heliophanus tribulosus* (Simon, 1868). Mcheidze (1997) also lists the synonym *H. cambridgii* Simon, 1868.

³⁶Mcheidze (1997) sic: 'Heliophanus tribulosua', probably lapsus.

3. *Heliophanus flavipes* (Hahn, 1831)³⁷

Description: Female body length 4–6 mm, male 3–5 mm. ♀ The carapace is almost simple.

The abdomen is covered with densely standing yellow cupreous setae; its fringe is rather narrow and elongated almost up to the spinnerets. The posterior part bears two small dots, rarely two median transversal white marks; sometimes it is entirely lacking white markings.

The light yellow legs sometimes bear black lines on the hind femur and tibia. The palpus is light yellow. The epigynal opening has a rounded anterior part and is broadened in its posterior part (Fig. 124).

♂ The carapace is black shagreen. The setae are yellow with white marginal lines. The cephalic region is weakly bulged. The palpus is black with white setae. The rounded bulbus is longer than wide (Figs. 122, 123).

Habitat: Grassy plants, under rocks, mixed forest.

Distribution: Europe, Central Asia, Siberia, Anatolia. In the former USSR: European part except the extreme north, Uzbekistan, Kyrgyzstan, North Caucasus. **In Georgia:** Mtirala, Oni (Mcheidze 1957, 1974). First record in Georgia.

Taxonomy: Platnick (2013): *Heliophanus flavipes* (Hahn, 1832). Mcheidze (1997) also lists the synonyms *H. hecticus* Simon, 1868 and *H. fulvignathus* Simon, 1871³⁸.

4. *Heliophanus cupreus* (Walckenaer, 1802)³⁹

Description: Female body length 4–6 mm, male 4.5 mm. The edges of the black carapace bear a broad white arch.

The anterior edge of the black abdomen bears a white band of setae, which is curved laterally. The venter, on the contrary, bears two longitudinal bands (Fig. 127). Epigyne like Fig. 126. Palpus like Fig. 125.

Habitat: This steppe species lives in the subalpine zone and can be found in dry grassy places. In parts of the steppe with fescue (*Festuca sp.*) and sagebrush (*Artemisia sp.*) as well as in coniferous forests and on the outer walls of buildings.

Distribution: Europe, St. Petersburg, Moscow region, Ukraine, Crimea, Transcaucasus, North Caucasus, Khosta, Southern Urals and Western Siberia.

In Georgia: Kutaisi, Qvirila (Zestaponi, Kulczyński 1895), Sukhumi (Spassky 1937), Tbilisi, Shavnabada, Manglisi, Keda (Mcheidze 1961–1970).

Taxonomy: Platnick (2013): *Heliophanus cupreus* (Walckenaer, 1802).

³⁷Mcheidze (1997) sic: '*Heliophanus flavipas* (Hahn, 1831)', probably lapsi.

³⁸In Mcheidze (1997) incorrectly as [sic] '*H. fulvignatus*', probably lapsus.

³⁹Mcheidze (1997) sic: '*Heliopanus cuprus*', probably lapsi.

5. *Heliophanus patagiatus* Thorell, 1875⁴⁰

Description: Carapace length 2–3 mm. The central part of the carapace is black; the lateral parts differ in a darker coloration. The epigynal opening has the form of a pit, which is divided by a longitudinal septum. The anterior part is strongly enlarged. The femur of the male palpus bears an apophysis, which terminates in a curved claw.

Habitat: Grassy places.

Distribution: Regions of Saratov and Rostov, Ukraine, Crimea, Turkmenistan. **In Georgia:** Lagodekhi Reserve (Mcheidze 1967). First record in the Caucasus.

Taxonomy: Platnick (2013): *Heliophanus patagiatus* Thorell, 1875.

6. *Heliophanus nigriceps* (Kulczyński, 1895)

Description: Carapace length 3–4 mm, width 1.8 mm. The brownish-red carapace bears a black edge and is covered with clay-colored shining scales. The dorsal part of the cephalic region is black. The eye region is rough and decorated with dense shallow dots.

The chelicerae bear weakly developed transversal, dorsal folds. The anterior parts of the brown-red chelicerae are colorless. The gnathocoxa are reddish-yellow; the sternum is yellowish-red and bordered in narrow black. The legs are red-yellowish, brown (except the coxae). The palpus bears a dorsal band of white scales; its base is cut deeply and transversally and bears a recognizable blunt tooth.

The dorsum and the spinnerets are black; the venter is blackish-brown; the ventral parts of the spinnerets are brown. The dorsum bears shining scales. The white scales form a white belt in the anterior part. Two pairs of small marks are situated near the spinnerets in the median line of the dorsum, among which the anterior marks are rounded and the posterior marks are transversal.

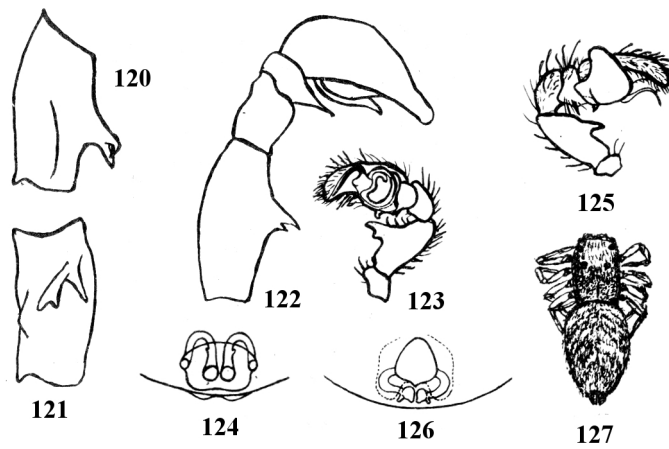
The venter is white near the spinnerets, with a transversal belt. The remaining part is covered with scattered, colorless, shining and white scales.

Habitat: In low grass, under rocks.

Distribution: Turkmenistan, Armenia, Khosta. **In Georgia:** Sukhumi (Spassky 1937).

Taxonomy: Platnick (2013): *Heliophanus auratus* C. L. Koch, 1835. In Mcheidze sic: 'Heliophanus nigriceps (Kulcz., 1895)', lapsus.

⁴⁰Mcheidze (1997) sic: 'Heliophanus Patagiatus', probably lapsus.



Figs. 120-127. **Salticidae, *Heliophanus***. *H. melinus*: 120 – palpal femur. *H. tribulosus*: 121 – palpal femur. *H. flavipes*: 122, 123 – male palpus; 124 – epigyne. *H. cupreus*: 125 – palpus; 126 – epigyne; 127 – habitus.

7.12.16 *Menemerus* Simon, 1868

Key to species

- 1 (2) Female carapace broad and with white fringe. Male and female carapace length 3–4 mm. Male palpus femur tip and patella basis with white setae. Palpus tibia with apophysis.
 1. *M. semilimbatus* (p. 126)
- 2 (1) Female carapace wide, but without white fringe. Carapace length in male and female 4 mm. Male palpus femur tip and patella basis without white setae. 2. *parietinus* (p. 126)

1. *Menemerus semilimbatus* (Hahn, 1827)

Description: The LE in males and females are separated from the carapace surface by a triangular pointed mark, which is followed in the thoracic part by broken, thin, white, median lines and a marginal strong, broad, white band. The setae of the male are red; the weakly elongated band is simple and without setae.

The chelicerae are long, black and without white setae. The palpus tibia bears a pointed ventral median apophysis, which is directed ventrally (or laterally). The large tarsus is situated on the small bent tip, without a flat comb at its base.

The anterior epigynal opening is projected outwards; the chitinized epigynal plate is deeply cut-in in its posterior part. Its anterior part is elongated as a pointed triangle, which does not reach the anterior edge of the opening.

Habitat: Bare and rocky places, below roots and on stipes of plants. Thermophilous.

Distribution: In the former USSR in the southern European part, Transcaucasus. **In Georgia:** Batumi (Spassky 1937), Sukhumi, Poti, Gudauta (Mcheidze, 1965).

Taxonomy: Platnick (2013): *Menemerus semilimbatus* (Hahn, 1829).

2. *Menemerus parietinus* Spassky, 1934

Description: ♀ Abdomen length (including the spinnerets) 6–8 mm, width 3.5–4 mm. The carapace is black or blackish brown, in adults gray and covered with a marginal gray or gray yellow fringe. The cephalic region of the low carapace is flat and somewhat sloping. The thoracic region is weakly broadened. In adults the eye region is gray and covered with mixed brown and black setae. The clypeus is very flat. The labium is almost 1.5x as long as wide. The anterior part of the sternum is narrowed and cut off, blackish brown.

The chelicerae are black–brown. The legs are brown. The dorsal parts of the palpus femur are covered with long white setae.

The flattened abdomen bears a rough edge; in adults it is of gray color and divided by a broad belt. The ventral side and the edges are pale (Fig. 128). The epigynal plate is trapezoid.

♂ The males often have a darker coloration, compared to the females. The markings of the abdomen are pale, sometimes normally developed. The legs are similar to the females'.

It should be considered for the morphological characterization, that these spiders are covered with dense, long, white setae in two places, e.g. fanning on the palps.

Ecology: This thermophilous species lives in sun-lit places, in holes in the outer walls of buildings, on guardrails, in window sills, under the bark of

plants, in rocky and bare places, in crevices of rocks.

They move about jumping very quickly. In case of danger, they hide well within their hole with the help of the flat body. It is true that they do not catch their prey with a web; instead they catch insects with quick and well-placed leaps (flies, midges, bugs), killing them in large numbers.

Distribution: Sotshi, Khosta (Spassky 1937). **In Georgia:** Sukhumi (Spassky 1934), Borjomi, Bakuriani, Adigeni, Akhaltsikhe, Abastumani, Kharagauli, Zestaponi, Baghdati, Tqibuli, Mestia, Batumi, Sukhumi, Tbilisi (Lake Kus) (Mcheidze 1939, 1940, 1961, 1970).

Taxonomy: Platnick (2013): *Menemerus taeniatus* (L. Koch, 1867).

7.12.17 *Bianor* Peckham & Peckham, 1886

1. *Bianor aenescens* (Simon, 1868)

Description: Female body length 3.5 mm, male 2–3 mm. ♀ The black abdomen is covered with simple gray, white, thorn-like setae, which are scale-shaped in the anterior part of the abdomen. The venter is simple, of grayish white color. The epigynal plate is chitinized; its posterior part bears a tapering opening (Fig. 130).

♂ The cephalic region of the male is black, bronze. The thoracic region is brown-yellow to dark brown and covered with scale-like setae and with a green or golden coloration. Leg I is very thick and densely covered with setae and scales (Fig. 129). The palpus is short and thick (Fig. 130).

The dorsum and venter of the blackish abdomen are covered with iridescent scales, which are dense in the anterior half and form a semi-border.

Habitat: In short grass, under rocks and in mixed beech forests.

Distribution: In the former USSR: Regions of Perm, Moscow, Belgorod, Kursk, Tatarstan, North Caucasus, Transcaucasus, Central Asia, East Siberia. **In Georgia:** Letskhumi (Tsageri, Lasuria) (Mcheidze 1976). First record for Georgia.

Taxonomy: Platnick (2013): *Sibianor aurocinctus* (Ohlert, 1865). In Mcheidze (1997) sic: '*Bianor aenescens* Sim., 1868)', lapsus. Mcheidze also lists the synonym *Bianor aurocinctus* Ohlert, 1867, which is an incorrect citation of *Bianor aurocinctus* (Ohlert, 1865).

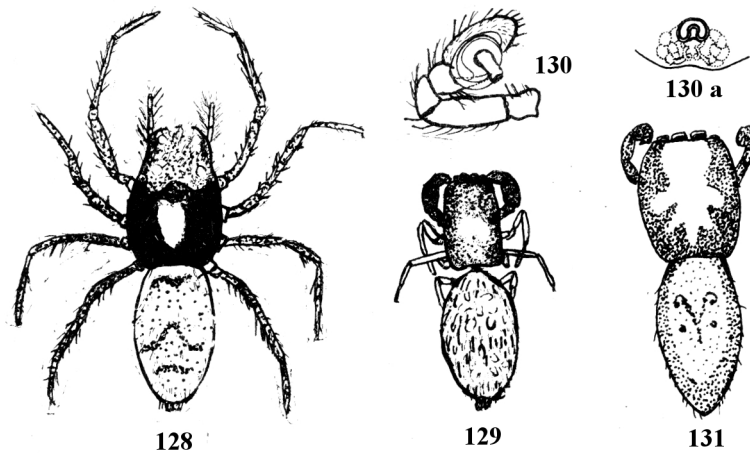
7.12.18 *Dendryphantes* C. L. Koch, 1837

1. *Dendryphantes nidicolens* (Walckenaer, 1802)⁴¹

Description: Female carapace length 2.5–3.5 mm, males 2.3–3 mm.

♀ The abdomen is densely covered with setae, which are rather broad on the venter. The ventral band is blackish gray or reddish. The venter bears

⁴¹This is an incorrect citation of *Aranea nidicolens* Walckenaer, 1802.



Figs. 128-131. Salticidae, *Menemerus*, *Bianor*, *Dendryphantes*. *M. parietinus*: 128 – habitus. *B. aenescens*: 129 – female habitus; 130 – palpus; 130 a – epigyne. *D. nidicolens*: 131 – male habitus.

two posterior united black bands, which are cut by two or three white bands. The dorsal markings vary more strongly.

♂ The carapace is yellowish red and very broad with a yellowish white fringe. The chelicerae are straight and elongated, their inner side is armed with a ridge, which does not reach the base. The bulbus is almost flat. Habitus like Fig. 131.

Habitat: On flowering plants.

Distribution: Southern Europe, Belgium, Syria, Algiers. In the former USSR: Crimea, Transcaucasus. **In Georgia:** Tbilisi (Kulczyński 1895), Sukhumi (Gulripshi), Akhali Atoni, Batumi, Adjara River (Mcheidze 1956, 1960).

Taxonomy: Platnick (2013): *Macaroeris nidicolens* (Walckenaer, 1802).

7.12.19 *Sitticus* Simon, 1901⁴²

1. *Sitticus pubescens* (Fabricius, 1775)

Description: Female carapace length 2.5 mm, width 1.9 mm; in males length 2.4 mm, width 1.7 mm. Female abdomen length 3.2 mm, width 2.4 mm.

♀ The carapace is covered with mixed white and red setae; one small triangular mark is very white.

The abdomen is covered with gray, white setae. Its reddish median band broadens in its posterior part and is covered with darker small transversal

⁴²Mcheidze (1997) also lists the synonym *Attus* Walckenaer, 1805 part.

markings. The epigynal plate is reddish shagreen.

♂ The black carapace is covered with dark reddish setae. The upper eyes are surrounded by white setae, forming broken median lines. The chelicerae are black and of simple structure. The legs are comparably thin and of dark brown color. The palpus is dark red; the base of femur, patella, tibia and tarsus is covered with white setae on the ventral side. The bulbus is black and oval, of simple structure and with a small pit in the middle of the outer edge.

Habitat: On the outer walls of buildings, under rocks, on wooden columns.

Distribution: Kola Peninsula, western Ukraine. **In Georgia:** Lagodekhi (Mt. Ninigori, 2200 m a.s.l.) (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Sitticus pubescens* (Fabricius, 1775).

7.13 Gnaphosidae⁴³

The carapace is elongated and weakly narrowed. The chelicerae are arranged horizontally; sometimes in the males they are projecting forward. The inner edge of the cheliceral furrow is armed with teeth, a thick blade-like structure or entirely unarmed. The eyes are almost uniform in size and arranged in two rows, the AME are dark day eyes; the remaining are brightly colored night eyes. The clypeus is broad.

The entire body is covered with simple setae, sometimes with mixed white and yellow, shining scales. The legs are long and thick. Leg formula is 4.1.2.3. The tarsi have two claws and a scopula. Male tibia and tarsus always bear an apophysis. Six spinnerets; the anterior spinnerets are separated from each other, allowing the small middle spinnerets to be viewed easily.

The gnaphosid spiders do not construct webs to catch prey. They are active at night. Some species make small holes in the soil and stretch out a web above it. The males additionally make a chamber, in which copulation takes place. The egg sac of the gnaphosids is flat, lense-shaped, white or pink. The juveniles of almost all representatives hibernate. During the year they reproduce once. They live under rocks, in mosses, between plant roots, in tree hollows or under tree bark, in leaf litter. Some species come into apartments.

Up to 100 species are distributed in the former USSR, in Georgia seven genera with 19 species.

Key to genera

- 1 (4) Inner edge of cheliceral furrow with numerous teeth (Fig. 132) or with large blade-like structure (subfamily Gnaphosinae). **2**

⁴³Mcheidze (1997) also lists the synonym Drassidae.

- 2 (3) Distance between PME shorter than between ME and LE. Body covered with simple setae. 1. *Gnaphosa* (p. 130)
- 3 (2) PE arranged at uniform distances. 4
- 4 (1) Inner edge of cheliceral furrow with 1–2 small teeth or not armed (subfamily Drassodinae). 5
- 5 (8) Gnathocoxae straight, parallel; their outer part cut out. 6
- 6 (7) Tibia IV with two dorsal spines. PME separated from each other at a distance not smaller than the eye diameter. 2. *Drassodes* (p. 136)
- 7 (6) Tibia IV without dorsal spines. PME approximated and almost touching each other. 3. *Haplodrassus* (p. 139)
- 8 (5) Gnathocoxae markedly curved, labium and outer part not cut out (Fig. 133). 9
- 9 (10) Metatarsus III with large uniform, long and approximated setae, which are arranged hood-like (Fig. 134). PER not wider than AER. 4. *Zelotes* (p. 140)
- 10 (9) Metatarsus III without such ventral setae. PER considerably wider than AER. 11
- 11 (12) Outer edge of cheliceral furrow with 2–3 teeth. AME significantly larger than the other eyes. Male abdomen with scuta. 5. *Scotophaeus* (p. 142)
- 12 (11) Outer edge of cheliceral furrow without teeth. AME somewhat larger than ALE. Male abdomen without dorsal scuta. 13
- 13 (14) PME triangular, approximated to each other, anterior carapace not wide. 6. *Phaeocedus* (p. 143)
- 14 (13) PME rounded, all eyes bordered by a narrow black band. Central part of carapace narrow. 7. *Talanites* (p. 144)

7.13.1 *Gnaphosa* Latreille, 1804⁴⁴

Note: *Gnaphosa bicolor* and *G. muscorum* are not keyed.

Key to species

- 1 (8) Males. 2
- 2 (3) Tip of male palpus tibia apophysis elongated in two parts, with a few cut-out areas in between. Body length 8–10.5 mm. 1. *G. taurica* (p. 131)
- 3 (2) Tip of male palpus tibia apophysis with simple point, without additional parts and cut-outs (Fig. 135, 136). 4
- 4 (7) Male palpus tibia apophysis hook-like (Fig. 137). 5

⁴⁴Mcheidze (1997) also lists the synonym *Pythonissa* C. L. Koch, 1837.

- 5 (6) Tibia I with 1 apical and 1 submedial spine. The inner lamella of the bulbus with 2–3 small teeth (Fig. 137). Sternum of black color. Body length 10.5–13 mm. 4. *G. lucifuga* (p. 133)
- 6 (5) Tibia I without spines. Inner bulbus lamella with only one faintly recognizable tooth. 7
- 7 (4) Tibia apophysis straight (Fig. 138). Palpus tip like Fig. 132⁴⁵. Apical bulbus apophysis diagonally cut off at the tip. Carapace dark, brownish red. Body length 10 mm. 3. *G. lugubris* (p. 133)
- 8 (1) Females. 9
- 9 (16) Tibia III with one bristle. 10
- 10 (13) Posterior part of epigynal opening raised. 11
- 11 (12) Epigyne like Fig. 139. Body length 11–12 mm.
. 1. *G. taurica* (p. 131)
- 12 (11) Epigyne like Fig. 141. Body length 7 mm.
. 2. *G. caucasica* (p. 132)
- 13 (10) Posterior part of epigynal opening not raised. 14
- 14 (15) Epigynal opening covered by a dense chitinous lamella; its basis separated below the scapus (Fig. 142). Carapace edges with a black fringe. PME separated from each other at a distance almost equal to the eye radius. Body length 11–11.5 mm. 3. *G. lugubris* (p. 133)
- 15 (14) Epigynal opening not covered by a lamella. Carapace brown, without black fringe. PME separated from each other at a distance shorter than the eye radius. 16
- 16 (9) Tibia III without dorsal bristle. Clypeus width well exceeding the ALE diameter. Body length 13–16 mm. 4. *G. lucifuga* (p. 133)

1. *Gnaphosa taurica* Thorell, 1875

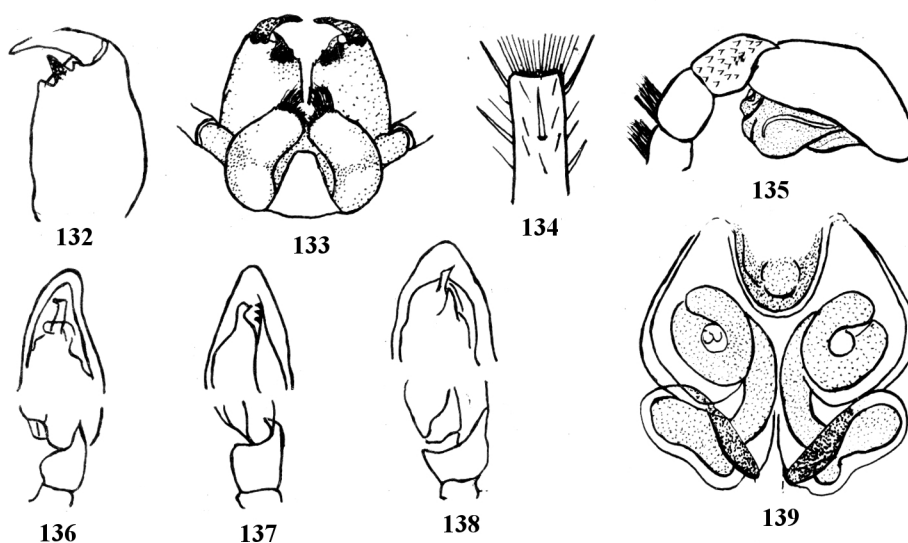
Description: Female carapace length 4 mm, width 3 mm; male carapace length 5 mm, width 3.5 mm. Female abdomen length 5.5 mm, width 3 mm. The carapace furrow is thin and long; its edge thick and dark brown. The sternum is dark brown. The AER is strongly curved. The AME are markedly smaller than ALE; the PME are rounded and triangular. The chelicere bases are strongly bulged.

The male bulbus is large and strongly bloated; its edge is armed with dark teeth. The femur of all legs is armed with dorsal spines. Tarsus I and partially the metatarsus bear a scopula.

The black dorsum bears scattered long black setae. The posterior part of the black venter bears brown spots in the center. Epigyne like Fig. 139.

Habitat: In grass, under rocks and on forest edges.

⁴⁵Sic Mcheidze (1997).



Figs. 132–139. **Gnaphosidae, *Gnaphosa*, *Zelotes*.** *Gnaphosa* sp.: 132 – chelicere; 133 – mouth parts. *Zelotes* sp.: 134 – tarsus of leg III. *G. bicolor*: 135 – palpus. *G. muscorum*: 136 – palpus. *G. lucifuga*: 137 – palpus. *G. lugubris*: 138 – palpus. *G. taurica*: 139 – epigyne.

Distribution: Southern palearctic part of the former USSR (southern Ukraine, Rostov region, Kazakhstan, Central Asia, Balkans). **In Georgia:** Tusheti, Bakuriani (alpine zone of Nine-Springs Pass) (Mcheidze 1938, 1940, 1973). First record for the Transcaucasus.

Taxonomy: Platnick (2013): *Gnaphosa taurica* Thorell, 1875. In Mcheidze (1997) author with brackets.

2. *Gnaphosa caucasica* Mcheidze, 1997

Description Female: Carapace length 3.1 mm, width 2.4 mm; abdomen length 3.8 mm, width 2.6 mm. The carapace is reddish brown, gray, with blackish markings; at its borders with flat blade-like marks and radial lines, which terminate in three pairs of broadened, yellowish cell-like marks. Its fringe is black.

The AER is weakly curved backwards; the PER is curved stronger. The distance between the AME is larger than between the ME and LE (Fig. 140). Chelicere, coxa, palpus, labium and sternum are of the same color as the carapace. The sternum is imprinted with a long light band; its lateral part is darker and in front of the edge it bears blackish marks.

The legs are orange-brown; the femur is somewhat light, the remaining segments yellow. The distal half of the patella bears triangular marks. A

smoke-colored band is recognizable in the proximal and distal parts of the tibia.

Leg armament: Femur I and II 1.1d, 1a spine. Femur III 1.1d, 1.1ad, 1.1pd. Femur IV 1.1d, 1p spine. Tibia I and II at the tip with 1av spine. Tibia III 1.1v, in the basal half with 1a (near the center), 1.1av, 2.2.2v, 1.1p, 1pv spine. Tibia IV 2.2.2v, 1.1av, 2.1.1p spines. Metatarsus I and II with 2av (long) spines, with scopula. Metatarsus III and IV without scopula.

The blackish gray abdomen bears three longitudinal pairs of deeply imprinted spots, in the posterior half with six pairs of diagonal lines. The abdominal markings are brown-yellow and are not sharply developed (Fig. 140). The venter is yellowish and bordered by two lines. Epigyne like Fig. 141.

This species stands close to *Gnaphosa bicolor* (Hahn, 1831)⁴⁶ and *Gnaphosa modestior* Kulczyński, 1897. It is especially close to the second species but differs from it in the structure of the epigyne.

Habitat: In forests under rocks.

Material: Lagodekhi Reserve (Matsimi Valley), 2 ♀, 1939. The male is unknown.

Taxonomy: Platnick (2013): *Gnaphosa mcheidzeae* Mikhailov, 1998.

3. *Gnaphosa lugubris* (C. L. Koch, 1839)

Description: Carapace length 10–11 mm, male 4–4.6 mm, width 3–3.5 mm.

♀ The brown-red carapace is considerably bulged, its anterior part comparatively narrowed. The edges are thin, in the center with an almost serrate long band. The AE form a curved line; the distance between the ME is almost equal to their diameter. The PLE are of the same size as the AE. The legs are brownish red; tarsi I, II and IV bear thick scopulae.

The abdomen bears blackish brown setae (Fig. 143). The epigynal plate is oval and longer than wide (Fig. 142).

♂ The male palpus bears several rough spines. Tibia and patella IV are somewhat shorter than the carapace.

Habitat: Under rocks on hills in habitats with short grass.

Distribution: Europe, Turkey. In the former USSR: Belgorod region, Kazakhstan, Siberia, Transcaucasus. **In Georgia:** Gagra, Zugdidi (Simon 1899), Tusheti, Bakuriani, Zhinvali (Mcheidze 1938, 1940, 1965).

Taxonomy: Platnick (2013): *Gnaphosa lugubris* (C. L. Koch, 1839).

4. *Gnaphosa lucifuga* (Walckenaer, 1802)

Description: Female body length 12–15 mm, male 10–13 mm.

⁴⁶Sic Mcheidze (1997), lapsus.

♀ Habitus like Fig. 144. The carapace is more or less dark, brown-red, sometimes black and distinctly bulged. The edges are black, almost vertical, wide and flat.

The AE are arranged as a curved line; the distance between the ME is equal to their diameter. The LE are large, oval and arranged diagonally. The AME are of the the same size as the ALE. The legs are very dark brown-red; tarsus and metatarsus I and II bear dense scopulae.

The black abdomen bears short setae, gray-black, with silky coloration. The epigastric area on the venter is of light color. A large opening is imprinted into the granulated epigynal plate.

♂ Patella and tibia IV of the male are somewhat shorter than the carapace. The palpus femur bears several long coarse setae. The patella is narrower than the tibia. The bulbus is elongated, its inner spade-like structure is brown-red and ends in a thin pointed needle on the ventral side. The central part of the bulbus is filmy white (Fig. 137).

Habitat: These spiders live under rocks on hills, where they weave a very large irregular web of transparent light blue threads. Often they make use of natural hollows in the soil or some kind of animal cave. Sometimes they dig a shallow hollow themselves. The egg sac measures nearly 1–2 cm in diameter. The cocoon is suspended in a vertical retreat.

Distribution: Turkey, India, with a wide distribution in the European part of the former USSR up to the regions of St. Petersburg and Arkhangelsk. **In Georgia:** Tusheti, Bakuriani (Nine-Springs Pass), Bakhmaro, Khulo, Upper Ratsha (Tshiora) (Mcheidze 1938, 1940, 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Gnaphosa lucifuga* (Walckenaer, 1802).

5. *Gnaphosa muscorum* (L. Koch, 1866)

Description: Female carapace length 6.4 mm, width 4.7 mm; abdomen length 9 mm, width 5 mm. Male carapace length 5 mm, width 3.8 mm.

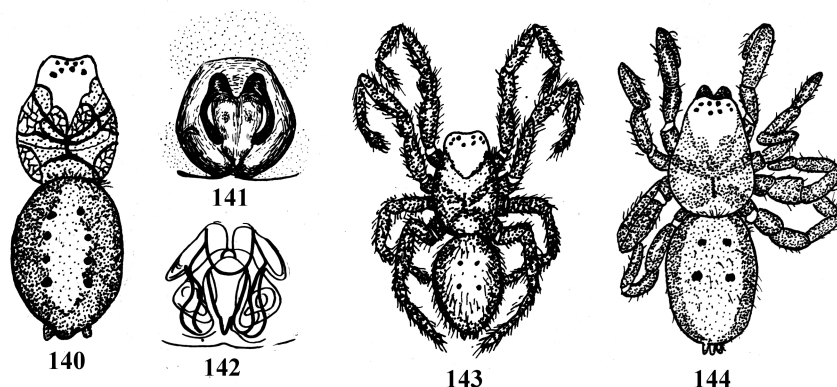
♀ The carapace is dark brown, somewhat reddish and has an almost flat ventral side. The band on the edge is of average length. The setae are light brown and reddish. The AE are uniform and arranged in a curved line. The legs are brown-red, sometimes dark; tarsi and metatarsi I and II bear dense scopulae. Patella and tibia IV are of the same length as the carapace:

The black abdomen bears light-brown setae. The epigynal plate is oval (longer than wide).

♂ The palpus femur bears several coarse setae. Palpus like Fig. 136; its patella is somewhat narrower than the tibia.

Habitat: Under rocks, in coniferous and deciduous forests in the field layer in grass.

Distribution: USA, Europe, furthermore in the former USSR: Kola Peninsula, Moscow region, Urals, western and eastern Siberia. **In Georgia:** Bor-



Figs. 140–144. **Gnaphosidae, *Gnaphosa***. *G. caucasica*: 140 – habitus, 141 – epigyne. *G. lugubris*: 142 – epigyne; 143 – habitus. *G. lucifuga*: 144 – female habitus.

jomi valley, Bakuriani (Mcheidze 1960). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Gnaphosa muscorum* (L. Koch, 1866). In Mcheidze (1997) sic: '(C. L. Koch, 1866)', lapsus.

6. *Gnaphosa bicolor* (Hahn, 1831)

Description: Female carapace length 8.2–8.5 mm; male 3.4 mm, width 2.7 mm. Body length 8 mm.

♀ The black carapace is raised significantly and bears a band all around the edge. The AE form a strongly curved line. The LE are large, oval and arranged diagonally. Tarsus and femur are of light brown color; the remaining segments are blackish. Scopula on tarsi I and II are somewhat condensed. Patella and tibia IV are shorter than the carapace.

The black abdomen bears gray-brown setae. The epigynal plate is triangular, wider than long and with parallel edges.

♂ Palpus femur and tip of the patella bear a bunch of thorn-like spines. Tibia and patella are equal in width. Palpus like Fig. 135.

Habitat: On forest edges, under rocks, in mosses, in low grass.

Distribution: Regions of Moscow, Perm, Chuvashia. **In Georgia:** Khulo (Tago, 1600 m a.s.l.) (Mcheidze 1974). First record in the Caucasus.

Taxonomy: Platnick (2013): *Gnaphosa bicolor* (Hahn, 1833)⁴⁷.

⁴⁷In Mcheidze (1997) sic: '(Hahn, 1831)', lapsus.

7.13.2 *Drassodes* Westring, 1851

Key to species⁴⁸

- 1 (5) Males. **2**
- 2 (3) Inner edge of cheliceral furrow (below the fang) with a lamella-like apophysis, bearing three teeth (Fig. 145). Body length 7 mm. 1. *D. pubescens* (p. 136)
- 3 (2) Inner edge of cheliceral furrow at its base without teeth (Fig. 146). Body length 10–11 mm. 2. *D. villosus* (p. 136)
- 4 (5) Inner edge of cheliceral furrow without apophysis but with one tooth below the claw (Fig. 147). 3. *D. lapidosus* (p. 137)
Inner edge of cheliceral furrow like Fig. 148.
. *D. lapidosus macer* (p. 138)
- 5 (1) Females. **6**
- 6 (7) Sides of epigynal opening (at the median lamella) with two rounded, chitinized protuberances (Fig. 149). Body size 10–12 mm. 3. *D. lapidosus* (p. 137)
- 7 (6) Epigynal opening without such protuberances (Fig. 152). AME larger than LE. Body length 6.5–7.5 mm. 2. *D. villosus* (p. 136)
- 8 (9) Epigyne like Fig. 154. All AME of the same size⁴⁹. Body length 12–13 mm. 1. *D. pubescens* (p. 136)
- 9 (8) All AE of the same size. 4. *D. albicans* (p. 138)

1. *Drassodes pubescens* (Thorell, 1856)

Description: Female body length 8.5 mm, male 7 mm. The carapace is reddish-yellow. The yellow sternum bears a brown fringe. The abdomen of the female is gray-yellow, in the male dark gray. The legs are yellow. Epigyne like Fig. 154. Male palpus like Fig. 155.

Habitat: In mountainous places on the ground, often under rocks.

Distribution: Europe, Anatolia. In the former USSR in the Ukraine, southern Urals, western Siberia. **In Georgia:** Kodzori, Kazbegi (Sioni), Georgian Military Highway, Keda (Mcheidze, 1939–1940). First record in the Transcaucasus.

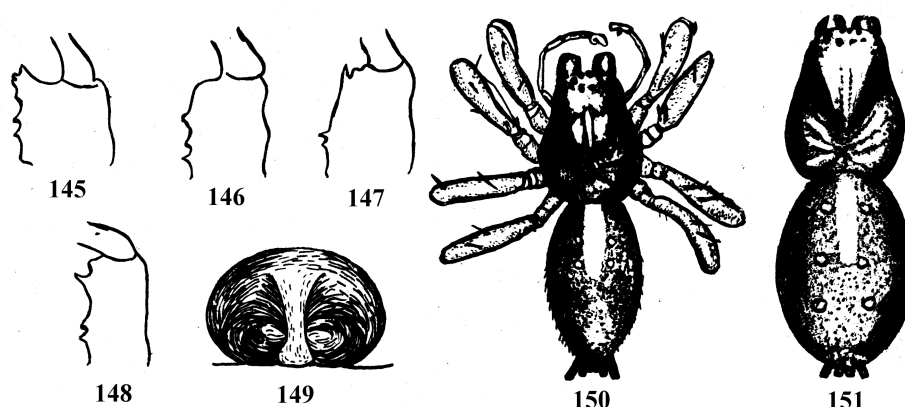
Taxonomy: Platnick (2013): *Drassodes pubescens* (Thorell, 1856).

2. *Drassodes villosus* (Thorell, 1856)

Description: Female body length 11–12 mm, male 10 mm. The carapace is yellowish red. The sternum is light brown. The legs are reddish yellow,

⁴⁸There is no thread to the males of *Drassodes albicans* nor to instance eight.

⁴⁹Sic Mcheidze (1997).



Figs. 145–151. **Gnaphosidae, *Drassodes* (in part.)**. *D. pubescens*: 145 – chelicere. *D. villosus*: 146 – chelicere. *D. lapidosus*: 147 – chelicere. *D. lapidosus macer*: 148 – chelicere. *D. lapidosus*: 149 – epigyne, 150 – male habitus; 151 – female habitus.

with brown tarsi. The yellowish gray abdomen is covered with brown setae. Epigyne like Fig. 152.

Habitat: In grass, under rocks, rock crevices (common in mountainous places).

Distribution: Central Europe, Switzerland, Norway. In the former USSR: In the center of the European part, Turkmenistan, Himalayas, western Siberia.

In Georgia: Khulo-Agara-Zendidi, Megrelia (Mcheidze 1968, 1979). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Drassodes villosus* (Thorell, 1856).

3. *Drassodes lapidosus* (Walckenaer, 1802)

Description: Female carapace length 5–6 mm, width 3.5–4 mm; abdomen length 7–8 mm, width 4.5–5 mm. Male carapace length 4.5–5 mm, width 4 mm.

♀ Habitus like Fig. 151. The anterior part of the brown-yellow carapace is darker; it is bordered all around with a black band. The AE are uniform in size and form a recurved line. The PME are somewhat smaller than the AE. The chelicerae are brownish-red. The strongly deepened sternum is brown red with a dark black edge. The legs are brown red.

The gray-brown dorsum is covered with setae. The epigynal plate is semi-circular (Fig. 149).

♂ Habitus like Fig. 150. The anterior part of the carapace is strongly darkened. The chelicerae are thick and long, directed forward and armed with one large and two small teeth. The palpus is very thin and weakly curved. The bulbus is of simple structure.

Habitat: In mountainous places, on the forest floor, under rocks, in grass.

Distribution: Palearctic (except Japan), furthermore, this species is recorded from Mongolia (1450–1500 m a.s.l.). In the European part of the former USSR. **In Georgia:** Tbilisi (Kulczyński 1895), Batumi (Simon 1899), Tbilisi, Gori (Medzhvriskhevi), Bakuriani (Baniskhevi), Kazbegi (Devdorak Glacier, 2400 m a.s.l.), Barisakho, Bakhmaro, Batumi, Shovi (Mcheidze 1939–1941, 1964, 1973).

Taxonomy: Platnick (2013): *Drassodes lapidosus* (Walckenaer, 1802).

3a. *Drassodes lapidosus macer* (Thorell, 1875)

Description: Male carapace length 3 mm, width 2.5 mm; abdomen length 4.5 mm, width 2 mm. The carapace is yellow; the extremities are brownish and armed with spines. The dark yellow abdomen is completely covered with black setae; the spinnerets are long.

Habitat: Under rocks in places with short grass.

Distribution: Crimea. **In Georgia:** Tusheti (Tshigho), Kazbegi (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): Synonymous with either *D. cupreus* (Blackwall, 1834) or *D. lapidosus* (Walckenaer, 1802).

4. *Drassodes albicans* (Simon, 1878)

Description: Female carapace length 5.8 mm, width 3.7 mm; abdomen length 10 mm, width 5 mm. The anterior part of the light brown to red carapace is weakly darkened and lacking a marginal black line. The AE are of similar size; The AER is weakly curved backwards. The chelicerae are dark brown, reddish and almost flat. The brown-red sternum bears a black edge, which is curved inwards.

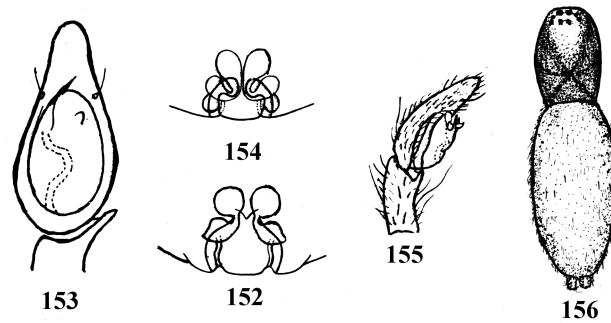
The extremities are brown-shingle-colored. Patella and tibia IV are barely longer than the carapace. Tibiae I and II bear two pairs of long ventral spines. Tarsi I and II bear one pair of spines at their bases. Tibia IV has two pairs of dorsal spines; the tarsus bears scopulae.

The brown-gray abdomen has a silky shining and patches of white nacreous setae (Fig. 156). The epigyne has a black opening, which is 2x broader than long. Each half of the epigynal opening is filled with a broad black appendage.

Habitat: Under rocks, in places with low grasses and woody areas.

Distribution: French and Swiss Alps. **In Georgia:** Lagodekhi Reserve, Lake Khala-Kheri (Mcheidze 1940).

Taxonomy: Platnick (2013): *Drassodes albicans* (Simon, 1878). Mcheidze (1997) also lists the Synonym *Drassus albicans* (Simon, 1878).



Figs. 152–156. **Gnaphosidae, *Drassodes* (in part.)**. *D. villosus*: 152 – epigyne; 153 – palpus. *D. pubescens*: 154 – epigyne; 155 – palpus; *D. albicans*: 156 – habitus.

7.13.3 *Haplodrassus* Chamberlin, 1922

1. *Haplodrassus signifer* (C. L. Koch, 1839)

Description: Female body length 8 mm, male 6.2 mm.

♀ The carapace is often bulged and bears a broad clypeus. The triangular AE almost touch each other. The chelicerae are thick and bulged, their ventral side bears two thick teeth. The legs are short and thick. Tarsus IV lacks a stronger scopula.

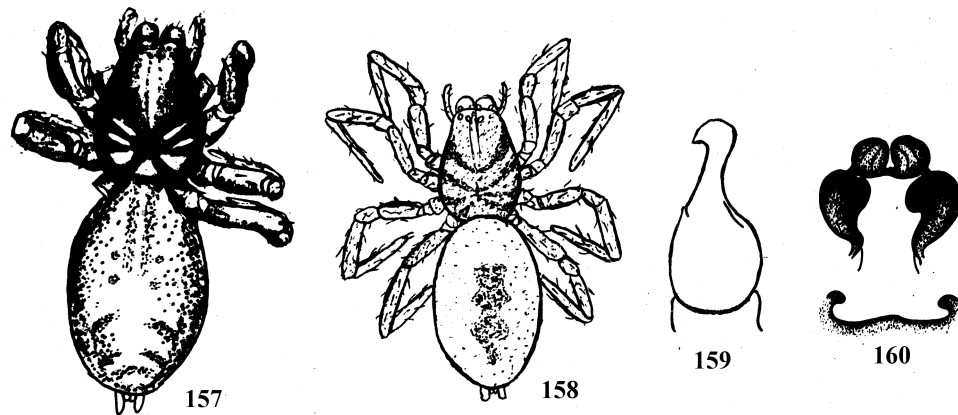
The abdomen bears uniform blackish markings (Fig. 158).

♂ Habitus like Fig. 157. The stout palpus is as long as wide; its outer apophysis is sickle-shaped (Fig. 159). Epigyne like Fig. 160.

Ecology: In woody places, in mosses, under rocks, in grass. These spiders do not construct a web but instead dig a straight shallow hollow, the entrance to which is closed by a fine web. The egg sac is lentiform and woven with white silk, which is simple and durable. The female keeps the egg sac between its legs.

Distribution: Europe, Western Asia, Mongolia, Greenland. In the European part of the former USSR. **In Georgia:** Tusheti (Tshigho), Upper Alvani, Bakuriani (Nine-Springs Pass), Adigeni (Mcheidze 1940–1970). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Haplodrassus signifer* (C. L. Koch, 1839).



Figs. 157-160. **Gnaphosidae**, *Haplodrassus signifer*. 157 – male habitus; 158 – female habitus; 159 – male palpus lamella; 160 – epigyne.

7.13.4 *Zelotes* Gistel, 1848⁵⁰

Key to species

- | | | |
|---------|--|------------------------------------|
| 1 (8) | Males. | 2 |
| 2 (3) | Metatarsus I with two pairs of spines. Distal palpus part like Fig. 162. Body length 3–4.5 mm. | 1. <i>Z. caucasius</i> (p. 141) |
| 3 (2) | Tarsus ⁵¹ I without spines. | 4 |
| 4 (5) | Bulbus tip with a blunt hook-like appendage. | 2. <i>Z. erebeus</i> (p. 141) |
| 5 (4) | Bulbus tip without such appendage. | 6 |
| 6 (7) | Embolus separate in the central bulbus part (Fig. 164). Body length 6 mm. | 3. <i>Z. serotinus</i> (p. 142) |
| 7 (6) | Upper embolus part thin and long, almost reaching the cymbium tip (Fig. 169). Body length 5.5 mm. | 4. <i>Z. subterraneus</i> (p. 142) |
| 8 (1) | Females. | 9 |
| 9 (10) | Anterior epigyne part formed like a semicircular furrow, separated to the sides and behind its protuberance (Fig. 169). Body length 5.5–6 mm. | 1. <i>Z. caucasius</i> (p. 141) |
| 10 (9) | Epigyne not like this. | 11 |
| 11 (12) | Epigyne with a linear opening, its posterior edge clearly separated (Fig. 166). | 3. <i>Z. serotinus</i> (p. 142) |
| 12 (11) | Posterior epigyne edge not separated. | 13 |

⁵⁰Mcheidze (1997) also cites as a synonyms *Melanophora* C. L. Koch, 1833 and *Prosthesima* L. Koch, 1872.

⁵¹Sic Mcheidze (1997).

- 13 (14) Anterior part of median epigynal plate wide (Fig. 167). Body length 7.7 mm. 2. *Z. erebeus* (p. 141)
- 14 (13) Anterior part of median epigynal plate wide but with a very different posterior part (Fig. 168). Body length 6–6.5 mm. 4. *Z. subterraneus* (p. 142)

1. *Zelotes caucasius* (L. Koch, 1866)

Description: Male body length 3–4.5 mm. The anterior part of the carapace is narrowed; its posterior part is short, raised, shining, simple and sparsely covered with setae. A row of long, backwards directed spines is situated between the central line of the cephalic region and the median band. The median band is situated in front of the posterior slope.

The sides of the yellow to brownish carapace bear a thin black line. The sternum is brownish-yellow, oval, bears a dark fringe, and is somewhat bulged and shining; its posterior part is fringed with sparse setae. Setae near the edges are thick.

The AER is strongly curved; the ME sit on a small round protuberance. The LE are oval. The PME are significantly larger than the other eyes. The legs are covered with brown setae and have no scopulae.

The abdomen is long with a steep anterior part and sides of equal width; its hind end is weakly pointed, of silky shining and densely covered with setae. The anterior spinnerets are cylindrical and long. The abdomen is unicolored blackish to gray (Fig. 161). Epigyne like Fig. 163. Palpus like Fig. 162.

Habitat: Under rocks, in places with low grass.

Distribution: Eastern Europe, Hungary, France, Damascus. In the former USSR: Rostov region, Crimea, Transcaucasus. **In Georgia:** Gagra (Simon 1899), Batumi (Botanical Garden), Makhindzhauri (Mcheidze 1953).

Taxonomy: Platnick (2013): *Zelotes caucasius* (L. Koch, 1866). In Mcheidze (1997) sic: 'Zelofes caucasius', lapsus.

2. *Zelotes erebeus* (Thorell, 1871)

Description: Female carapace length 3.5 mm, width 2.6 mm; abdomen length 3 mm, width 2 mm. The black carapace has a uniformly shagreen surface. The AE form a curved line. The shining sternum is black and small, with fine, black pubescent setae. The legs are black; the scopulae on tarsi I and II almost reach the base.

The black abdomen bears brown setae. The large epigynal plate is longer than wide (Fig. 167)

Habitat: Under rocks, in grass.

Distribution: Central Europe, Khosta (Spassky, 1937). **In Georgia:** Sukhumi (Eshera) (Mcheidze 1953). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Zelotes erebeus* (Thorell, 1871).

3. *Zelotes serotinus* (L. Koch, 1866)

Description: Female body length 7.5–8.5 mm, male 6 mm. The carapace is black. The legs are dark brown with light-colored tarsi. In posterior view femur I bears a yellow mark.

The black abdomen bears coarse, black setae (Fig. 165). Epigyne like Fig. 166. Apical male palpus tip like Fig. 164 a; palpus like Fig. 164.

Habitat: Forest species, in mosses, on the ground, under rocks.

Distribution: Germany, France, Belgium, Netherlands, England. in the former USSR: Northern Caucasus (Kislovodsk), southern Urals, Turkmenistan. **In Georgia:** Tbilisi (Botanical Garden), Gori, Vardzia (Aspindza), Lagodekhi (Mcheidze 1946, 1947). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Zelotes longipes* (L. Koch, 1866). Mcheidze (1997) also lists (sic) '*Z. tridenticus* (Canestr., 1876)', which is an incorrect citation of *Prosthesima tridentina* Canestrini, 1876.

4. *Zelotes subterraneus* (C. L. Koch, 1833)

Description: Female body length 6.5–8 mm, male 5.5–6 mm.

♀ The black carapace is simple and shining, its dorsal side somewhat shagreen. The small black sternum bears black silky setae. The legs are blackish. The abdomen is black with silky color. The epigynal plate is hardly longer than wide (Fig. 168).

♂ The low carapace is covered with dark gray setae. Palpus like Fig. 169.

Ecology: On forest edges under rocks or in the soil, in mosses. Sometimes in the high mountains. They make their retreat with light transparent webbing. The egg sac is made of very thin parchment; initially it is white but under the influence of air it becomes pink or red.

Distribution: Western Europe, Canada, USA. Everywhere in the European part of the former USSR, Siberia, Kamchatka. **In Georgia:** Lagodekhi, Borjomi (Akhaldaba) (Mcheidze 1961). First record in the Transcaucasus.

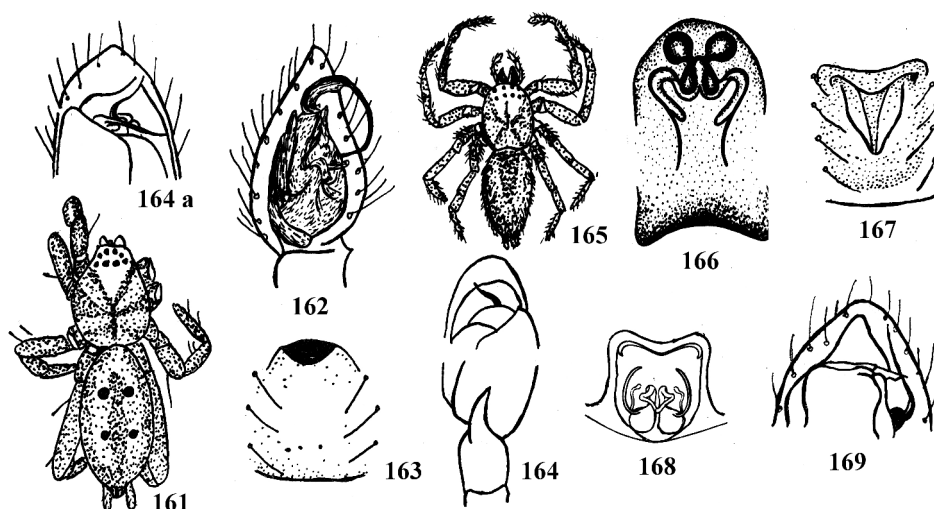
Taxonomy: Platnick (2013): *Zelotes subterraneus* (C. L. Koch, 1833).

7.13.5 *Scotophaeus* Simon, 1893

1. *Scotophaeus scutulatus* (L. Koch, 1866)

Description: Female carapace length 5.6 mm, width 4.1 mm; abdomen length 8 mm, width 5 mm. Male carapace length 5 mm, width 3.6 mm.

♀ The carapace is somewhat bulged; its posterior part is wide, its anterior part is very narrow. The clypeus is rather low, brown-red, shining and covered with short brown-whitish setae. The AER is almost straight,



Figs. 161-169. **Gnaphosidae, Zelotes.** *Z. caucasius*: 161 – habitus; 162 – tip of male palp; 163 – epigyne. *Z. serotinus*: 164, 164 a – male palp; 165 – habitus; 166 – epigyne. *Z. erebeus*: 167 – epigyne. *Z. subterraneus*: 168 – epigyne; 169 – tip of male palp.

with approximated eyes. The PER is curved, with clearly smaller and more separated eyes compared to the AER. The LE are large.

The sternum is brown-red, dull and weakly shagreen. The legs are short and thick. Tarsus IV and metatarsi I and II bear scopulae.

The gray dorsum of the oval abdomen is covered with blackish satin setae (Fig. 170). The epigynal plate is brown.

♂ The dorsum is shining, brown-red and without setae.

Habitat: Under rocks, in crevices of walls of buildings as well as in apartments.

Distribution: Rostov region, Crimea and beyond the Carpathian Mountains, Mikhailovski Pass west of Sukhumi (Spassky 1937). **In Georgia:** Baghdati, Rokiti (Mcheidze 1966).

Taxonomy: Platnick (2013): *Scotophaeus scutulatus* (L. Koch, 1866). In Mcheidze (1997) sic: 'Scotophaeus Acutularis', lapsi.

7.13.6 *Phaeoedus* Simon, 1893

1. *Phaeoedus braccatus* (L. Koch, 1866)

Description: Female body length 6–6.5 mm, male 4–5.5 mm. The carapace is dark brown. The sternum is brown-yellow with darkened edges. The light brown abdomen bears three pairs of oval, white marks (Fig. 171). Male palpus like Fig. 172.

Habitat: On the ground, hidden under rocks, in mosses, in grass. Often in saline soil. Steppe species.

Distribution: Widely distributed in western European countries (Germany, Hungary, England). In the former USSR: Crimea, Southern Urals, Belgorod region. **In Georgia:** Telavi, Akhaltsikhe, Adigeni, Tsemi (Borjomi), Kodzhori, Mestia (Mcheidze 1938–1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Phaeocedus braccatus* (L. Koch, 1866).

7.13.7 *Talanites* Simon, 1893

1. *Talanites atcharica* Mcheidze, 1946

Description: Female carapace length 3 mm, width 2 mm; abdomen length 4.5 mm, width 2.3 mm. The carapace is yellow, weakly bulged upwards and wider in the median part as well as with a reddish-brown furrow. The eyes are arranged in two rows. The PER is curved backwards. The dark yellow sternum is bordered by a curved band and short black setae. The chelicerae are yellow and bear 2–3 teeth on the edge of the furrow.

The elongated abdomen is oval; the dorsum bears small black marks in the form of six transversal bands below the center, near the end. Its anterior half bears four dots. The anterior part of the abdomen bears long black setae near the place of attachment to the carapace (Fig. 173). The spinnerets of the second anterior row are longer than the others. The orange–yellow epigyne is almost hexagonal (Fig. 174).

Habitat: In grass below rocks, in scrubs.

Distribution: Batumi (Botanical Garden) (Mcheidze). Georgian endemic species.

Taxonomy: Platnick (2013): *Talanites atcharicus* Mcheidze, 1946.⁵²

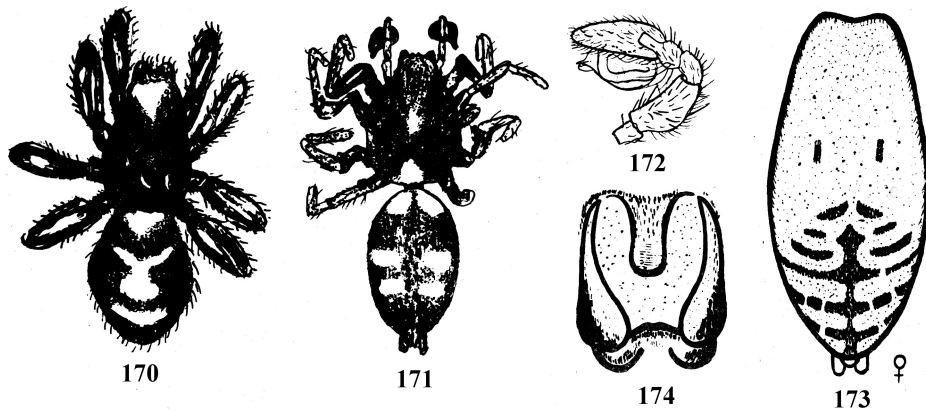
7.14 Anyphaenidae

The anterior part of the oval carapace is broadened and blunt, with a median furrow. The eight eyes are arranged in two rows. The eyes in the PER are of uniform size; the ME form a rectangle. The chelicerae are vertical; the inner edge of the cheliceral furrow bears 3–5 teeth. The labium is elongated; the gnathocoxae are long and narrow. The bases of tarsus and metatarsus bear a scopula; the tarsus bears two claws. Tibia I and II each bear 2–3 ventral spines.

The elongated abdomen bears dorsal markings. They breathe with lungs and trachea, which are situated in the center of the venter. Anyphaenid spiders have no colulus.

These spiders live on trees and scrubs. They hunt at night and spend the day in retreats in coiled up leaves, which are tied up with silk. At the end

⁵²In Mcheidze (1997) sic: '*Talanites* (?) *atcharica* Mcheidze. 1946', lapsi.



Figs. 170-174. Gnaphosidae, *Scotophaeus*, *Phaeocedus*, *Talanites*. *S. scutulatus*: 170 – habitus. *P. braccatus*: 171 – habitus; 172 – palpus. *T. atscharica*: 173 – abdomen; 174 – epigyne.

of spring and at the begin of summer, the females stay in this retreat with their egg sacs. There is a total of 260 known species, the majority of which are distributed in South America. In the former USSR and in Georgia there is one genus with two species.

7.14.1 *Anyphaena* Sundevall, 1833

Key to species

- 1 (2) ♂ Basal half of palpus femur armed with ventral spines. Legs II longer than legs IV.
 ♀ AME smaller than ALE. AER developed as a straight line. Epigynal opening longer than wide. Body length 6–8 mm. 1. *A. accentuata* (p. 146)
- 2 (1) ♂ Basal half of palpus femur without ventral spines. Legs II shorter than legs IV. Body length 5.5–6.5 mm.
 ♀ AME not smaller than ALE. AER developed as a weakly curved line. Epigynal opening not longer than wide. Body length 7–9 mm. 2. *A. sabina* (p. 146)

1. *Anyphaena accentuata* (Walckenaer, 1802)

Description: ♀ Carapace length 2.9 mm, width 2.2 mm; abdomen length 5.5 mm, width 4 mm. The brown or reddish shingle-colored carapace is covered with shining white setae. The area between the eyes is darkened. Two broad lateral bands bear strong, broken, diagonal lines. Sometimes a single marginal line is developed. The sternum is dark brown, sometimes black. The dark shingle-colored legs bear numerous brown rings, which are well visible in the apical part of femora I and II.

The gray-brown, shingle-colored abdomen is laterally bordered by brown setae, which stand denser in the posterior part. A dark mark is visible in the center. The venter is shingle-colored in the small epigastric part. The epigynal plate is black.

♂ The coloration of the male is similar to the coloration of the female (Fig. 175). The palpus femur is covered with ventral and lateral black setae, which are very thick and similar to spines, very long and basally forming a brush. The tibia is long and bears a thin dorsal band of spine-like black setae. The apophysis on the outer tip of the tibia is armed with a black lamella-like appendage with a hook-like tip. Its ventral side, on the other hand, bears a rounded lamella.

Habitat: In forests on trees and scrubs. They can be caught especially in coniferous and broad-leaved (oak) forests. They make their retreat in coiled-up leaves and run about very fast (like philodromids) preying on insects.

Distribution: In the European part of the former USSR except the extreme North. **In Georgia:** Sukhumi (Mikhailovski Pass) (Spassky 1937), Lagodekhi Reserve, valley of the river Matsimi, Batumi, Poti (Mcheidze 1939–1941).

Taxonomy: Platnick (2013): *Anyphaena accentuata* (Walckenaer, 1802).

2. *Anyphaena sabina* L. Koch, 1866

Description: ♀ The AME are not smaller than the ALE. All eyes of the AER are arranged in a somewhat curved line. The epigyne is not longer (0.5–0.65 mm) than wide (0.7–0.9 mm).

Habitat: In grass, scrubs or on woody plants.

Distribution: Southern Europe, Transcaucasus. **In Georgia:** Batumi (Simon 1899).

Taxonomy: Platnick (2013): *Anyphaena sabina* L. Koch, 1866.

7.15 Sparassidae

7.15.1 *Micrommata* Latreille, 1804

The carapace is as long as wide, flattened, with a well-developed median furrow as well as radial furrows. The cephalic region bears eight separate,

almost equal-sized day-eyes, which are arranged in two broad rows. The chelicerae are thick; the edge of the cheliceral furrow is armed with thick teeth. The labium is as long as wide. The anterior part of the long gnathocoxae is constricted; its edge bears thick setae of the scopula-type. The broad sternum is round or heart-shaped.

The legs are long and thick; their lateral extension is similar to thomisids. Tarsus and metatarsus are apically armed with a scopula. The apical part of the metatarsus usually bears a trilobate membrane. The tarsus bears two claws; the tarsus of the female ends with fine claws.

The anterior band of the elongated oval abdomen is cut off. The abdomen surface bears dark spots. The anterior of the six spinnerets are approximated. A colulus is not developed. The epigynal plate is solid. The sexual dimorphism is not well expressed in coloration nor body size.

These spiders do not construct a web to catch prey but instead jump on it using the anterior legs. During the reproductive season the female makes a retreat of coiled-up leaves, which are bound with silk. Within it the female guards the egg sacs containing the yellowish-greenish eggs. Leaving the retreat, the female carries the eggs about with its chelicerae.

About 1100 species are known in this family. They are distributed in the tropics and several species can be found in temperate zones: in the former USSR four species and in Georgia one genus with one species: *Micrommata roseum* (Clerck, 1757), which moves quite a bit northwards.

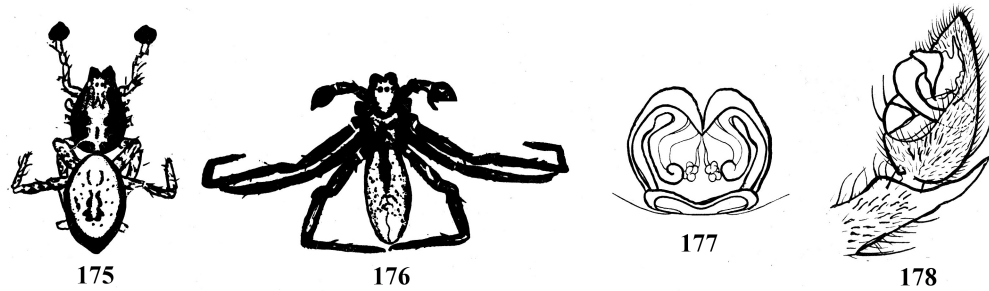
1. *Micrommata roseum* (Clerck, 1757)

Description: Female body length 10–12 mm, male 9–11 mm. The entire body is light green and elongated. The abdomen of the female is dark green in its anterior half; in the male it is light yellow with longitudinal yellow bands (Fig. 176). The epigynal plate is black (Fig. 177). Male palpus like Fig. 178.

Habitat: Fields with sparse grass vegetation, scrubs, forest edges, on vine leaves and grapes. Usually the spider is in the retreat, which is made of the coiled-up leaves of several plants.

Distribution: Palearctic (except North Africa and Japan). In the former USSR: European part and western Siberia. **In Georgia:** Tsebelda (Simon 1899), Sukhumi (Spassky 1937), Batumi (Botanical Garden), Baghdati (Sakraula), Gori, Igoeti, Tbilisi (near Lake Kus), Kodzhori, Manglisi (Mcheidze 1950–1965).

Taxonomy: Platnick (2013): *Micrommata virescens* (Clerck, 1757). Mcheidze (1997) also lists the synonyms *Micrommata virescens* (Clerck, 1757) and *Micrommata viridissima* (De Geer, 1778).



Figs. 175-178. Anyphaenidae, *Anyphaena*, Sparassidae, *Micrommata*. *A. accentuata*: 175 – male habitus. *M. roseum*: 176 – male habitus; 177 – epigyne; 178 – palpus.

7.16 Thomisidae (incl. Philodromidae)

The carapace is short and broad; its length exceeds the width only in some genera (*Tibellus*, *Thanatus*). In the other genera, the carapace is as long as wide. It bears cut-out radial depressions; the anterior edge of the carapace is cut off or somewhat rounded. The eight day eyes are of almost uniform size and arranged in two transversal rows. The chelicerae are arranged vertically; the edge of the cheliceral furrow is without teeth or with 1-2 small teeth, and a short and thick claw. The poison gland is large. The labium is plane and elongated. The gnathocoxae are long, wide and laterally cut off at the basis. The oval sternum is heart-shaped or triangular.

The female palpus has one claw; in males it is developed as a copulatory organ formed like a bowl and bearing a comparatively simple bulbous with a long embolus. The tibia bears 1-3 appendages, in some taxa four appendages (*Oxyptila*) but *Tibellus maritimus* and *T. oblongus* lack any appendages. The legs are long and directed sideways. Legs I and II are very long. In the Philodromidae, all legs are of comparable length. The tarsus is armed with two dentate claws.

The form of the abdomen is variable, round or oval; its posterior part is round (Thomisinae), or wedge-like pointed (Philodrominae). Sometimes the abdomen is strongly elongated. Six spinnerets are situated on the venter. A colulus is developed. The body is covered with silky and thick setae. The genus *Oxyptila* is characterized by pinhead-formed spines, which cover the whole body and the sides. The coloration is strongly variable, depending on the substrate: on grasses green and on flowers taking on the flower's color.

The sexual dimorphism is well developed. During most years they have only one reproductive period (stenochronous forms), but sometimes two periods (diplochrous forms). In some species the females are eurychronous with stenochronous males (*Philodromus histrio*). The egg sac is lentiform, sometimes bright and attached to coiled-up leaves (*Xysticus*). *Philodromus*

species attach their egg sac to grass, rocks and plant stipes. The egg sac of some representatives is characterized by a scarcity of eggs (30–80).

The spiders in this family do not weave webs to catch prey; they are characterized by their vagabond lifestyle. The spiders catch their prey using the long and thick anterior extremities. They feed on aphids, flies, bark beetles, bugs, bees, sawflies and others. It is true, these spiders move slowly, but their camouflaging coloration helps them in catching prey (especially on flowers). Some acrobatically jump onto the prey.

They live in the forest steppe, on flowers, in grass, on bushes, below tree bark, below rocks, on the spikes of cereals and others. Many thomisids are eurybiontic and can be found in different types of biotopes. Some species are adapted to only one type of habitat, e. g. *Xysticus sabulosus* lives only in very dry fields with low herbaceous vegetation, *Xysticus horticola* lives below rocks in spruce forests, others dwell in artificial phytocenoses like agrobiocenoses and play an important role in the reduction of pest insects. There, they quickly establish populations on freshly prepared agricultural fields from adjoining places. This is mainly true for species of this family (Charitonov 1950).

They are widely distributed in the North and the temperate belt but are rare in the tropics. They are distributed in all regions of the former USSR from the lowlands to the snowy mountains of the Pamir and Tian Shan. A total of 1600 species is known, of which 80 are registered in the European part of the former USSR. Currently, 14 genera with 62 species are recorded in Georgia.

Within the family Thomisidae, the representatives of the genus *Xysticus*, represented with 45 species in the USSR, are of most practical significance. Only five of these species had been reported from Georgia (Ymorkun 1968). Currently, 27 species of *Xysticus* are known in Georgia (Mcheidze 1971, 1972).

Key to genera.

Note: *Xysticus tristrami* (p. 205) and *Xysticus nubilus* (p. 205) are not keyed.

- 1(6) Legs III and IV almost or indeed as long as legs I and II. Habitus like Fig. 180. Metatarsus tip with a broad thick brush. Tarsi always armed with an apical scopula. Outer edge of cheliceral furrow with a small tooth. **subfamily Philodrominae**
- 2(3) PER weakly curved (PME situated in front of posterior edge of the PLE). If PER strongly curved, then tibia I with more than three pairs of ventral spines (not counting apical spines). 1. *Philodromus* (p. 151)

- 3(2) PER strongly curved (PME situated behind posterior edge of LE). Tibia I with a maximum of three pairs of ventral spines (not counting apical spines). **4**
- 4(5) Carapace not longer than wide and not broader than abdomen (Fig. 189). **2. *Thanatus*** (p. 156)
- 5(4) Carapace markedly longer than wide and wider than abdomen. Abdomen length 2.5–3.5 mm, longer than wide (Fig. 201). PME strongly approximated; distance between PME shorter than distance between PME and PLE. **3. *Tibellus*** (p. 161)
- 6(1) Legs III and IV markedly shorter than legs I and II. Habitus like Fig. 204. Metatarsus below the claw without a broad thick brush. All tarsi without scopula. Outer edge of the cheliceral furrow without a tooth **subfamily Thomisinae**
- 7(10) Clypeus steep and wide. Distance between AME and PME not exceeding clypeus height. **8**
- 8(9) All eyes of similar size. Abdomen not elongated. Posterior part of abdomen with angular apophyses (Fig. 204). **4. *Thomisus*** (p. 164)
- 9(8) ALE and PLE larger than the oval ME. Abdomen usually elongated and with one posterior median apophysis (Fig. 210). **5. *Tmarus*** (p. 164)
- 10(7) Clypeus vertical and narrow. Distance between PME markedly exceeding clypeus width (Fig. 235). **11**
- 11(18) Height of the ME rectangle exceeding its base width. **12**
- 12(13) Metatarsus I with 4–6 ventral pairs of spines, without lateral spines or with only one. ALE and PLE on the same protuberance. Abdomen with posterior and lateral angular apophyses. **6. *Pistius*** (p. 165)
- 13(12) Metatarsus I with some lateral spines in addition to the ventral spine pairs. ALE and PLE situated on separate protuberances. Abdomen rounded, oval or rounded oval, without angular apophyses. **14**
- 14(15) Body covered with thick and very long setae. AER weakly curved, compared to PER (rarely both rows curved to the same extend) **7. *Heriaeus*** (p. 166)
- 15(14) Body almost naked, rarely with single short or apically enlarged (flask-like) setae. AER curved stronger than PER. **16**
- 16(17) PE of the ME rectangle spaced farther apart than its AE. Body covered only with single, simple setae. **8. *Diaea*** (p. 167)
- 17(16) PE of the ME rectangle not spaced farther apart than its AE. Body setae with different kinds of (flask-like) tips. **9. *Oxyptila*** (p. 168)
- 18(11) ME rectangle shorter than or equal to its width. **19**

- 19(20) Between both eye rows a sharp transversal ridge. AME approximated; the distance between them shorter than between AME and ALE. 10. *Runcinia* (p. 174)
- 20(19) Without ridge between both eye rows. AME distant from one another: the distance between them not shorter than between AME and ALE (Figs. 235, 236). 21
- 21(24) Metatarsus I with 5–7 thin ventral spines and entirely lacking lateral spines or with only one. ALE and PLE situated together on one protuberance. 22
- 22(23) Male femur with few spines (on femur I usually two but femur IV with one spine). AME and PME at the same distance from one another. Eyes in AER of the same size. 11. *Misumena* (p. 174)
- 23(22) Male femur with numerous spines. In the females, the distance between AME shorter than between PME. ALE somewhat larger than ME. 12. *Misumenops* (p. 175)
- 24(21) Besides the paired ventral spines, metatarsus I with a number of lateral spines. ALE and PLE situated on different protuberances. 25
- 25(26) Distance between PME larger than between AME. All eyes of AER of equal distance from one another. Dorsum yellow or white, with star-like markings. 13. *Synema* (p. 175)
- 26(25) AME and PME at equal distances from one another or AME farther apart from one another than PME. In most cases, distance between AME greater than between AME and ALE. Abdominal markings variable. Abdomen shape like Fig. 274. 14. *Xysticus* (p. 179)

7.16.1 *Philodromus* Walckenaer, 1826⁵³

Key to species

- 1(14) Males. 2
- 2(3) Carapace and abdomen gray-white. Legs with few black sprinkles. Body with a dorsal median band. 1. *Ph. dilutus* (p. 153)
- 3(2) Carapace and abdomen not like this. 4
- 4(5) Palpus tibia with only one apophysis (Fig. 179). Carapace brown, its central area comparatively light but on the sides mixed with lines. Abdomen light brown, edges darker, its anterior part with a longitudinal band. Body length 4.5–5 mm (Fig. 180). 2. *Ph. histrio* (p. 153)
- 5(4) Palpus tibia with 2–3 apophyses. 6

⁵³Mcheidze (1997) lists *Artanes* Thorell, 1869 as synonym.

- 6(9) Palpus tibia with three apophyses of roughly the same size. Body length 5–7 mm. **7**
- 7(8) Carapace and abdomen grayish-white, without black spots. **3. *Ph. margaritatus*** (p. 153)
- 8(7) Carapace and abdomen not like this. **9**
- 9(6) Palpus tibia with two apophyses; sometimes with a small protuberance between them. **10**
- 10(11) Lateral apophysis of the palpal tibia very short; its length shorter than the length of the ventral apophysis (Fig. 181). Carapace and abdomen dark brown, sides white. Body length 3.5–5 mm. **4. *Ph. dispar*** (p. 154)
- 11(10) Lateral palpus tibia apophysis longer than ventral apophysis. **12**
- 12(13) Ventral apophysis base of the palpus tibia narrower than its distal part. Palpus with a pointed protuberance between the apophyses (Fig. 184). Light brown carapace and abdomen with small brown marks. Body length 3–5 mm. **5. *Ph. rufus*** (p. 155)
- 13(12) Base and tip of ventral palpus tibia apophysis of almost equal size. A protuberance is not visible (Fig. 182). Carapace brown and with a light median band. Abdomen yellow, in its anterior part with a dark median band and two medio-lateral bands of the same color (cupreous-golden). **6. *Ph. aureolus*** (p. 155)
- 14(1) Females. **15**
- 15(16) Distance between PME and PLE exceeding twice the length of the distance between PME and ALE. Body length 5–7 mm. **4. *Ph. dispar*** (p. 154)
- 16(15) Distance between PME and PLE not exceeding double distance between PME and ALE. **17**
- 17(18) Distance between PME not exceeding distance between the PME and AME. **2. *Ph. histrio*** (p. 153)
- 18(17) Distance between PME exceeding distance between PME and AME. **19**
- 19(20) Anterior part of epigyne with a pit (Fig. 185). **3. *Ph. margaritatus*** (p. 153)
- 20(19) Anterior part of epigyne without pit. **21**
- 21(22) Median epigynal septum with *S*-shaped lateral edges (Fig. 184 a). Body length 4.5–5 mm. **5. *Ph. rufus*** (p. 155)
- 22(21) Median epigynal septum not with such an edge. **23**
- 23(24) Eyes of AER not of uniform size. Epigyne like Fig. 183. Body length 6–8 mm. **6. *Ph. aureolus*** (p. 155)
- 24(23) Eyes of AER of uniform size. Body length 4.5–5 mm. **1. *Ph. dilutus*** (p. 153)
- A. Kulczyński (1895) reports *Ph. aureolus caespiticola* from Gelati, which differs from the nominal form in some characteristics (p. 156).

1. *Philodromus dilutus* Thorell, 1875⁵⁴

Description: Carapace length 2.33 mm and somewhat broader; abdomen length 4 mm, width 3.25 mm. The carapace is shingle-colored white; its band in both parts wide. The carapace sides bear an irregular line of shingle-colored whitish marks. The cephalic region is broad, with two curved lines, which almost unite in the posterior part. The sternum is whitish.

Chelicerae, gnathocoxae, labium, palps and legs are light shingle-colored. The legs bear numerous fine blackish spots, especially on femur, patella and tibia.

The dorsum is shingle-colored whitish, its center bears four blackish spots, forming a trapezoid in the rear part. The anterior part of the dark, spear-shaped band is fringed, with whitish marks behind it. The posterior part of the abdomen sides bears an irregular blackish brown band, sometimes with some fine marks. The venter or the entire abdomen is ashcolored whitish, with fine, weakly dark spots, arranged in four longitudinal rows, or medially dark.

Habitat: In grass and bushes.

Distribution: Moscow, Dnepropetrovsk (Ekaterinoslav), Transcaucasus.

In Georgia: Tbilisi (Kulczyński 1895), Lagodekhi, Kaspi, Surami (Mcheidze 1969).

Taxonomy: Platnick (2013): *Philodromus dilutus* Thorell, 1875.

2. *Philodromus histrio* (Latreille, 1819)

Description: Female body length 5–8 mm; male 4.5–5 mm. The anterior part of the carapace is yellowish-white with a longitudinal brown line; on the sides lined by a marmorated brown fringe. The sternum bears a longitudinal light-gray to white line.

The abdomen is egg-shaped, light gray, with brown lanceolate marks in the anterior half as well as white and brown lines arranged at acute angles (Fig. 180). Epigyne like Fig. 180 a. Male palpus like Fig. 179.

Habitat: In short grass and shrubs. Steppe species.

Distribution: Central and Northern Europe, southern European part of the former USSR, West Siberia. **In Georgia:** Lagodekhi, Telavi, Betania (Mcheidze 1962). First record for the Transcaucasus.

Taxonomy: Platnick (2013): *Philodromus histrio* (Latreille, 1819). Mcheidze (1997) also lists the synonym *Ph. elegans* Blackwall, 1859.

3. *Philodromus margaritatus* (Clerck, 1757)

Description: Female carapace length 3 mm, width 3.4 mm; abdomen length 6.3 mm, width 5.4 mm. Male carapace length 3.4 mm, width 3.3 mm.

⁵⁴In Mcheidze (1997) with brackets.

♀ The carapace is wider than long. The AE form a curved line.

The anterior part of the flattened abdomen is cut off and towards the posterior third gradually widening, and in its posterior part tapering and rounded. The dorsum is of dull gray-white bluish color; sometimes the whole surface bears irregularly arranged marks and a black venation. Sometimes the anterior part bears a longitudinal band, but with small inclined black lines. The epigyne is longer than wide (Fig. 185).

♂ The carapace is cinereous-white; its sides bear black spots. The eye region bears black bands. The ME form a trapezoid, which is as long as wide. The AE are almost uniform and (in anterior view) form a curved line.

The abdomen is similar to the abdomen of the female. The chelicerae are not large, in anterior view flat, black with wide brown bands. The legs are very long, with brown marks forming rings.

Habitat: On plant twigs and stipes, during the winter under roots.

Distribution: Japan, USSR, western Siberia, Lake Baikal, Kazakhstan.

In Georgia: Aspindza, Zekari Pass (Mcheidze 1954). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Philodromus margaritatus* (Clerck, 1757)⁵⁵. She also lists the synonym *Ph. levipes* (L. Koch, 1758) [sic].

4. *Philodromus dispar* Walckenaer, 1826

Description: Female carapace length 2.3 mm, width 2.2 mm; abdomen length 3.8 mm, width 2.7 mm. Male carapace length 2.3 mm.

♀ The broad carapace is brown with a testaceous band, which is somewhat narrowed in its posterior part. A V-shaped mark is situated in the center; the hind part often bears a brown median band. The carapace is covered with white setae.

The PME are small and spaced at a greater distance than towards the LE. The AER is strongly curved. The AME are larger than the PME and of the same size as the LE.

The posterior part of the oval abdomen is somewhat broad; the venter is brown with a weakly recognizable broad white fringe. Its anterior part bears an elongated lanceolate dark band; its posterior part bears some transversal bands of the same color. The legs are very similar to the legs of the male. The large epigynal plate is somewhat protuberant.

♂ The carapace is brown with dark sides (almost black) and covered with patches of brown setae, forming a thin marginal line. The PE are spaced at almost uniform distances; the ME are somewhat smaller. The AME are larger than the PME but smaller than the lateral eyes.

The legs are rather long and thick, for the most part light yellow and with black spines. The palpus is longer than carapace and femur I.

⁵⁵In Mcheidze (1997) sic: '*Thilodromus margaritatus*', lapsus.

The oval abdomen is elongated or tapering and in the anterior part somewhat cut off. The dorsum is darkened, brown-yellow, often almost black and covered with setae of the same color. Its white fringe is broad compared to the carapace.

Habitat: In short grass and on shrubs.

Distribution: Europe, Moscow, Gorki Region, Saratov Region, Voronezh Region, Ukraine, Moldova, Caucasus. **In Georgia:** Batumi (Simon 1899), Poti, Tshokhatauri, Zenaki (Mcheidze 1967).

Taxonomy: Platnick (2013): *Philodromus dispar* Walckenaer, 1826. Author in Mcheidze (1997) with brackets. She also lists the synonym *Ph. limbatus* Sundevall, 1826.

5. *Philodromus rufus* Walckenaer, 1826

Description: Female carapace length 2 mm, width 1.8 mm; abdomen length 4 mm, width 2.6 mm. Male carapace length 1.8 mm, width 1.6 mm.

♀ The carapace is light brown or shining brown-red on the sides. The eyes are lined with small, dull white rings. The PME are more narrow compared to the LE. The AE are arranged in a weakly curved line. The ME are larger than the PE.

The oval abdomen is mostly white, continuously yellowish or white, towards the sides shining yellow and rarely with two lateral black bands. The long legs are mostly light yellow, with long black spines. The epigyne is small (Fig. 184 a).

♂ The carapace is light yellowish red, weakly darkened on the sides and stained with brown spots and covered with dorsal patches of white setae. The eyes are lined with small white rings. The legs are comparably long and thick, light yellow, with small, thin, brown spots, which are covered with white setae. Palpus like Fig. 184.

The abdomen is narrow, elongated and spotted with shingle-colored brown-red spots.

Habitat: On shrubs, in beech forests.

Distribution: Holarctic. In the former USSR known from Crimea and East Siberia. **In Georgia:** Lagodekhi (beech forest), Dzhava (Mcheidze 1952). First record for the Transcaucasus.

Taxonomy: Platnick (2013): *Philodromus rufus* Walckenaer, 1826. Author in Mcheidze (1997) with brackets. She also lists the synonym *Ph. pellax* Herman, 1876.

6. *Philodromus aureolus* (Clerck, 1757)

Description: This species does not have the same abdominal markings pictured for *Philodromus histrio*. The epigyne is made up of two curved, longitudinal, protuberant, thick, dark chitinized bands. Its central part is

separated between these bands and has the form of a weakly curved lamella (Fig. 183).

The male palpus bears two apophyses (outer and ventral); the ventral apophysis is not broad and long and is more or less formed like an inclined cut-out lamella. The dorsal apophysis is markedly thick, long, tapering towards the end and directed forward (Fig. 182). Carapace length 2–2.5 mm.

Habitat: On vegetables, mostly on cabbage with corresponding color (green or yellowish white); on grass. They feed on pest insects of cabbage and gardens: aphids, bugs, larvae of pierids and others.

Distribution: Holarctic (except the far north). **In Georgia:** Kutaisi, Zestaponi (= Qvirila). (Kulczyński 1895), Tbilisi, Gori, Khashuri, Borjomi, Telavi, Sighnaghi, Lagodekhi (Mt. Ninigori), Satshkhere, Kharagauli, Baghdati, Shovi, Poti (Mcheidze 1941–1963).

Taxonomy: Platnick (2013): *Philodromus aureolus* (Clerck, 1757). Mcheidze (1997) also lists the synonym *Ph. canadensis* Emerton, 1917.

7. *Philodromus aureolus caespiticola* (Walckenaer, 1805)

Kulczyński (1895) found this species in Gelati. We could not find it in our material.

Taxonomy: Platnick (2013): *Philodromus cespitum* (Walckenaer, 1802)⁵⁶.

7.16.2 *Thanatus* C. L. Koch, 1837

Key to species

- | | | |
|------|--|-----------------------------------|
| 1(6) | Males. | 2 |
| 2(3) | Carapace broader than abdomen, almost rounded. Dark brown part of the carapace with characteristic markings; its sides with broad, almost semilunar, dark brown markings. Median line of the eye region with three short brown bands but in the central part with a large mark of irregular shape. Abdomen elongated oval, light yellow, at the median line with light brown, dark brown and red markings (Fig. 186). | 1. <i>Th. lineatipes</i> (p. 157) |
| 3(2) | Coloration of carapace and abdomen not like this. | 4 |
| 4(5) | Palpus tibia apophysis near the tip broadened (Fig. 193). Carapace brown with two longitudinal light bands and light lateral edge. Abdomen pink-yellow with a black lanceolate mark in its anterior part and two longitudinal brown bands or with posterior sharp raspberry-colored bands. Female body length 6.5–7.5 mm, male 6 mm. | 2. <i>Th. arenarius</i> (p. 157) |

⁵⁶In Mcheidze (1997) sic 'Philodzomus aureolus (Cl.) Sub sp. caespiticola (Walck., 1805)', lapsi.

- 5(4) Palpus tibia apophysis near the tip gradually tapering (Fig. 191). Carapace light brown with two longitudinal dark bands. Abdomen pinkish-yellow, sometimes distinctly pink with a lanceolate black or a brown band in the posterior half. Male coloration darker than in female. Female body length 6.5–8 mm, male 5.5 mm. 3. *Th. formicinus* (p. 159)
- 6(1) Females. 7
- 7(8) Epigynal median plate narrow, not broader in its posterior half (Fig. 190). Body length 5–8 mm. . 3. *Th. formicinus* (p. 159)
- 8(7) Epigynal plate different. 9
- 9(10) Epigynal plate laterally bordered by a narrow chitinized arch (Fig. 192). Body length 7–9 mm. 2. *Th. arenarius* (p. 157)
- 10(9) Epigynal plate not bordered by such an arch. 11
- 11(12) Median plate of the epigyne broad and somewhat narrowed in its posterior half (Fig. 187). 1. *Th. lineatipes* (p. 157)
- 12(11) Median plate of the epigyne narrow and in its anterior part cone-like narrowed. The form of the epigynal pits is similar to the shape of wrongly paired shoes (right-left and left-right) (Fig. 188). 4. *Th. imbecilus* (p. 159)

1. *Thanatus lineatipes* Simon, 1870

Description: The sternum of the female is blackish. The clypeus is narrow and brighter than the legs, which are long, with lineation and, especially on the femur, with two brown bands. The epigynal plate is semi-circular (Fig. 187). The male bulbus bears a cut-off apophysis, which bears a small conical bulging part.

Habitat: In short grass in rocky places.

Distribution: Spain, Portugal, Tunis, Syria. **In Georgia:** Tbilisi (Mcheidze 1959). First record in the former USSR.

Taxonomy: Platnick (2013): *Thanatus lineatipes* Simon, 1870⁵⁷.

2. *Thanatus arenarius* L. Koch, 1872

Description: Female body length 6.5–7.5 mm, male 6 mm.

♀ The carapace is brownish red, sometimes carmine red and brighter than in the male; with two elongated bands, which are widened near the tip. The ME are uniform, the AE form a weakly curved line.

The anterior part of the longish-oval abdomen is hardly distinguishable brown red and covered with light brown setae as well as with a median black band in the anterior half, which is rectangular in its anterior part and tapering in the posterior part. This band is covered with brownish red setae and is often bordered by a narrow white band. In the second half this band is

⁵⁷In Mcheidze (1997) sic: '*Thanatus liniatipes* (E. Simon, 1870)', lapsi.

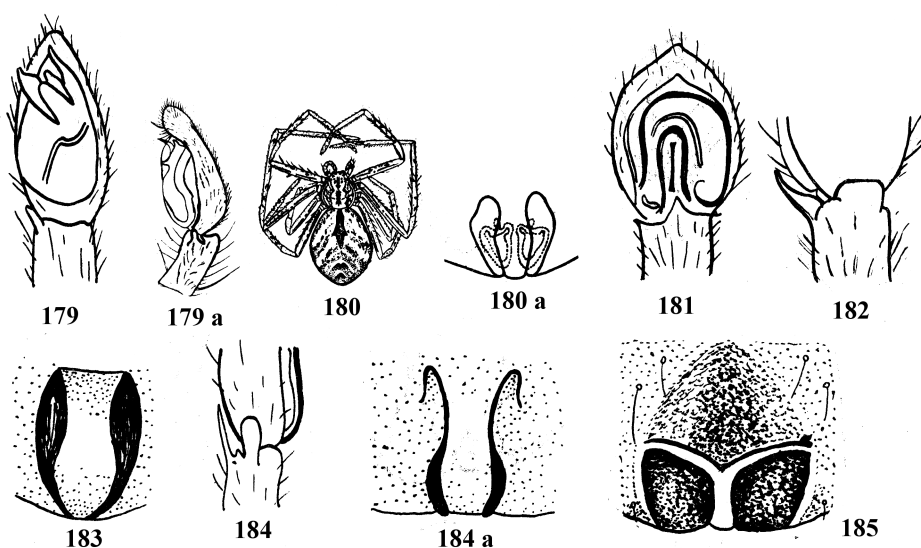


Fig. 179–185. **Thomisidae (Philodromidae), *Philodromus*.** *Ph. histrio*: 179 – ventral male palp; 179 a – lateral male palp; 180 – habitus; 180 a – epigyne. *Ph. dispar*: 181 – male palp. *Ph. aureolus*: 182 – palpal apophysis; 183 – epigyne. *Ph. rufus*: 184 – palpal apophysis; 184 a – epigyne. *Ph. margaritatus*: 185 – epigyne.

weakly curved and ends above the spinnerets. The extremities are brownish red and covered with whitish setae. The epigyne forms a large brown-red depression (Fig. 192).

♂ The carapace is darkened brownish-red with two longitudinal light lines, directed from the posterior part to the sides of the eye region. Its posterior part is weakly narrowed and covered with light yellow setae. The cephalic region is very short and blunt, its surface almost flat, the thoracic part is not raised but with well visible bands on the sides, which do, however, not extend all along the first half of the carapace. The PME are smaller and more condensed than the LE. The legs are mostly bright brown-red. Palpus brownish red (Fig. 193).

Habitat: In high grass, shrubs, rarely under rocks. Steppe species.

Distribution: Europe, Turkey, in the former USSR in Kharatov region, Voronezh region, Ukraine, Urals and Central Asia. **In Georgia:** Tbilisi (Simon 1899), Kiketi, Betania, Poti (Mcheidze 1968).

Taxonomy: Platnick (2013): *Thanatus arenarius* L. Koch, 1872⁵⁸. She also lists the synonym *T. mundus* Pickard-Cambridge, 1873.

⁵⁸In Mcheidze (1997) sic: 'Thor., 1872', lapsus.

3. *Thanatus formicinus* (Clerck, 1757)

Description: Female body length 6.5–8 mm, males 5.5 mm. The carapace is light brown, with two long dark bands. Sternum and abdomen are pinkish-yellow; the abdomen is sometimes shining pink, with a black lanceolate mark in the anterior half and two long, pink or brown bands in the posterior half. The coloration is darker in males compared to females. Epigyne like Fig. 190. Male palpus like Fig. 191.

Habitat: On the ground, in grass.

Distribution: Central and southern European countries, North America, in the former USSR everywhere except the extreme North. **In Georgia:** Mestia, Bakhmaro, Adigeni (Mcheidze 1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Thanatus formicinus* (Clerck, 1757).

4. *Thanatus imbecillus* L. Koch, 1878

Description: ♂ The sides of the brown-yellow carapace are black and marmorated; a long band, which is enlarged in its upper part and whitish-yellow towards the AER originates from the posterior carapace slope. The cephalic region bears two reddish-brown bands, which unite in the posterior part and show a line of the same color between them.

The palpus is bulged, light brown; its center is reddish brown. Most of the setae are white and wing-shaped; the ventral and lateral parts of the cephalic region bear a trail of yellow setae. Both eye rows are curved forward, especially the posterior row. The sternum is light brown and covered with white setae as well as black sprinkles. Metatarsus and tarsus I bear a scopula. The legs are thin, long and covered with wing-shaped setae.

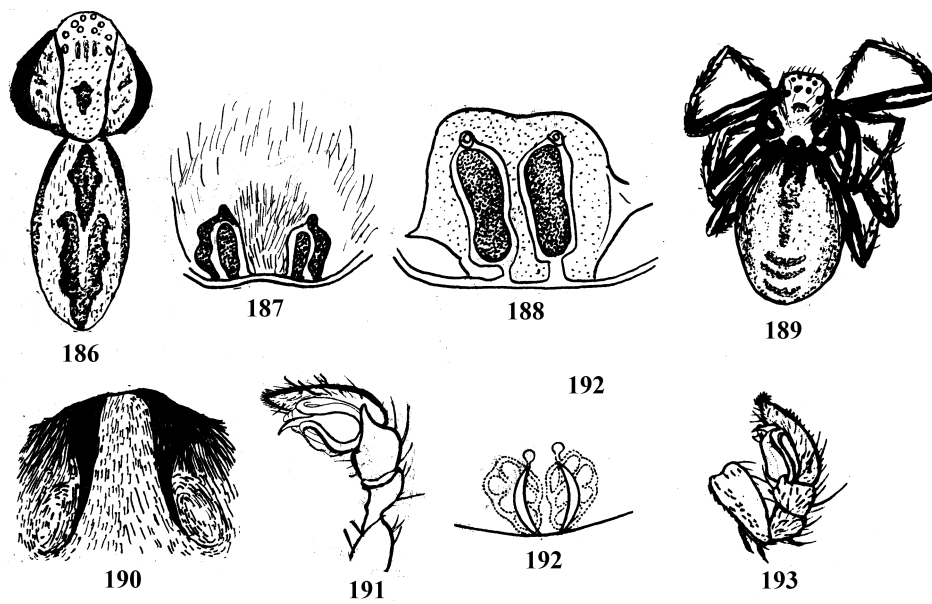
The abdomen is elongated, rounded, its posterior part is pointed. The main color of the abdomen is claycolored-brownish-yellow, with a black dorsal mark. The white fringe is narrow, with a rhomboid mark originating from the basis and not reaching the central part (Fig. 189). The venter bears four elongated brown lines, of which the two central lines unite in the posterior part, terminating in a point. The spinnerets are brown-yellow white. Epigyne like Fig. 188.

Habitat: In grass.

Distribution: Turkey. In the former USSR in the Caspian Region, Transcaucasus. **In Georgia:** Tbilisi (Kulczyński 1899), Tbilisi, Akhalkalaki, Gori (Mcheidze 1970).

Taxonomy: Platnick (2013): *Thanatus imbecillus* L. Koch, 1878⁵⁹.

⁵⁹In Mcheidze (1997) sic: 'imbecilus', lapsus, and author with brackets.



Figs. 186–193. **Thomisidae (Philodromidae), *Thanatus***. *T. lineatipes*: 186 – habitus; 187 – epigyne. *T. imbecilus*: 188 – epigyne; 189 – habitus. *T. formicinus*: 190 – epigyne; 191 – male palpus. *T. arenarius*: 192 – epigyne; 193 – male palpus.

7.16.3 *Tibellus* Simon, 1875

Key to species

- 1(2) Male palpus tibia tip with a broad lateral apophysis. Epigyne like Fig. 195. Female body length 10–11 mm, male 7 mm. 1. *T. macellus* (p. 161)
- 2(1) Male palpus tibia without such an apophysis. Epigyne like Fig. 199. **3**
- 3(4) Posterior half of the abdomen with two dark marks next to the median band (Fig. 198). Male embolus flat, its median furrow not visible (Fig. 200). Epigyne like Fig. 199. Female body length 10–11 mm, male 7 mm. 3. *T. oblongus* (p. 162)
- 4(3) Posterior half of the abdomen without dark marks. Male embolus with a black furrow (Fig. 202). Epigyne like Fig. 203. Female body length 10–11 mm, male 6–7 mm. 4. *T. maritimus* (p. 162)

1. *Tibellus macellus* Simon, 1875

Description: Female carapace length 4 mm, width 3 mm; abdomen length 8.6 mm, width 2.2 mm. Male carapace length 3 mm, width 2.3 mm.

♀ The lateral band on the carapace is sometimes substituted by three pairs of brown marks with vague spots in between. Legs dark red, somewhat spotted.

The abdomen is narrow and long, with a cut-off anterior part as well as with a continuous, broad, dull yellowish, dorsal band. The sides bear a number of black spots, of which two extend into the posterior third (Fig. 194). The central part of the shingle-colored abdomen is darker. The simple epigynal plate is longer than wide (Fig. 195).

♂ The carapace is dark brown-red or black, with three broad longitudinal bands. The ME form a trapezoid of equal length and width. The sternum is dark red and armed with coarse white setae. The legs are very long and thin.

Habitat: In grass and shrubs.

Distribution: Regions of Moscow, Saratov, Belgorod. **In Georgia:** Tbilisi, Telavi, Lagodekhi, Poti (Mcheidze 1964–65). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tibellus macellus* Simon, 1875. In Mcheidze (1997) with year 1878, lapsus. She also lists the synonym *T. vittatus* (Thorell, 1875).

2. *Tibellus macellus georgicus* Mcheidze, 1997

Description: ♀ Carapace length 4 mm, width 3 mm; abdomen length 9 mm, width 2.5 mm. The coloration of the elongated body light yellow. A pair of dark marks is situated behind the eyes.

The abdomen bears two dorsal lines of thin setae along its entire length (Fig. 197). The structure of the epigyne is given in Fig. 196.

Based on the study of material from Telavi we separate a new subspecies, *T. m. georgicus*, from the nominal species. Based on the study of the male copulatory organs, it might be possible to describe a new species.

Habitat: In grass.

Distribution: In Georgia: Recorded from Telavi (Mcheidze 1938).

Taxonomy: Platnick (2013): *Tibellus macellus georgicus* Mcheidze, 1997.

3. *Tibellus oblongus* (Walckenaer, 1802)

Description: Female body length 7.5–11 mm, male 6–7 mm. The brownish-yellow carapace bears a longitudinal brown band and three brown marks on the sides, which can be fused forming a lateral fringe.

The abdomen is strongly elongated, pale yellow, and sometimes with three small pinkish bands and 1–2 pairs of black marks close to the rear end; in some forms instead with dispersed brown marks (Fig. 198). Epigyne like Fig. 199. Male palpus like Fig. 200.

Habitat: Hygrophilous species, often living near water bodies or on forest edges in low grass and on bushes.

Distribution: Holarctic. Widely distributed in the former USSR. In Georgia: Kutaisi (Kulczyński 1899), Manglisi, Kobuleti (on edges of mires), Poti (Mcheidze 1963, 1965).

Taxonomy: Platnick (2013): *Tibellus oblongus* (Walckenaer, 1802).

4. *Tibellus maritimus* (Menge, 1875)

Description: Female body length 8.5–12 mm, male 6–8 mm.

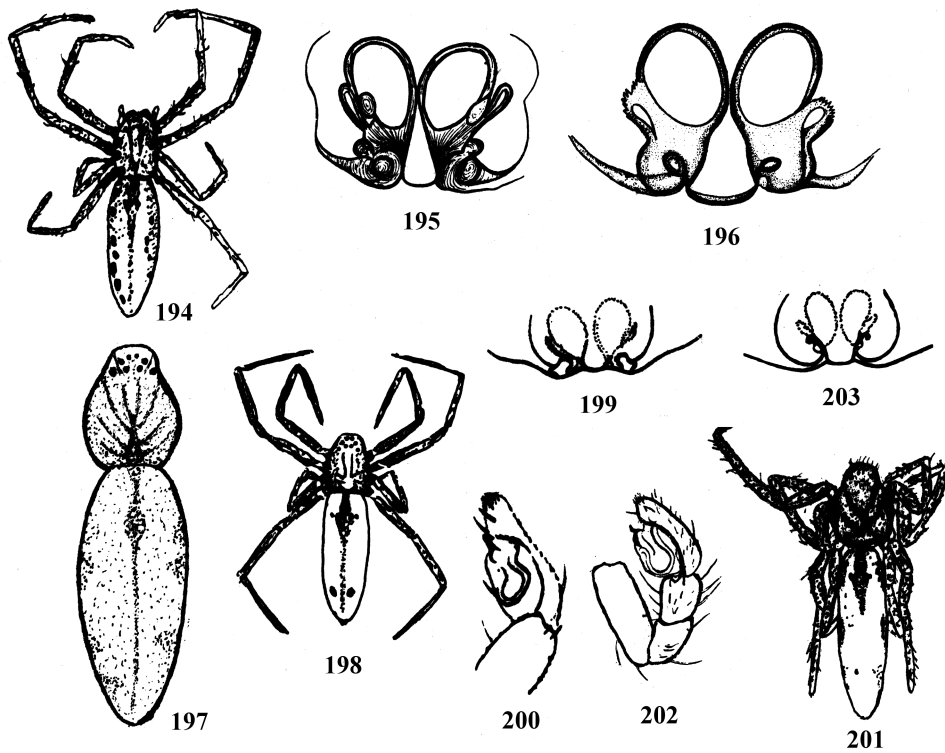
♀ The reddish-yellow carapace bears a longitudinal brown band and has darkened sides. The abdomen is elongated, pale yellow or pinkish, with three small, longitudinal brown bands. Epigyne like Fig. 203.

♂ The male is of darker color compared to the female (Fig. 201). Palpus like Fig. 202.

Habitat: On edges of water bodies; on forest edges in various grasses. Hygrophilous.

Distribution: Palearctic (except North Africa and North Japan), USA. Widely distributed in the former USSR. In Georgia: Zugdidi (Simon 1895), Manglisi, Poti, near Lake Paliastomi (Mcheidze 1962–67).

Taxonomy: Platnick (2013): *Tibellus maritimus* (Menge, 1875).



Figs. 194-203. **Thomisidae (Philodromidae), Tibellus.** *T. macellus*: 194 – habitus; 195 – epigyne. *T. macellus georgicus*: 196 – epigyne; 197 – habitus. *T. oblongus*: 198 – habitus; 199 – epigyne; 200 – male palpus. *T. maritimus*: 201 – habitus; 202 – male palpus; 203 – epigyne.

7.16.4 *Thomisus* Walckenaer, 1805

1. *Thomisus onustus* Walckenaer, 1805

Description: Female body length 6.5–7 mm, male 3.5–4.5 mm. The brown carapace bears a yellow or white longitudinal band. The protuberances of the lateral eyes are quite strong and inclined. The posterior part of the abdomen is wide, with two lateral mounds; pale yellow or greenish, with dark inclined lines on the sides and two rows of black spots (Fig. 204). Epigyne like Fig. 205. Male palpus like Fig. 206.

Ecology: This species can be found on flowers or in high grass. These spiders do not construct webs to catch prey. They feed on butterflies, beetles, bugs and grasshoppers after leaping upon and catching them with their front legs. They are rather slow-moving spiders.

Distribution: Palearctic and equatorial Africa. **In Georgia:** Zestaponi (Qvirila), Kutaisi (Kulczyński 1899), Tbilisi, Manglisi, Kodzhori, Khara-gauli, Tshiatura, Tqibuli, Ambrolauri, Baghdati, Sairme, Batumi, Poti, Sukhumi, Lake Ritsa (Mcheidze 1940, 1966).

Taxonomy: Platnick (2013): *Thomisus onustus* Walckenaer, 1805. Mcheidze (1997) also lists the synonym *Thomisus albus* (Gmelin, 1878).

7.16.5 *Tmarus* Simon, 1875

Key to species

Tmarus horvathi (p. 165) is not keyed.

- 1(2) ♂ Male palpus tibia with a dorsal appendage, having a tip curved towards the tibia basis (Fig. 208). Carapace length 1.25 mm.
 ♀ PME markedly larger than AME. Carapace brownish with white venation. Dorsum with white marks and three transversal bands, the posterior band not always well visible. Carapace length approximately 2 mm. 1. *T. piger* (p. 164)
- 2(1) ♂ Dorsal side of the male palpus tibia with an appendage, which is pointed and directed towards tibia tip. Carapace length 1.2 mm.
 ♀ PME weakly or not larger than the anterior median eyes. Coloration and size comparable to the former species. 2. *T. stellio* (p. 165)

1. *Tmarus piger* (Walckenaer, 1802)

Description: Female body length 4.5–6 mm, male 3.2 mm. The brown carapace bears white and yellow lines. The sternum is black with small-sized white marks. The gray abdomen bears a longitudinal white band and three transversal lines. Its rear end bears an elongated conical protuberance,

which runs vertically down towards the spinnerets (Fig. 210). Epigyne like Fig. 209, male palpus like Fig. 208.

Habitat: Forest species, living on the forest edge in grass and on bushes.

Distribution: Palearctic (except North Africa⁶⁰). In the former USSR in the Moscow Region, Ukraine, Crimea, Transcaucasus, southern Urals, Siberia. **In Georgia:** Manglisi, Betania, Lentekhi (Mcheidze 1959). First record in Georgia.

Taxonomy: Platnick (2013): *Tmarus piger* (Walckenaer, 1802). In Mcheidze (1997) author without brackets.

2. *Tmarus stellio* Simon, 1875

Description: Female carapace length 2 mm, male 1.2 mm.

♀ The brown carapace bears a white venation. The PME are markedly larger than the AME⁶¹. The dark dorsum bears white marks and three transversal bands, which are not always well visible. The black epigyne has a median indentation.

♂ Palpus tibia long and with a stem-like elongated basis.

Habitat: On ligneous plants and shrubs.

Distribution: On the shores of the Black Sea, Mikhailovski Pass (Spassky 1937). **In Georgia:** Sukhumi, Batumi, Kobuleti (Mcheidze 1962).

Taxonomy: Platnick (2013): *Tmarus stellio* Simon, 1875⁶².

3. *Tmarus horvathi* Kulczyński, 1895

Description: PME of the female are markedly larger than the AME; all AE are spaced at uniform distances. The posterior part of the abdomen is wedge-like. The epigynal opening is isolated, wider than long and wider towards its posterior end.

Distribution: Kutaisi (Kulczyński 1895), Lagodekhi (Mcheidze 1940). Endemic species in Georgia.

Taxonomy: Platnick (2013): *Tmarus horvathi* Kulczyński, 1895.

7.16.6 *Pistius* Simon, 1875

1. *Pistius truncatus* (Pallas, 1772)

Description: Female carapace length 3.5 mm, width 2.7 mm; abdomen length 4.5 mm, width 5.6 mm. Male carapace length 2.2 mm, width 2.3 mm.

♀ The dark brown carapace bears brown spots and has rough sides. The legs are brown. The anterior part of the abdomen is sloping directly downwards, its posterior part is gradually enlarged; edges are conical and

⁶⁰Mcheidze (1997) sic: 'except South Africa', probably lapsus.

⁶¹Sic Mcheidze (1997), contradicting the determination key, instance 2.

⁶²In Mcheidze (1997) sic: '*Tmarus stelio* (E. Simon, 1875)', lapsi.

and bears a round apophysis. The venter is greenish and bears numerous anterior and lateral wavelike lines as well as many straight broad white lines in the posterior part. The setae are white, while the extremities are body-colored. The epigyne bears a short red broad triangular plate in its anterior part.

♂ The carapace is brown shingle-colored and rather dark greenish. The setae are very thick and long, the white bands at the basis are of different color. The cephalic region is short and gradually narrowed; bluntly cut-in and rather broad in its frontal part.

The PE are similar; forming a procurved line. The distance between the ME is shorter than between the LE. The sternum is smooth and wider than long.

The abdomen is long and bears a rounded dorsum; towards the posterior third it is broadened, but narrowed further back. The extremities are greenish shingle-colored, often monochromatic. The palpus is black.

Habitat: Grass and shrubs.

Distribution: Estonia, Crimea, Transcaucasus. **In Georgia:** Kutaisi (Kulczyński, 1895), Batumi, Poti, Tshakvi (Mcheidze 1969).

Taxonomy: Platnick (2013): *Heriaeus hirtus* (Latreille, 1819).

2. *Heriaeus oblongus* Simon, 1918

Description: Female body length 6.5–7.5 mm, male 4.5–5.5. The carapace is gray green; with a longitudinal white band. The sternum is greenish. The abdomen is elongated, oval, pale green and with a vague white band. The abdomen is as long as wide.

The entire body of the male is densely covered with long bright spines (Fig. 214). Epigyne like Fig. 213. Male palpus like Fig. 212.

Habitat: In grass and shrubs of the forest-steppe zone.

Distribution: Europe, Anatolia. In the former USSR in Central Asia, Kazakhstan, Uzbekistan, Siberia, Caucasus. **In Georgia:** Kodzhori, Betania, Manglisi, Poti (Mcheidze 1940, 1950, 1960). First record in Georgia.

Taxonomy: Platnick (2013): *Heriaeus oblongus* Simon, 1918. In Mcheidze (1997) author with brackets.

7.16.8 *Diaea* Thorell, 1869⁶³

1. *Diaea dorsata* (Fabricius, 1777)

Description: Female carapace length and width 2.5 mm; abdomen length 4.8 mm, width 4.2 mm. Male carapace length 2 mm, width 2 mm.

♀ The carapace is dark shingle-colored, with a marginal greenish line and lacking a frontal mark. The eye protuberances are white; the setae very long,

⁶³In Mcheidze (1997) sic: 'DIAE THOR., 1869', probably lapsus.

thorn-like and situated between the protuberances. The upper eyes are in a similar position. The legs are mostly green (Fig. 215).

The oval abdomen is longer than wide; its posterior end is rounded. The dorsum is brown red, more or less darkened and has a continuous white fringe.

♂ The male is bright brown-reddish with a thin marginal line. The eye region bears brown marks and a black venation. The eyes are surrounded by a yellow circle. The integument bears strong, long and thorn-like setae; the surface is almost flat. The clypeus is broad and not flat between the ME. The sternum is dark red. Legs I and II are very long, dark red; the femur is spotted and bears brown rings. The posterior legs are dark shingle-colored. The palpus is light brown.

The abdomen is oval and narrow, elongated and in the posterior part rounded on both sides; brownish with a white fringe, which is more or less visible from below. A median longitudinal band originates at the anterior end, alongside of which are two lateral, inclined, shingle-colored marks; three triangles are situated in the posterior part.

Habitat: On shrubs and small woody plants.

Distribution: In the European part of the former USSR, Crimea, Caucasus, Tajikistan. **In Georgia:** Lagodekhi (Mt. Ninigori at 2400 m a.s.l.; Mcheidze 1939). First record in Georgia.

Taxonomy: Platnick (2013): *Diaea dorsata* (Fabricius, 1777)⁶⁴.

7.16.9 *Oxyptila* Simon, 1864

Key to species

- | | | |
|------|---|---------------------------------|
| 1(6) | ♂ | 2 |
| 2(3) | Palpus tibia with two, sometimes almost uniformly sized, blunt apophyses. Outer apophysis close to the tarsal joint, broad, straight and its tip rounded. Inner apophysis tip hardly enlarged and with a curved inner side (Fig. 216). Body length 4.5–4.7 mm. | 1. <i>O. lugubris</i> (p. 170) |
| 3(2) | Palpus tibia without two blunt apophyses. | 4 |
| 4(5) | Basis of the outer apophysis of the palpus tibia broad, its tip pointed (Fig. 218). Body length 3.3 mm. | 2. <i>O. praticola</i> (p. 170) |
| 5(4) | Outer apophysis of the palpus tibia bodkin-shaped, slightly curved. Inner apophysis half as long as outer apophysis (Figs. 221, 221 a). Body length 3.1 mm. | 3. <i>O. trux</i> (p. 172) |
| 6(1) | ♀ | 7 |

⁶⁴In Mcheidze (1997) sic: '(Fabr., 1864)', lapsus.

- 7(8) Sternum with a white center, its edges light brown with seven black or blackish-brown rounded marks. Epigynal opening with well separated openings (Fig. 219). Body length 3.5–3 mm⁶⁵. 2. *O. praticola* (p. 170)
- 8(7) Coloration of sternum and epigyne not like this. 9
- 9(10) Carapace with three longitudinal yellow bands alternating with four longitudinal brown bands. Of all these bands the inner band broad and sharp. Carapace with a V-shaped white mark in front of its posterior slope. Carapace weakly wrinkled and with thin pin-like spines; longer and blunt spines on the clypeus and in the eye region.
Anterior third of the abdomen with two large brown marks, bearing yellow spots; these marks separated from each other by the yellowish white median band. Abdomen in its median and posterior parts with transversal bands; its ventral side yellow (except for the epigyne).
Legs yellow, small, rarely with small brown marks. Tongue of the epigyne pale, twice as broad as long, its upper part protuberant, its lower part indented (Fig. 222). 3. *O. trux* (p. 172)
- 10(9) Body coloration and epigyne structure not like this. 11
- 11(12) Body and legs of more or less the same dirty yellow color and often completely covered with sand granules. Dorsal body with thick pin-like spines; on the abdomen they are situated between some large brown spines. Legs with some scattered spot-like yellow sprinkles. Epigyne formed like a broad yellow appendage (Fig. 217). 1. *O. lugubris* (p. 170)
- 12(11) Body coloration and epigyne structure not like this. 13
- 13(14) Cephalic region of the carapace weakly elongated forward; of dark brown color and with a yellow fringe. Dorsum of the same color as the carapace but the dark brown abdomen with stronger contrasting markings of yellow marks (Fig. 223). Epigyne of characteristic structure: a yellow triangle with a protuberance (Fig. 224). 4. *O. mingrelica* (p. 172)

⁶⁵Sic Mcheidze (1997).

- 14(13) Cephalic region of the carapace not elongated forward. Carapace brown, its posterior, towards the abdomen sloping part, dark brown; also with more than 20 spines on the clypeus and the eye region. ME quadrangle rectangular; higher than wide. Median part of the sternum light brown, with whitish spots coming in here and there from the edge.

Abdomen wrinkled, its dorsal side with dark brown markings on white ground. Anterior median part of abdomen with a backwards directed dark brown band, forking in the central part; forks leading to the sides. Behind it, a number of transversal arches of the same dark brown color are situated in the posterior part of the abdomen. Epigyne even more characteristic. 5. *O. baudueri* (p. 173)

1. *Oxyptila lugubris* (Kroneberg, 1875)

Description: Female body length 5.5–8.7 mm, carapace length 3–3.3 mm. Male body length 4.5–4.7 mm, carapace length 1.9–2 mm.

♀ The dorsal body parts bear stout pinhead-like spines; on the abdomen these are arranged in groups, which are surrounded by very stout brown spines. The legs are sometimes sprinkled brown. Epigyne like Fig. 217.

♂ The carapace is brown; the top of the eye region is bright. The white dorsum has markings in the center, which have the form of three inclined streaks. The spines on the carapace and abdomen are of two kinds: stout and small; both are wedge-like and tapering towards the tip. Legs III and IV are significantly brighter than the first legs. Palpus like Fig. 216.

Habitat: Under rocks, in grass, in dry, fertilized places.

Distribution: Asia, European part of the former USSR, Erevan. **In Georgia:** Shiraki, Tbilisi (Shavnabada; Mcheidze 1939). First record in Georgia.

Taxonomy: Platnick (2013): *Oxyptila lugubris* (Kroneberg, 1875).

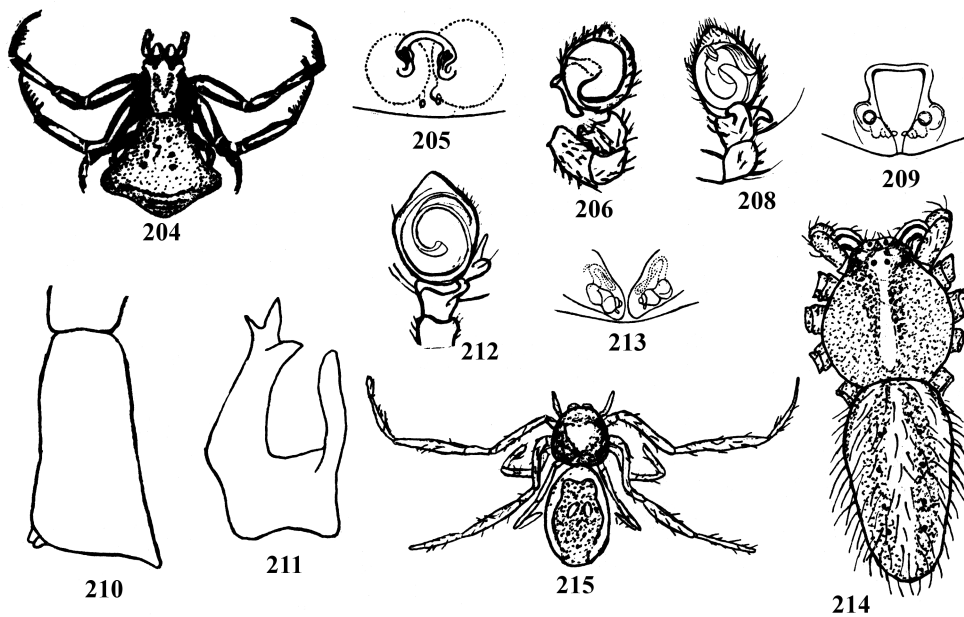
2. *Oxyptila praticola* (C. L. Koch, 1837)

Description: Female body length 4.5 mm, male 2.9 mm. The brown carapace bears dark marmorate markings. The thoracic region is yellow, with a central brown mark and a serrate dark fringe. The central part of the sternum is white, its fringe gray, with seven black or blackish brown rounded marks. The carapace is brownish gray. The integument bears small scales of bright color, which are not readily visible (Fig. 220). Epigyne like Fig. 219. Male palpus like Fig. 218.

Habitat: Forest zone, ground layer of forests, under rocks.

Distribution: Europe, Central Asia, Kazakhstan, Siberia, Altai, basin of the river Yenisei. **In Georgia:** Lagodekhi, Manglisi, Ambrolauri, Poti (Mcheidze 1955–1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Oxyptila praticola* (C. L. Koch, 1837).



Figs. 204-215. **Thomisidae**, *Thomisus*, *Tmarus*, *Heriades*, *Diaea*. *Th. onustus*: 204 – habitus; 205 – epigyne; 206 – male palpus; 207 – [figure missing in Mcheidze (1997)]. *Tm. piger*: 208 – male palpus; 209 – epigyne; 210 – lateral abdomen. *H. hirtus*: 211 – apophysis of male palpal tibia. *H. oblongus*: 212 – male palpus; 213 – epigyne; 214 – male habitus. *D. dorsata*: 215 – habitus.

3. *Oxyptila trux* (Blackwall, 1846)

Description: Female body length 4.6 mm, carapace 2 mm. Male body length 3.1 mm.

♀ The carapace bears three yellow bands alternating with four brown bands; dorsal parts with a V-shaped white mark in front of the posterior slope. The integument of the carapace bears fine wrinkles and is armed with pinhead-like spines. Even longer blunt spines are situated on the fringe of the clypeus and in the eye region. The legs are yellow and bear fine marks.

The first third of the dorsum bears two rather large brown marks and scattered yellow spots. The venter is yellow. Epigyne like Fig. 222.

♂ The legs are brighter than the carapace; femur I and II are brown, with marks. Male palpus like Fig. 221.

The dorsum bears a distinct fine granulation, is brown and armed with blunt spines. A V-shaped yellow figure is imprinted in front of the posterior slope. The dorsum bears black, brown and yellow marks; the center bears a longitudinal white band, the posterior half bears two transversal white bands.

Habitat: In forests, under leaves, in grass, in mosses.

Distribution: Almost everywhere in the European part of the former USSR.

In Georgia: Lagodekhi Reserve, Tshiauri Forest, Manglisi, Sairme (Mcheidze 1938–1947). First record in Georgia.

Taxonomy: Platnick (2013): *Oxyptila trux* (Blackwall, 1846). Mcheidze (1997) also lists the valid species *Oxyptila westringi* (Thorell, 1873) (sic 'Oxyptila westringi') as a synonym of *Oxyptila trux*.

4. *Oxyptila mingrelica* Mcheidze, 1970

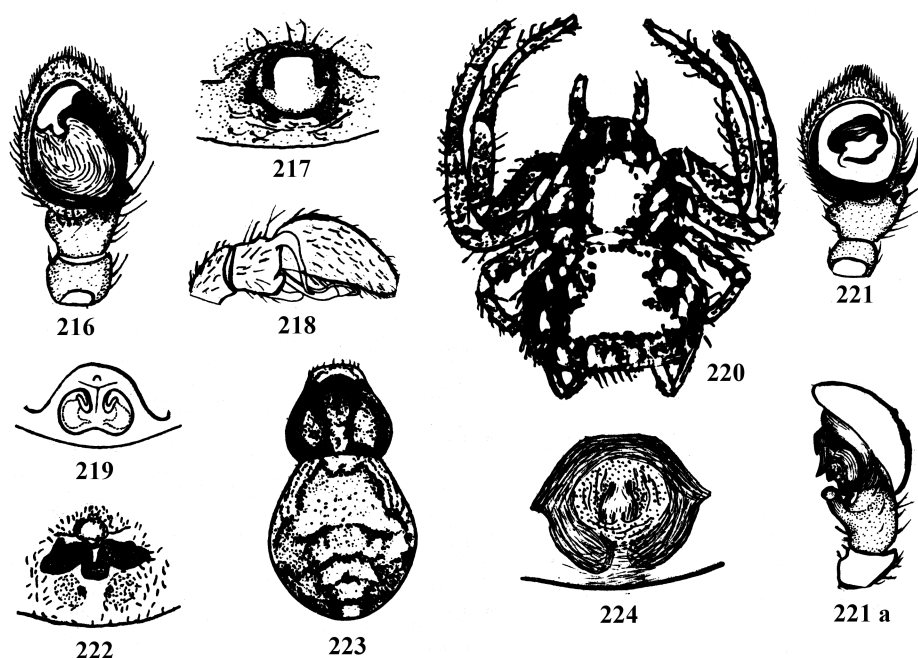
Description: ♀ Carapace length 3 mm, width 2.9 mm. The cephalic region of the carapace is somewhat elongated forward; of dark brown color and with a yellow pattern. The anterior slope is rather bright, whereas the posterior slope is bright yellow. The fringe of the clypeus is armed with nine blunt spines. The eye region in the anterior half is yellow and dark brown in the posterior part. The ME form a rectangle across the width of the carapace. The sternum is of dark brown color. The legs are dark brown with yellow marks.

The dorsum is of the same color as the carapace but with stronger contrasting markings, with dark brown and yellow marks and characteristic triangular yellow protuberances (Fig. 223). Epigyne like Fig. 224.

Habitat: In short grass, under rocks.

Distribution: Tsalendzhikha (Obudzhi; Mcheidze 1964). Georgian endemic species.

Taxonomy: Platnick (2013): *Oxyptila mingrelica* Mcheidze, 1971.



Figs. 216-224. **Thomisidae, *Oxyptila***. *O. lugubris*: 216 – male palpus; 217 – epigyne. *O. praticola*: 218 – male palpus; 219 – epigyne; 220 – habitus. *O. trux*: 221, 221 a – male palpus; 222 – epigyne. *O. mingrellica*: 223 – habitus; 224 – epigyne.

5. *Oxyptila baudueri* (Simon, 1877)

Description: Carapace length 2 mm, width 2 mm; abdomen length 4 mm, width 3 mm. The carapace is dorso-ventrally strongly flattened. The ME form a square. The spines and setae of the legs are of equal length; the legs are short, shingle-colored and sprinkled.

The abdomen is brown, sprinkled with black and white spots; its sides bear a transversally arranged fringe, but the anterior half bears a transversal white band, which extends backwards and is often segmented by brown regions. The epigyne bears superficial rounded depressions.

Habitat: In short grass, under rocks, between dry leaves.

Distribution: France, Portugal. **In Georgia:** Tbilisi (Sartitshala), Lantshkhuti, Ambrolauri (Mcheidze 1938, 1940). First record in the former USSR.

Taxonomy: Platnick (2013): Nomen dubium. In Mcheidze (1997) sic: (E. S., 1875), lapsus.

7.16.10 *Runcinia* Simon, 1875

1. *Runcinia lateralis* (C. L. Koch, 1837)

Description: Female carapace length 2.7 mm, width 2.5 mm; abdomen length 4.9 mm, width 4.2 mm. Male carapace length 1.5 mm, width 1.5 mm.

♀ The dorsal part of the carapace is of a dull yellowish color, its sides are brown or even darker, sometimes with two broad brownish lateral bands. The legs are long and overall yellow.

The abdomen is elongated, its anterior part narrow and rounded, its posterior part is somewhat broadened and rounded, shining brightly, rarely unicolor. Often, the abdomen bears four yellowish-orange bands (Fig. 225). Due to its small size, the epigyne is hardly noticeable, elongated and rounded; a depression is outlined in its anterior part, terminating in the posterior part in two approximate spots; it cannot easily be distinguished from the epigastric furrow.

♂ The carapace is bright, with two broad lateral brown-reddish bands. A transversal (sometimes broad) white line cuts through the eye group. Legs I and II are thin and very long, bright yellow and have a red annulation. The palpus is bright yellow.

The anterior part of the oval abdomen is incised and rounded in the posterior part; its color is generally bright, brown shingle-colored.

Habitat: Places with grass, especially in mountainous places at 2000 m a.s.l.

Distribution: Mediterranean Region, Turkey, East Africa. In the former USSR: regions of Vitebsk, Gorki, Dnepropetrovsk and Odessa, Turkmenistan (Samarkand), Crimea, Transcaucasus. **In Georgia:** Sukhumi (Spassky 1937), Kutaisi (Kulczyński 1895), Lake Ritsa, Eshera, Borjomi, Bakuriani, Surami Pass, Lagodekhi, Ambrolauri (Mt. Satsalike, Khotevi), Oni (Mcheidze 1938, 1960, 1973).

Taxonomy: Platnick (2013): *Runcinia grammica* (C. L. Koch, 1837). In Mcheidze (1997) with year '1838', lapsus.

7.16.11 *Misumena* Latreille, 1804

1. *Misumena vatia* (Clerck, 1757)

Description: Female body length 6.5–10.5 mm, male 3–4 mm.

♀ The carapace is reddish yellow, with a median white band. The sternum is yellow. The abdomen is broad and thick; with its largest width in the anterior third. The coloration of the abdomen varies considerably; it is mostly white, greenish or shining yellow. White specimens sometimes bear shining yellow bands on the anterior sides of the abdomen (Fig. 226).

♂ The carapace is brownish black with a median white band. The legs are spotted. The abdomen is white or yellow, with black sides. Its posterior

part bears two longitudinal black bands (Fig. 227). Palpus like Fig. 228.

Habitat: Forest clearings, in grass, on white and yellow flowers (and of the same color as the flower), especially on Ranunculaceae (Fig. 226⁶⁶).

Distribution: Holarctic, in the whole European part of the former USSR.

In Georgia: Zestaponi (Qvirila), Kutaisi (Kulczyński 1895), Sukhumi (Spassky 1937), Tbilisi (Tsqneti), Manglisi, Betania, Kiketi, Borjomi, Bakuriani, Adigeni, Abastumani, Vartshikhe, Samtredia, Tshokhatauri, Batumi, Sukhumi, Lagodekhi, Telavi, Shiraki, Eldari (Mcheidze 1938, 1954, 1970, 1974).

Taxonomy: Platnick (2013): *Misumena vatia* (Clerck, 1757).

7.16.12 *Misumenops* Cambridge, 1900⁶⁷

1. *Misumenops tricuspидatus* (Fabricius, 1775)

Description: Female body length 4.5–5.5 mm, male body length 3–4 mm.

The carapace is reddish yellow. The carapace of the male bears two brown longitudinal bands. The abdomen is white, greenish or yellow, silvery; its sides bear brown or reddish hook-like marks (Fig. 229). Males have a brown lateral fringe. Epigyne like Fig. 230. Male palpus like Fig. 231.

Habitat: In grass, bushes, on flowers, in Western Georgia abundant on tea bushes, in citrus plantations. They feed on pest insects (e. g. aphids, beetles, bugs and coccids on citrus plants).

Distribution: Northern countries of Europe and in Japan, in the former USSR in the Ukraine, Caucasus, Southern Urals and Central Asia. **In Georgia:** Sukhumi (Spassky 1937), Gelati, Kutaisi (Kulczyński 1895), Batumi (Simon 1899). Tbilisi, Manglisi, Betania, Gori (Bakuriani, Nine-Springs Pass), Borjomi, Lagodekhi, Shiraki, Gurdzhaani, Baghdati, Kharagauli, Batumi, Sukhumi, Ozurgeti (in large numbers in tea and citrus plantations), Poti, Gudauta, Gagra (Mcheidze 1939–1973).

Taxonomy: Platnick (2013): *Ebrechtella tricuspидata* (Fabricius, 1775).

7.16.13 *Synema* Simon, 1864⁶⁸

Key to species

- 1(6) Venter with a broad dark median band surrounded by five bright marks (Fig. 232). **2**
- 2(3) ♀ Both tips of metatarsi I and II armed with three spines. Claws of legs I with 7–8 small teeth. Dorsum yellowish white, with black-brown markings (Fig. 234). Epigyne like Fig. 233. Carapace length 2.1 mm

⁶⁶Sic Mcheidze (1997); Fig. 226 shows a species of Asteraceae.

⁶⁷In Mcheidze (1997) sic: 'PIK.-CAMBR., 1900'.

⁶⁸Mcheidze (1997) sic: 'SYNAEMA group GLOBOSUM SIM., 1864'.

- ♂ Ventro-lateral apophysis of the palpus tibia apically tapering like a mountain top (Fig. 235). Dorsum brown-black, with yellowish white marks (Fig. 236). Carapace length 2.1 mm. 1. *S. caucasicum* (p. 176)
- 3(2) Both tips of metatarsi I and II armed with four spines. 4
- 4(5) Both tips of metatarsi III and IV armed with three or two spines. Female carapace length 2.4–2.6 mm. Claw of leg I with 8–9 small teeth. Epigyne like Fig. 237. Dorsum white or rose-colored, with black-brown markings (Fig. 238). Carapace width of the male close to 2 mm. Femur I with six small teeth. Ventro-lateral apophysis of the palpus tibia apically tapering and branched (Fig. 239). Dorsum like Fig. 240. 2. *S. globosum* (p. 178)
- 5(4) Both tips of metatarsi III and IV armed with four spines. Carapace length 2.5 mm. Claw on leg I with 13-14 small teeth. Dorsal markings of the abdomen disrupted in the second and third part (Fig. 241). Epigyne like Fig. 242. Male unknown. 3. *S. caucasicum dagestanicum* (p. 178)
- 6(1) One bright spot behind the epigastric furrow and sometimes with two additional spots next to the spinnerets. Epigyne like Fig. 243. Male palpus like Fig. 244. 4. *S. richteri* (p. 179)

1. *Synema caucasicum* Utochkin, 1960

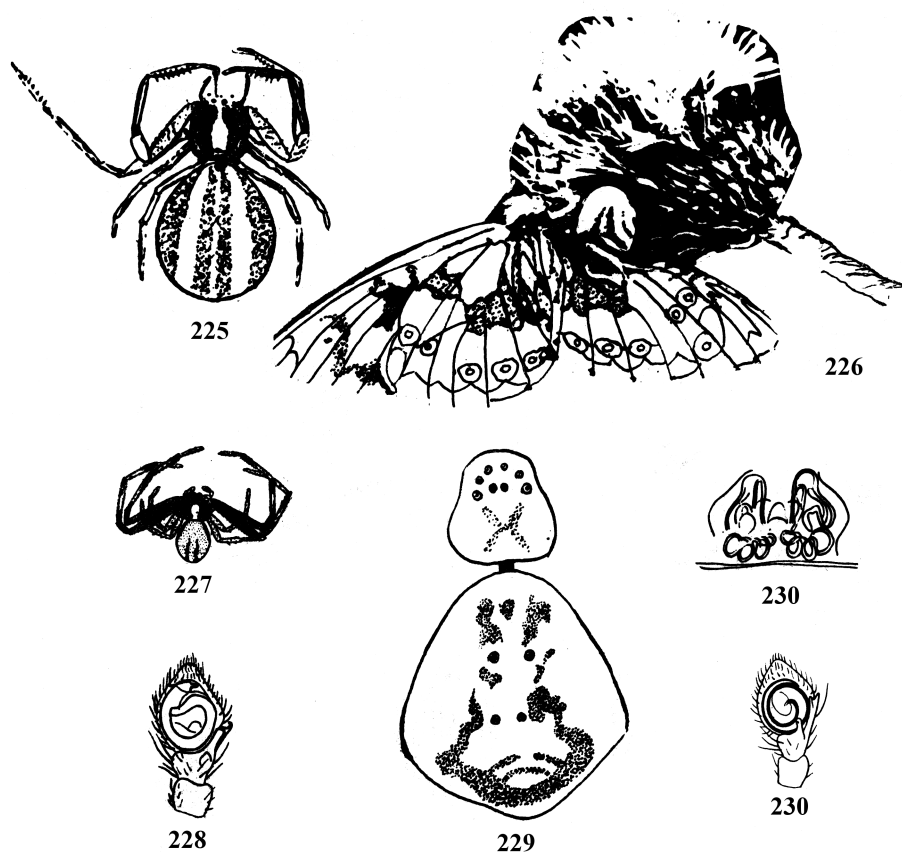
Description: ♀ Carapace length 2.1 mm. The carapace is reddish-brown, with a few black spines and short bright setae. Chelicerae, labium and gnathocoxae are of the same color as the carapace. The sternum is dark brown, with brownish-yellow marks, simple and covered sparsely with fine setae.

The abdomen is evenly bulged, oval, somewhat longer than wide. The dorsum is covered with short and thick setae; it bears yellowish-white and brown-black markings (Fig. 234). The venter bears a broad median black-brown band, which is bordered by four rows of small, pale dirty yellow marks extending from the epigastric furrow towards the spinnerets. Furthermore, it bears five bright white marks. Epigyne like Fig. 233. The anterior part of the chitinized epigynal plate is sharply divided into two parts.

♂ The male is similar to the female in color and size of the carapace, eye arrangement, leg coloration and the venter (Fig. 232). The dorsum is brownish-black, with a yellowish-white mark (Fig. 236). Palpus like Fig. 235.

Habitat: In grass, on flowers.

Distribution: Tbilisi (Andreevski 1921), Mtskheta, Kiketi (forest meadows), Lagodekhi Reserve, Batumi, Tsikhisdziri, Sukhumi (Mcheidze 1939, 1941, 1962). Georgian endemic species.



Figs. 225–231. Thomisidae, *Runcinia*, *Misumena*, *Misumenops*. *R. lateralis*: 225 – habitus; 226 – catching prey. *Misumena vatia*: 227 – habitus; 228 – palpus. *Misumenops tricuspidatus*: 229 – habitus; 230 – epigyne; 231 – palpus.

Taxonomy: Platnick (2013): *Synema caucasicum* Utochkin, 1960. In Mcheidze (1997) sic: 'Synaema caucasicum Ut., 1960'.

2. *Synema globosum* (Fabricius, 1775)

Description: ♀ Carapace length 2.4–2.6 mm. The dorsum is white or rose-colored, with black-brown markings (Fig. 238). The proximal and distal parts of metatarsi I and II are armed with four spines (two or three spines in metatarsi III and IV).

♂ Carapace width almost 2 mm. The claw on leg I bears six teeth. The ventro-lateral apophysis of the palpus tibia is elongated, tapering and does not have a bifid tip (Fig. 239). Dorsum like Fig. 240.

Habitat: On flowers, bushes, in grass, under rocks.

Distribution: Central Europe, Mediterranean countries (Canary Islands), Transcaucasus, Turkey, China, Siberia, southern regions of the former USSR, e. g. Mikhailovski Pass west of Sukhumi (Spassky 1937). **In Georgia:** Zestaponi (Qvirila), Kutaisi (Kulczyński 1895), Tsebelda (Simon 1899), Manglisi, Betania, Tbilisi, Batumi (Botanical Garden), Ozurgeti, Gudauta, Sukhumi, Gulripshi, Dranda (Mcheidze 1960, 1961).

Taxonomy: Platnick (2013): *Synema globosum* (Fabricius, 1775). In Mcheidze (1997) sic: 'Synaema globosum Fabr., 1775'.

3. *Synema globosum dagestanicum* Utochkin, 1960

Description: Female carapace length 2.7 mm, width 2.5 mm.

The carapace is light red-brown, sparsely covered with yellow setae and small light spines. The chelicerae and labium are of the same color as the carapace. The palpi are yellow. The plain sternum is brown, brownish-yellow, bears spots and is covered with numerous dark spines. Legs I and II are of the same color as the carapace; legs III and IV are considerably lighter. The claw on leg I is armed with 13–14 teeth. The distal part of femur I bears 10 spines.

The abdomen is somewhat bulged and oval; the dorsum is covered with thick and thin setae, the venter only with thin setae. The dorsum is decorated rose-yellow with brown-black markings (Fig. 241). The venter is developed like in *S. globosum* and *S. caucasicum*. Epigyne like Fig. 242.

Habitat: In grass, on flowers, under rocks.

Distribution: Dagestan. **In Georgia:** Kiketi (xerophytic parts of the upper forest; Mcheidze 1959). First record in Georgia.

Taxonomy: Platnick (2013): *Synema caucasicum* Utochkin, 1960. In Mcheidze (1997) sic: 'Synaema globosum (F) dagestanicum Ut. 1960'.

4. *Synema richteri* Utochkin, 1960

Description: Female carapace length 2.4 mm, width 2.3 mm. Male carapace length 2.3 mm, width 2.2 mm

♀ The carapace is dark reddish-brown with few spines and fine setae. The chelicerae, labium, gnathocoxae and palpus are of the same color as the carapace. The plain sternum is dark brown with yellow-brown spots; it is covered with fine long setae.

The abdomen is uniformly bulged, oval and covered with thick and short dorsal setae; the venter bears short setae. The dorsum is yellowish white with black-brown markings (Fig. 245). The lateral parts of the venter and the spinnerets, are brown-black. Epigyne like Fig. 243. Juvenile females are of lighter color.

♂ The male is similar to the female in the color of the carapace, eye arrangement, and leg color. They are smaller than the female and they have longer legs. The oval abdomen is somewhat elongated. The dorsum is black-brown with four marks (Fig. 346). The venter is brown-black with one white mark behind the epigastric furrow. Palpus like Fig. 244.

Habitat: In grassy places, under rocks.

Distribution: Erevan, Megri (Richter 1936–1938). **In Georgia:** Manglisi (Mcheidze 1964). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Synema plorator* (O. P.-Cambridge, 1872). In Mcheidze (1997) sic: '*Synaema richteri* Utotchkin, 1960'.

7.16.14 *Xysticus* C. L. Koch, 1835

Key to species groups

- | | | |
|------|--|------------------------------------|
| 1(6) | Males. | 2 |
| 2(5) | Clypeus area with 7–11 spines (without small spines). Palpus tibia with two apophyses (exception: <i>X. kempeleni</i> with three apophyses). Carapace with a well-developed bright median band or (sometimes) V-shaped figure. | 3 |
| 3(4) | Bulbus with one or two upwards projecting apophyses. Clypeus area with 7–9 long and pointed spines. Anterior slope of the carapace with a well-separated yellowish-white V-shaped figure. | 1. cristatus group (p. 180) |
| 4(3) | Bulbus without projecting apophyses. Clypeus region with 9–11 short, often pointed, spines. Carapace without or with a very poorly developed V-shaped figure. | 2. sabulosus group (p. 192) |
| 5(2) | Clypeus region with 13 or more long, pointed and curved spines. Palpus tibia with three apophyses. Carapace without a bright median band or median band hardly visible. | 3. robustus group (p. 203) |

- 6(1) Females. **7**
- 7(8) Clypeus region with 13 or more pointed curved spines. Carapace without a bright median band or median band hardly visible. Epigyne with a broad, wrinkled opening and a dark anterior projection. **3. robustus group** (p. 203)
- 8(7) Clypeus area with 7–11, rarely 13 spines. Median bright band of the carapace well developed. Epigyne not like this. **9**
- 9(10) Clypeus area with 7–9 long and pointed spines. Anterior carapace slope always with a sharp, brightly yellow and V-shaped figure. Epigyne with one or two deep openings or like a hump. **1. cristatus group** (p. 180)
- 10(9) Clypeus area with 9–11 pointed and short spines (exceptions: *X. acerbus*, *X. kempeleni* and *X. sabulosus* with 11–13 spines). Median, bright, V-shaped figure of the carapace hardly visible or entirely absent. Epigyne with one shallow opening or developed like a hump or cylinder. **2. sabulosus group** (p. 192)

1. cristatus group

Key to species

- 1(22) Males. **2**
- 2(17) Bulbus with two apophyses, one central and one basal apophysis. Central apophysis distinctly forked, somewhat similar to a pick-axe. If shape of the apophysis weakly developed, then handle with two blunt points. **3**
- 3(16) Central part of basal apophysis hardly curved and forming a hump near the bulbus. Clypeus area with seven spines. **4**
- 4(7) Basal apophysis formed like a thin spoon, tapering towards the tip, but with a sharp tooth at its base. Ventral apophysis distinctly formed like an ice axe. ME quadrangle formed like a trapezoid, distance between PME longer than between AME. **5**
- 5(6) Ventral apophysis thick, its handle as long as the outer lamella-like branch. With a sharp curved tooth at the tip of the basal apophysis; it is long and oriented parallel to the tip of the basal apophysis (Figs. 247, 247a). Carapace and abdomen like Fig. 248. Carapace length 2–2.6 mm. 1.1 ***X. audax*** (p. 184)
- 6(5) Ventral apophysis smaller, its handle longer than the outer conical branch. Sharp tooth on the basis of the basal apophysis small and oriented towards the apophysis tip (Figs. 250, 250a). Carapace and abdomen like Fig. 251. Carapace length 1.8–2.6 mm. 1.2 ***X. cristatus*** (p. 184)

- 7(4) Basal apophysis not like this. Ventral apophysis never formed like an ice axe. ME quadrangle square or rectangular. **8**
- 8(11) Bulbus and embolus in their apical-lateral parts sharply curved, almost at a right angle. **9**
- 9(10) Basal apophysis strongly curved, cylindrical, its tip rounded. Inner branch of the central apophysis short, pointed and oriented towards the apical-lateral part of the bulbus (Figs. 252, 253). Carapace and abdomen like Fig. 254. Carapace length 2.4–1.8 mm. 1.3 *X. kochi* (p. 186)
- 10(9) Basal apophysis hardly curved, wedge-like or cylindrical. Central bulbus apophysis formed like an ice axe; its outer branch oriented laterally (Figs. 259, 260). Carapace length 2.6 mm. 1.4 *X. gallicus* (p. 187)
- 11(8) Bulbus and embolus evenly rounded, almost circular. **12**
- 12(13) Central bulbus apophysis ice-axe-shaped, its inner branch directed laterally (Fig. 264). Outer tibia apophysis pointed (Fig. 265). Clypeus area with seven spines. Carapace and abdomen like Fig. 266. Carapace width 2.2 mm. 1.5 *X. umbrinus* (p. 188)
- 13(12) Ice-axe shape of the central apophysis weakly developed, its inner branch directed towards the basis of the bulbus and cut off above the basal apophysis. Outer apophysis of the tibia blunt. Clypeus area with nine spines. **14**
- 14(15) Both branches of the central apophysis arranged in one line directly opposite to one another. Outer apophysis of the palpus tibia curved (in lateral view). Basal apophysis three times wider than the central apophysis. **15**
- 15(14) Branches of the central apophysis forming a right angle. Outer tibia apophysis tip cut off, forming an inclined slope. Basal apophysis as wide as central apophysis (Fig. 267). Carapace and abdomen like Fig. 268. Carapace width 3–3.3 mm. 1.6 *X. cambridgei* (p. 188)
- 16(3) Basal apophysis strongly curved in the middle (often at a right angle) and forming a hump near the apical part of the bulbus. Clypeus area with nine spines. **17**
- 17(2) Central apophysis of the bulbus pointed, claw-like. **18**
- 18(19) Central and basal apophyses nearly as long as wide. Outer apophysis of the palpus tibia short (lateral view) and curved (Fig. 270, 271). ME quadrangle trapezoid, AME closer to each other than PME. Carapace and abdomen like Fig. 272. Clypeus area with seven spines. Carapace length 1.7 mm. 1.7 *X. ulmi* (p. 190)
- 19(18) Central apophysis always 1.5x longer than basal apophysis. ME quadrangle forming a square or a wide rectangle. **20**

- 20(21) Basal apophysis erect, conical. Outer tibia apophysis with a tooth on the tip (Figs. 275, 276). ME quadrangle rectangular, somewhat wider than long. Clypeus area with seven spines. Carapace length 2.5 mm. 1.8 *X. lanio* (p. 191)
- 21(20) Basal apophysis hardly curved. Outer palpus tibia apophysis with a rounded tip. Basal bulbous apophysis with a semilunar lamella (Figs. 278, 279). Carapace and abdomen like Fig. 280. Clypeus area with seven spines. Carapace length 2.2 mm. 1.9 *X. ukrainicus* (p. 191)
- 22(1) Females. **23**
- 23(28) Epigyne with two openings, separated from each other by a longitudinal septum. ME quadrangle forming a trapezoid, AME closer to each other than PME. Clypeus area with seven spines. **24**
- 24(27) Epigyne openings oval, in the anterior part more distant from one another; septum width equal to or narrower than the diameter of one opening. Distance between the openings and the epigastric furrow twice as large as the diameter of one opening. Tibiae I and II armed with 4–5 ventral spine pairs. **25**
- 25(26) Epigynal septum sharply narrowing from the posterior end, with a protuberance (Fig. 249). Dorsal markings of the abdomen dentated from the outside. Carapace width 2.3–3.5 mm. 1.1 *X. audax* (p. 184)
- 26(25) Epigynal septum gradually narrowing from the posterior end and without a protuberance (Fig. 251a). Dorsal markings of the abdomen more or less at a right angle from the sides (Fig. 251). Carapace width 2–3.5 mm. 1.2 *X. cristatus* (p. 184)
- 27(24) Epigynal openings not like this. **28**
- 28(23) Epigyne developed either with one deep opening with clearly outlined edges and often decorated with a median septum or sometimes with variable, dark apophyses or opening not complete; then developed with odd-numbered or pairwise protuberances. ME quadrangle square or rectangular. Clypeus area with 7–9 spines. **29**
- 29(40) Epigyne openings deep, connected partly or completely by a dark outer edge. **30**
- 30(31) Epigyne with a deep opening, which is separated in its anterior part by a median septum. Anterior part of the opening clearly separated, with the septum gradually extending towards its bottom, thus forming a well-developed pair of diverging openings towards the posterior part (Fig. 281). Abdomen like Fig. 282. ME quadrangle rectangular. Clypeus area with seven long and thick spines. Carapace length 3.5 mm. 1.10 *X. kalandadzei* (p. 192)
- 31(30) Epigynal opening transversally oval or circular or other. **32**

- 32(39) Epigynal opening partitioned by a median septum, which does not extend to the edges. **33**
- 33(38) Median septum extending from the anterior part, ending at the bottom of the opening and not reaching its posterior edge, or extending through the opening up to the posterior edge. Anterior part of septum wider than posterior part. **38**
- 34(37) Epigynal septum opening narrower than 1/3 of the opening's diameter. Clypeus area with seven spines. ME quadrangle rectangular. **35**
- 35(36) Median septum of the epigyne terminating at the opening's bottom and not reaching the posterior edge (Fig. 255). Borders of the epigynal opening narrow. Dorsal markings like Fig. 256. Carapace length 2.9 mm. 1.3 *X. kochi* (p. 186)
Based on two females, obtained 1961 in Kelasuri (Sukhumi region), we established the new subspecies *X. kochi abchasicus*, which differs from the nominal species in having a narrow epigyne septum (Fig. 257). Besides, carapace length is 4 mm, bright yellow with a bright band. Eye region brownish-yellow. ME quadrangle rectangular and somewhat broad. Clypeus area with seven spines. Abdomen like Fig. 258. 1.3 a *X. kochi abchasicus* (p. 186)
- 36(35) Median septum extending through the entire epigynal opening, reaching its posterior edge (Fig. 261). Carapace length 3.1 mm. 1.4 *X. gallicus* (p. 187)
Based on two females, obtained 1961 in the botanical garden of Batumi, we established the new subspecies *X. gallicus batumiensis*, which differs from the nominal species by its large size, the armament of femur I and the structure of the epigyne, which has a broad epigyne septum and angular, broadened edges (Fig. 262). Abdomen like Fig. 263. 1.4 a *X. gallicus batumiensis* (p. 187)
- 37(34) Median septum broad, almost reaching 1/3 of the opening's length (Fig. 269) or, if not as broad, extending through the opening to the posterior edge. Clypeus area with nine spines. ME quadrangle rectangular, somewhat broad compared to its length; sometimes posterior part hardly narrower than anterior part. Femur I with three prolateral and one dorsal spine, tibia only from below with 2:1:2:2:2:2. Carapace length 3.5–4 mm. 1.6 *X. cambridgei* (p. 188)
- 38(33) Epigyne and median septum not like this. **39**
- 39(32) Anterior part of epigynal opening narrowed, its bottom decorated with dark apophyses (Fig. 273). Carapace and abdomen like Fig. 274. ME quadrangle trapezoid, posterior part somewhat broad, compared to the anterior part. Clypeus area with seven spines. Carapace width 2.6 mm. 1.7 *X. ulmi* (p. 190)

- 40(29) Epigyne developed with one pair of pale, flat, swollen protuberances, between which is a transversal fold (Fig. 277). Clypeus area with nine spines. ME quadrangle rectangular, hardly broadened. Femur I armed with four prolateral and one dorsal spine. Tibiae I and II with three prolateral and retrolateral spines each, ventrally: 1:2:2:2:2:3:2:2. Carapace width 2.8 mm. .. 1.8 *X. lanio* (p. 191)

1.1 *Xysticus audax* (Schrank, 1803)

Description: Male body length 3–5 mm.

♀ The carapace is reddish-white, with rose-red sides in the posterior part and bright serrated median markings. The brown chelicerae bear setae. The legs are thick. The abdomen is reddish-brown, to some extent with fine wrinkles. Epigyne like Fig. 249.

♂ Carapace and abdomen are reddish-yellow, sometimes rose-yellow, with a broad, longitudinal, grayish-white, median band. In its posterior part, this band is bordered by a V-shaped white band. The edge of the carapace is black with a whitish venation. Palpus like Figs. 247, 247 a.

The dorsum bears many spots, sometimes with red and/or partly wrinkled sides (Fig. 248).

Habitat: On bushes, in grass, on ligneous plants.

Distribution: Palearctic (except Africa and Japan), in the Arctic from the tundra to the steppe. More abundant in northern regions, common in the Palearctic and Nearctic. Widely distributed. **In Georgia:** Telavi (Tsivi), Dzhvarpatiosani, Bakuriani (Nine-Springs Pass), Tsemi, Tshiatura, Ambrolauri (Mt. Satsalike), Mestia, Keda (Agara), Zendidi (Mcheidze 1940, 1953, 1973). First record in the Transcaucasus.

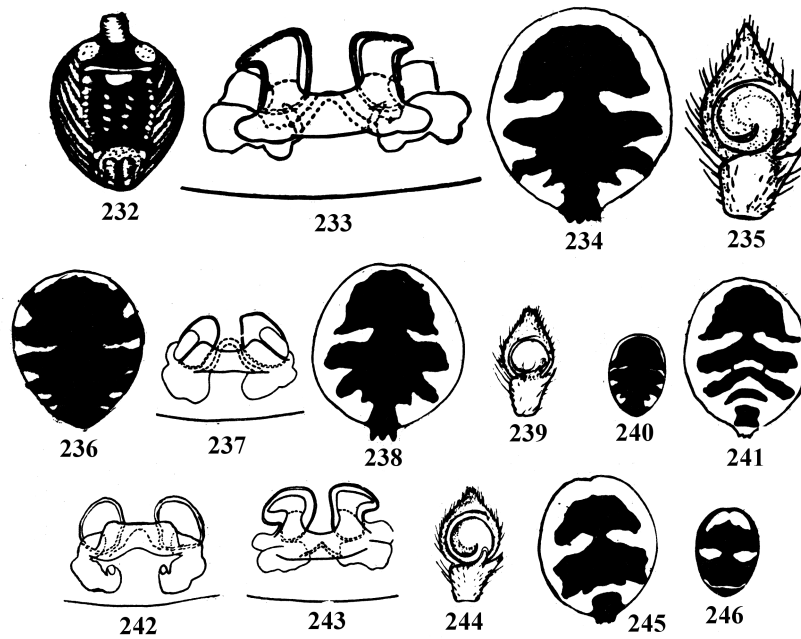
Taxonomy: Platnick (2013): *Xysticus audax* (Schrank, 1803). Mcheidze (1997) also cites the synonym [sic]: 'X. pini Hahn, 1831'.

1.2 *Xysticus cristatus* (Clerck, 1757)

Description: Female body length 5–7 mm, male 3.5–4.5 mm. The brown carapace is brighter in the middle and bears curved white lines. The abdomen is brown, brighter or with a white median band and three transversal white lines. The sides are white (Fig. 251). Epigyne like Fig. 251 a. Palpus like Figs. 250, 250 a.

Habitat: In grass, on bushes, ligneous plants. In the forest and steppe zones.

Distribution: Palearctic, former USSR. **In Georgia:** Gelati, Kutaisi (Kulczyński 1895), Borjomi (Koch 1878), Shiraki, Manglisi, Betania, Kiketi, Bakuriani (Lesser Omaneti), Tseti, Tbilisi, Sukhumi (Gulripshi) (Mcheidze 1940, 1954, 1970).



Figs. 232-246. **Thomisidae, *Synaema***. *S. caucasicum*: 232 - venter; 233 - epigyne; 234 - female dorsum; 235 - palpus; 236 - male dorsum. *S. globosum*: 237 - epigyne; 238 - female dorsum; 239 - male palpus; 240 - male dorsum. *S. globosum dagestanicum*: 241 - dorsum; 242 - epigyne. *S. richteri*: 243 - epigyne; 244 - male palpus; 245 - female dorsum; 246 - male dorsum.

Taxonomy: Platnick (2013): *Xysticus cristatus* (Clerck, 1757). Mcheidze (1997) also cites the synonym [sic]: '*X. viaticus* (L. 1758)'

1.3 *Xysticus kochi* Thorell, 1872

Description: Female carapace length 4 mm, width 3.6 mm; abdomen length 6.5 mm, width 5.8 mm. Male carapace length 2.5 mm, width 2.4 mm.

♀ The sides of the brown-auburnish carapace are bright. The clypeus is narrow and cut-off. The ME are uniform, forming a comparably broad quadrangle. The legs are dark auburnish-red.

The abdomen is brownish-reddish or blackish, sometimes auburn; its fringe is well developed, becoming larger towards the rear (Fig. 256). The epigyne is reddish, deep and longer than wide (Fig. 255).

♂ The carapace is of dark color: brown or black, its dorsal side bears a bright median band, which tapers towards the rear, accompanied by a dark brown band. In its anterior part, this band extends across the entire width of the carapace. The ventral surface is soft, somewhat irregular, with very long setae along the edge. Femur and patella are auburn, their proximate parts black. The palpus is auburnish-red (Fig. 252, 253).

The abdomen is brown or black, with a broad white border. A longitudinal auburn or reddish band is situated in the anterior part, tapering towards the rear (Fig. 254).

Habitat: In grass, on bushes.

Distribution: Europe, Tunis, Transcaucasus, characteristic for the Mediterranean Region. **In Georgia:** Zestaponi (Kulczyński 1895), Tbilisi (Simon 1899), Tbilisi (Botanical Garden), Kobuleti, Manglisi, Betania, Tabakhmela, Kodzhori, Keda, Khulo, Batumi (Mtirala), Tsaghveri, Tusheti (Omalo), Abasha, Sighnaghi, Lagodekhi (Matsimi Valley) (Mcheidze 1938, 1968, 1970).

Taxonomy: Platnick (2013): *Xysticus kochi* Thorell, 1872. In Mcheidze (1997) author with brackets.

1.3 a *Xysticus kochi abchasicus* Mcheidze & Utochkin, 1971

Description: Female carapace length 4.1 mm, width 4 mm. The dorsal carapace is light brown with a white band; its anterior slope bears a pentagonal brown spot and its posterior slope is almost entirely yellow. The ME quadrangle is rectangular, hardly wider than long. The clypeus area is armed with seven spines. The legs are brownish yellow; their dorsal parts are yellowish brown. The dorsal markings are light in the center and with three transversal bands (Fig. 258). The venter is light yellow. Epigyne like Fig. 257.

Habitat: In grass.

Distribution: Kelasuri (Sukhumi rayon) (Mcheidze 1961). Georgian endemic species.

Taxonomy: Platnick (2013): *Xysticus kochi abchasicus* Mcheidze & Utochkin, 1971⁶⁹.

1.4 *Xysticus gallicus* Simon, 1875

Description: Female carapace length 3.9 mm, width 3.8 mm; abdomen length 6.2 mm, width 6 mm. Male carapace length 3.5 mm, width 3.3 mm.

♀ The carapace is brownish black, on the sides brownish-reddish; the broad light band on its dorsal side is hardly visible. Its surface is almost uniform in having non-uniform spines along the middle line; it is somewhat bulged and inclined towards the front. The clypeus is wide and cut-off bluntly. The LE are bulged, the ME form a quadrangle, which is broader than long.

The abdomen is brownish-reddish, partly brown, with an auburn fringe and a broad median band. The epigyne is almost round with two small round or elongated furrows (Fig. 261).

♂ The carapace is black or dark brown, its sides bear an auburn venation, its dorsal surface bears a shingle-colored band, which unites with a brownish-red band. This band takes up the entire width of the anterior part and tapers in the posterior part. Near the sides, the dorsal surface is almost smooth. Rough setae are arranged in five lines. The clypeus is not as wide, tapering with a blunt apophysis and bears seven long setae in the anterior part.

The abdomen is black or dark brown and entirely fringed by a white band; with a white band in its anterior area. The spines are large and in the anterior part rather long and significant. The short tibiae of the hind legs bear brown-black or auburnish spots. Tibia I bears seven pointed spines.

The bulbus is brownish-reddish, its apophysis is black (Figs. 259, 260).

Habitat: In grass, forest floor, under rocks.

Distribution: France, Switzerland, Lesser Asia, Moldova, Moscow Region.

In Georgia: Tbilisi, Kodzhori, Manglisi, Betania, Martqopi, Keda, Poti, Mestia (Gvaldiri, Betsho, Latali) (Mcheidze 1940, 1956, 1957). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus gallicus* Simon, 1875.

1.4 a *Xysticus gallicus batumiensis* Mcheidze & Utochkin, 1971

Description: ♀ Carapace length 3.4 mm, width 3 mm. The dorsum is dark brown with a bright median band, originating from the ME and extends to the petiolus. From near the PME, the anterior slope of the carapace is decorated with a brown pentagonal mark, which is bordered in the front and rear by a V-shaped figure. On the posterior slope, this band is light yellow

⁶⁹In Mcheidze (1997) sic: 'X. kochi Th. abchasicus Sub sp. n. Mcheidze et Utotschkin, 1971', lapsus.

and broadened. The sides of the carapace are brown, with fine yellowish, dentate and marmorate markings.

The ME region is brown, whereas the region of the AME is yellow. The ME quadrangle forms a square. The clypeus area is armed with seven thick and pointed spines.

The abdomen is oval, the dorsum is brown and bears yellow markings. A broad light band extends along the abdomen and terminates in its second half by forming three small transversal bands. The abdomen is bordered by a yellow fringe (Fig. 263). The venter is covered with fine yellowish-brown marks and bands. Epigyne like Fig. 262.

Habitat: In grass.

Distribution: Batumi (Botanical Garden) (Mcheidze 1960). Georgian endemic species..

Taxonomy: Platnick (2013): *Xysticus gallicus batumiensis* Mcheidze & Utochkin, 1971. In Mcheidze (1997) sic: 'X. gallicus Sim. batumiensis subsp. n. Mcheidze et Utotschkin, 1971'.

1.5 *Xysticus umbrinus* Utochkin, 1968

Description: ♂ Carapace length 2,3 mm, width 2,2 mm. The dorsal carapace is yellow brown, its anterior slope bears a median band forming a white V-shaped figure and its sides are uniformly colored. Two brown marks are situated on the posterior slope of the carapace.

The ME are arranged as a rectangle, which is broader than long. The anterior part of the eye region is almost yellow, its posterior part is darkened. The clypeus area is armed with seven spines. The sternum is covered with brown sprinkles and brown setae. The legs are dark brown; femur and patella of leg III sprinkled. Palpus like Figs. 264, 265.

The abdomen is oval; the dorsum is somewhat flattened and dark brown; its ventral part is yellow with hardly recognizable sprinkles. The abdomen is bordered by a white fringe, which comes from the dorsum (Fig. 266). The female is not known.

Habitat: On grass in forests.

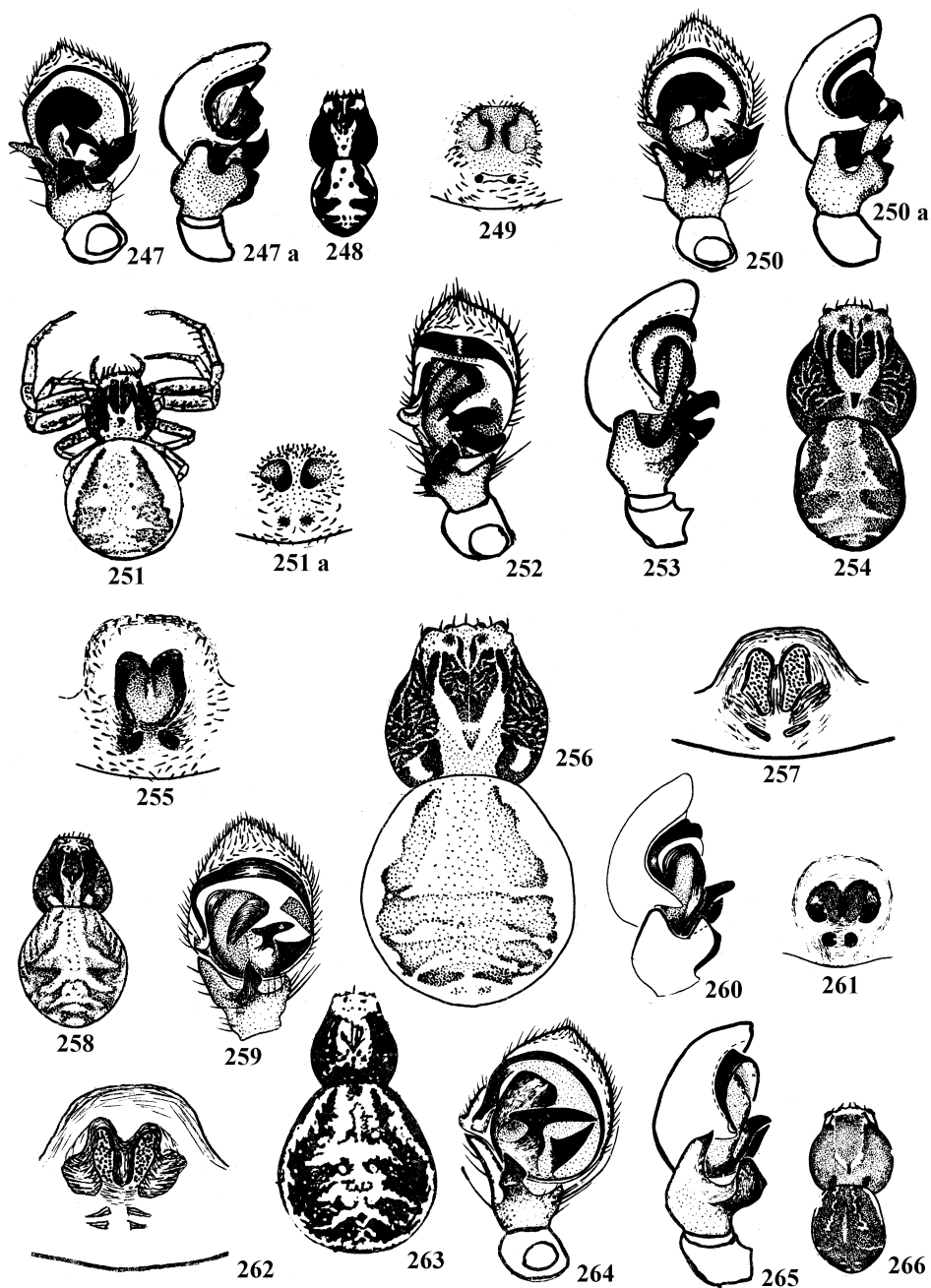
Distribution: North Caucasus (Kuban Region). **In Georgia:** Tusheti (Omalo), Alvani, Bakuriani (Mcheidze 1945–1960). Caucasian endemic species.

Taxonomy: Platnick (2013): *Xysticus spasskyi* Utochkin, 1968. In Mcheidze (1997) sic: 'Xysticus umbrinus Utotschkin, 1968'.

1.6 *Xysticus cambridgei* (Blackwall, 1859)

Description: Female carapace length 3.5 mm, width 3.3 mm; abdomen length 6.5 mm, width 6.2 mm. Male carapace length 3 mm, width 3 mm.

♀ The carapace is brown-black with a darker brown dorsal part; its surface is smooth with numerous similar setae, which are strong and short.



Figs. 247–266. Thomisidae, *Xysticus* (cristatus group, in part.). *X. audax*: 247 – ventral male palpus; 247 a – lateral palpus; 248 – male habitus; 249 – epigyne. *X. cristatus*: 250 – ventral male palpus; 250 a – lateral palpus; 251 – female habitus; 251 a – epigyne. *X. kochi*: 252 – ventral male palpus; 253 – lateral palpus; 254 – male habitus; 255 – epigyne; 256 – female habitus. *X. kochi abchasicus*: 257 – epigyne; 258 – female habitus. *X. gallicus*: 259 – ventral male palpus; 260 – lateral palpus; 261 – epigyne. *X. gallicus batumiensis*: 262 – epigyne; 263 – habitus. *X. umbrinus*: 264 – ventral male palpus; 265 – lateral palpus; 266 – habitus.

The antero-dorsal part is swollen. The clypeus is broad and cut off. The uniform ME form a quadrangle, which is broader than long. The legs are thick and short, brown-black; their ventral sides are bright, but with long, fine, shingle-colored lines on the dorsal femur, patella, tibia and tarsus.

The dorsum is dark, brown-yellow; often it is surrounded by a white fringe. Its surface is smooth with strong short and densely standing needles (Fig. 268). The epigyne is of transversal orientation, with two rounded depressions on each side (Fig. 269).

♂ The carapace is brown-red with a dark venation on the sides and a broad, shingle-colored dorsal band. The surface of the carapace is almost smooth, but its sides are rough. The clypeus area bears a row of 9–11 spines. The palpus is dark brown-yellow (Fig. 267).

The abdomen is black or dark brown, with a dentate fringe of scattered white spots. A strong transversal, elongated, dark, shingle-colored band is situated in the second half of the dorsum and ramifies horizontally; its surface bears thick and short spines.

Habitat: In mixed forests, on Azalea bushes (*Rhododendron spp.*).

Distribution: Europe, Central Asia (Europe–Siberia). **In Georgia:** Manglisi, Kiketi, Batumi (Botanical Garden) (Mcheidze 1958). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus luctator* L. Koch, 1870. Mcheidze (1997) cites *X. luctator* L. Koch, 1870 as a synonym, as well as *X. impavidus* Thorell, 1872. In Mcheidze (1997) sic: 'Xysticus cambridgei (Blakw., 1858)', lapsi.

1.7 *Xysticus ulmi* (Hahn, 1831)

Description: Female body length 5.5–8 mm, male 4–4.5 mm. In both sexes, the carapace is brown, with a white median field. Two broad dark bands are situated behind the lateral eyes.

♀ The abdomen is grayish-brown, with a thin white fringe; its anterior part bears a white median region and transversal white lines (Fig. 274). Epigyne like Fig. 273.

♂ The abdomen is brownish black, with bright markings, bearing a narrow lateral fringe and with a median cross-like field and 2–4 transversal lines (Fig. 272). Palpus like Fig. 270, 271.

Habitat: On grass, often near water bodies. Forest species.

Distribution: Mainly distributed in Central and Northern Europe. In the European part of the former USSR (with the exception of the most North-western, besides in Siberia, Sakhalin (Europe–Siberia). First record in Georgia.

Taxonomy: Platnick (2013): *Xysticus ulmi* (Hahn, 1831). In Mcheidze (1997) author without year and also citing the synonym [sic]: '*X. bivittatus* (westr., 1861)'.

1.8 *Xysticus lanio* C. L. Koch, 1835

Description: Female carapace length and width 3.5 mm; abdomen length and width 5.6 mm. Male carapace length and width 2.5 mm.

♀ The carapace is of bright color, brown-yellow, with a brown venation on the sides. The broad longitudinal, shingle-colored band is somewhat narrowed in its posterior part. The anterior band is of the same width and color as the lateral part. The clypeus is broad and crosses over onto the opposite line. The clypeus bears nine spines, of which the central spine is the longest. The LE are small; the ME form a square.

The abdomen is bright, brown-yellow; its markings are similar to the male's. The median band is finely serrated but not pointed backwards. Setae are abundant and long. The epigyne is very small (Fig. 277).

♂ The whole carapace is bright brown-yellow with a venation; the dorsal, broad longitudinal band on its sides is more pale. The surface is almost smooth and its dorsal side is somewhat flat. The clypeus is very broad and cut-off; bearing a row of nine spines. The LE sit on protuberances. The legs and palpus are dark yellow (Figs. 275, 276).

The abdomen is bright, brown-yellow and bears a very broad median band, which is serrated, white-yellowish or brightly rose-colored and bears three pairs of points in its posterior part. The setae on the whole surface are thick and long.

Habitat: On bushes.

Distribution: Almost everywhere in the former USSR, Northern Karelia, Astrakhan Region (Europe–Siberia). **In Georgia:** Tusheti (Omalo), Lagodekhi (Matsimi Valley), Kodzhori, Tsqneti, Kelasuri, Kobuleti, Shua Surebi (Guria) (Mcheidze 1939, 1964). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus lanio* C. L. Koch, 1835. In Mcheidze (1997) author with brackets.

1.9 *Xysticus ukrainicus* Utochkin, 1968

Description: ♂ Carapace length 3.3 mm, width 2.2 mm. The dorsal carapace is yellow-brown, with a well-visible median band, which is decorated with a darkened pentagonal mark and a white V-shaped figure in its anterior part behind the PME. This band is narrowed in its posterior part (Fig. 280).

The eye region is somewhat darkened, the protuberances of the PE are dark, the ME form a square. The clypeus area is armed with seven spines. The sternum is unicolor brown-yellow. The femur and patella of all legs are yellow with brown sprinkles; tibia and tarsus are unicolored brown-yellow. Palpus like Figs. 278, 279.

The dorsum is brown; its ventral side is gray brown. Its sides are darkened, with a broken, bright yellow fringe, which traverses onto the dorso-anterior part of the abdomen. The female is unknown.

Habitat: In forests, feeding on pest insects.

Distribution: North Caucasus (near Kuban River). **In Georgia:** Bakuriani, Tsaghveri (Mcheidze 1940). Caucasian endemic species.

Taxonomy: Platnick (2013): *Xysticus ukrainicus* Utochkin, 1968. Female described by Ovtsharenko (1979).

1.10 *Xysticus kalandadzei* Mcheidze & Utochkin, 1971

Description: Carapace length 3.6 mm, width 3.5 mm. The dorsal carapace is light brown with a broad median band, which is somewhat broader in the middle. In its anterior half, this band is decorated with a brownish pentagonal mark. The posterior part of this band is light brown. The lateral regions are brown-yellow and marmorated. Two brown spots divide the posterior slope. The eye region is yellow. The ME form a rectangle. The edge of the clypeus region is armed with seven long pointed spines.

The dorsum is flattened; its ventral and lateral surfaces are yellow, the dorsal markings are as illustrated in Fig. 282. The epigyne bears a deep groove, which is divided in its anterior part by a median septum (Fig. 281).

Habitat: In grass.

Distribution: In Georgia: Kiketi, Betania (Mcheidze 1962). Georgian endemic species..

Taxonomy: Platnick (2013): *Xysticus kalandadzei* Mcheidze & Utochkin, 1971.

2. *sabulosus* group

Key to species

- | | | |
|-------|--|---|
| 1(17) | Males. | 2 |
| 2(11) | Palpus tibia with a very long outer apophysis. | 3 |
| 3(8) | Palpus tibia with two apophyses, the inner (lower) apophysis is bifid. | 4 |
| 4(7) | Outer apophysis of the palpus tibia gradually growing thinner towards the tip and hardly bent towards the ventral side. ME forming a rectangle, which is wider than long. All femora, patellae and tibiae yellow with dark sprinkles. | 5 |
| 5(6) | Palpus like Figs. 283, 284. ME rectangle one third wider than long. Clypeus area with two spines. Dorsal habitus like Fig. 286. Carapace length 3 mm. | 2.1 <i>X. acerbus</i> (p. 195) |
| 6(5) | Palpus like Figs. 287, 288. ME rectangle one fourth wider than long. Clypeus area with nine spines. Carapace length 2.4 mm. | 2.2 <i>X. luctuosus</i> (p. 197) |

- 7(4) Outer apophysis of the palpus tibia sharply thinned in the middle, its tip thin, awl-shaped (Figs. 290, 291). ME quadrangle almost square, hardly wider than long. Femur, patella and tibia (except their bright bases) black, in its apical part with sharp white semi-circles. Clypeus area with nine spines. Carapace length 1.9 mm. 2.3 *X. lineatus* (p. 198)
- 8(3) Palpus tibia with three apophyses (not necessarily in one group); the inner apophysis with one tip. 9
- 9(10) ME quadrangle trapezoid (AME closer together than PME), which is wider than long. Legs armed with numerous spines (femur I with three anterior spines, I+II with three dorsal spines; tibia I+II with two anterior and posterior spines, 2:2:2 ventral spines, rarely 1:2:2:2). Palpus like Figs. 293, 294. Dorsal habitus like Fig. 295. Carapace width 1.7 mm. 2.4 *X. kempeleni* (p. 198)
- 10(9) ME quadrangle not like this. 11
- 11(12) ME square. Tip of the outer apophysis with a well-developed, claw-like tooth. Embolus with drill-like coiled borders (Fig. 296–297). Clypeus area with nine spines. Carapace length 2.2 mm. 2.5 *X. striatipes* (p. 199)
- 12(11) ME quadrangle, tooth of the outer apophysis and embolus shape not like this. 13
- 13(16) Embolus shorter than bulbus diameter and originating from the apical part of the bulbus. Bulbus with a crevice between cymbium and embolus. AME closer together than PME. Femur I with 7–16 anterior spines and tibia I with anterior spines arranged in two longitudinal rows (with three spines in the upper row and two spines in the lower row). 14
- 14(15) Embolus awl-shaped, tibia apophyses basally standing rather close to one another (Figs. 299, 300). Femora armed with 7–10 anterior spines. Carapace width 1.8 mm. 2.6 *X. ninnii* (p. 199)
- 15(14) Embolus not like this. Apophyses of the palpus tibia spaced more widely (Figs. 302, 303). Femur I armed with 16 anterior teeth. Carapace width 2.4 mm. 2.7 *X. sabulosus* (p. 199)
- 16(13) Median section of the embolus curved in a right angle, its tip directed laterally. Palpus with a dark claw (Figs. 305, 306). Tibiae I and II armed with four pairs of ventral spines. Clypeus area with 17 spines. Carapace length 1.9 mm.
 2.8 *X. marmoratus* (p. 201)
- 17(1) Females. 18
- 18(21) Epigyne of characteristic shape. 19

- 19(20) Epigynal depression not shallow and its shape similar to a triangle. The bottom of this depression is bright and divided into two parts by a transversal furrow (Fig. 307). Dorsal carapace brown with a bright median band. Abdomen oval, dorsum bright yellow with weakly recognizable brown markings (Fig. 308). Venter yellow-gray, sides with slanted bright spots. Eye region bright yellow. ME quadrangle wider than long. Distance between AME somewhat shorter than between PME. Clypeus area with 11 spines. Carapace width 2.1 mm. 2.9 **X. charitonovi** (p. 202)
- 20(19) Similar to the last species in having an epigyne, which is divided into two parts by a transversal furrow, but differing from it (Fig. 309). Dorsal carapace with a bright yellow-brown median band and this band on the anterior slope with a yellow V-shaped mark (Fig. 310). Abdomen oval, dorsum yellow with brown markings. Distance between AME somewhat shorter than between PME. Clypeus area with 11 spines. Carapace length 2.2 mm. 2.10 **X. bacuriensis** (p. 202)
- 21(18) Epigyne not like this. **22**
- 22(29) Epigynal depression deep, sometimes hardly noticeable, but always delimited in the front and rear by rounded borders; its posterior limits partly bright. **23**
- 23(28) Carapace and legs yellow-brown. Femur, patella and tibia with brown marks or sprinkles. Metatarsus and tarsus unicolored yellow-brown. **24**
- 24(27) ME quadrangle trapezoid, its anterior part weakly narrowed, its width exceeding its length by one fourth. Clypeus area with 11–13 spines. **25**
- 25(26) ME quadrangle almost one third wider than long. Leg 1.11⁷⁰ armed with spines only ventrally: 1:2:2:2:2 or 1:1:2:2:2:2:2. Carapace width 3.2–3.5 mm. Epigyne like Fig. 285. 2.1 **X. acerbus** (p. 195)
- 26(25) ME quadrangle one fourth wider than long. Tibia 1.11 with at least five pairs of spines. Carapace width 2.7–3 mm. 2.4 **X. kempeleni** (p. 198)
- 27(24) ME quadrangle rectangular, hardly wider than long. Clypeus area with nine spines. Epigyne like Fig. 289. Tibia 1.11 with ventral spines: 1:2:2:2 or 2:2:2:2. Carapace width 2.3 mm. 2.2 **X. luctuosus** (p. 197)

⁷⁰Sic Mcheidze (1997).

- 28(23) Carapace and legs black-brown. Femora, patellae and tibiae in their apical parts with sharp white semi-circles. Bases of metatarsus and tarsus yellow, but brown in their apical parts. Epigyne like Fig. 292. ME quadrangle somewhat wider than long. Clypeus area with 11 spines. Tibia 1.11 with ventral spines: 1:2:2:2 or 2:2:2. Carapace width 2.3 mm. 2.3 *X. lineatus* (p. 198)
- 29(22) Epigynal furrows spaced narrowly, surrounding similar areas. Anterior part of ME quadrangle narrowed, trapezoid. Clypeus area with 11–13 spines. 30
- 30(31) Epigynal furrows broadly spaced, surrounding similar areas; a pair of thick dark spots behind the furrow (Fig. 304). Clypeus area with 13 spines (not counting pairs). Tibia 1.11 armed with three posterior spines and ventral spines: 2:2:2:2. Carapace width 2.6 mm. 2.7 *X. sabulosus* (p. 199)
- 31(30) Distance between epigynal furrows not like this. –
- 32(33) Front of epigynal furrows spaced narrowly (sometimes almost touching), surrounding a dark area (Fig. 301). Clypeus area with 11 spines. Tibia 1.11 only armed with ventral spines: 1:2:2:2. Carapace width 2.3 mm. 2.6 *X. ninni* (p. 199)
- 33(32) Epigyne with protuberances or cylinder-like. 34
- 34(35) Epigynal protuberances in the anterior part narrowed, but in the posterior part rounded. ME quadrangle trapezoid, of short length and with a narrow anterior part. Clypeus area with 11 spines. Tibia 1.11 only armed with ventral spines: 1:2:2:2. Carapace width 2.6–2.7 mm. 2.8 *X. marmoratus* (p. 201)
- 35(34) Epigyne armed with a longitudinal cylinder in both furrowed depressions (Fig. 298). ME quadrangle square. Abdomen elongated. Clypeus area with nine spines. Carapace width 2.4–2.8 mm. 2.5 *X. striatipes* (p. 199)

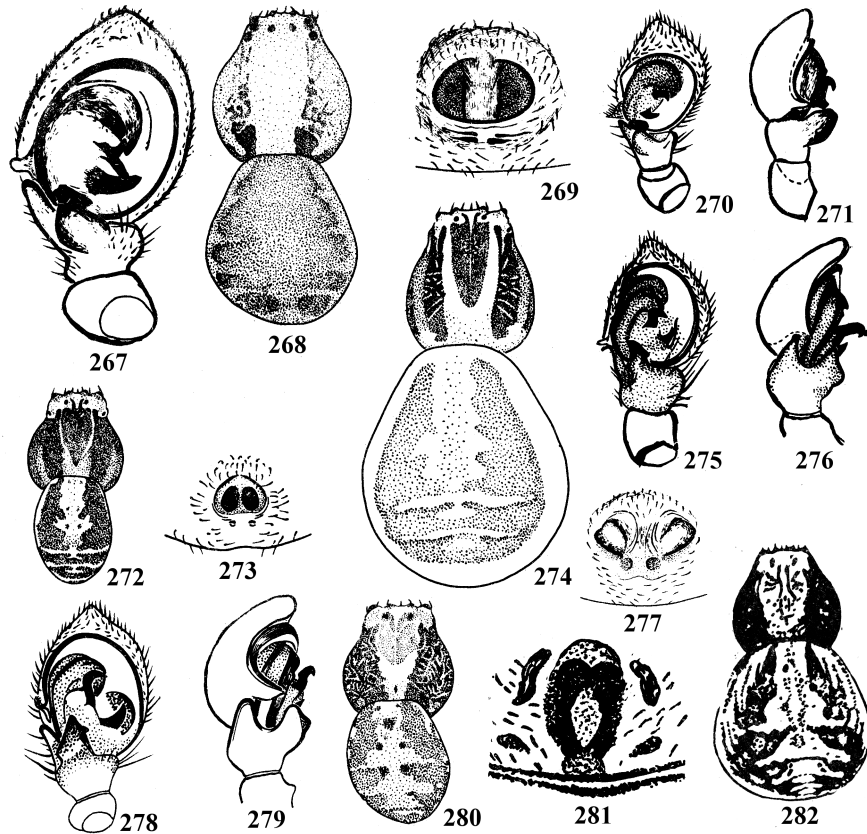
2.1 *Xysticus acerbus* Thorell, 1872

Description: Female carapace length 3.5 mm, width 3.4 mm; abdomen length 5 mm, width 4.6 mm. Male carapace length 2.5 mm, width 2.5 mm.

♀ The carapace is brown with a dark venation; the median band is very broad, bearing large pale brown spots. The broad clypeus is somewhat curved moon-like in frontal view. The mounds of the LE are weakly developed. The surface is thinly shagreen, with very long and thin setae. Legs I and II are brown-red with numerous dark brown dorsal spots.

The abdomen is dark brown, often reddish; its anterior part bears a very broad fringe and its posterior part bears 3–4 transversal dark brown bands; sometimes these bands are fused, forming one broad band. The simple epigyne is situated on a red relief; it is wider than long (Fig. 285).

♂ The carapace is blackish brown with a brown venation; the broad



Figs. 267–282. *Thomisidae*, *Xysticus* (*crustatus* group, in part.). *X. cambridgei*: 267 – ventral male palpus; 268 – habitus; 269 – epigyne. *X. ulmi*: 270 – ventral male palpus; 271 – lateral palpus; 272 – male habitus; 273 – epigyne; 274 – female habitus. *X. lanio*: 275 – ventral male palpus; 276 – lateral palpus; 277 – epigyne. *X. ukrainicus*: 278 – ventral male palpus; 279 – lateral palpus; 280 – male habitus. *X. kalandadzei*: 281 – epigyne; 282 – habitus.

longitudinal band is hardly noticeable. The carapace bears numerous irregular, scattered black marks and lines; its surface is shagreen and covered with thick setae, which are long in the anterior part and short in the dorsal and posterior parts. The dorsal area is almost flat, the clypeus wide and almost square. The mounds of the LE are thick. Femur, patella and tibia are blackish.

The abdomen is covered with erratic setae of blackish color. The fringe and the broad median band are bright; the median band is strongly serrate in its second half, often broken (Fig. 286). The palpus is brown with dark spots (Figs. 283, 284).

Habitat: Under rocks, in conifer forests, on stipes, in grass.

Distribution: Central and Southern Europe, Turkey, in the European part of the former USSR, northward up to Latvia and the regions of Pskov, Novgorod, Kalinin, Iaroslav. Siberia. **In Georgia:** Tsebelda (Simon 1899), Kodzhori, Tbilisi (Lake Kus), Zugdidi, Lagodekhi (Tshiauri Forest), Batumi (Tsikhisdziri) (Mcheidze 1952–1962).

Taxonomy: Platnick (2013): *Xysticus acerbus* Thorell, 1872. In Mcheidze (1997) author with brackets.

2.2 *Xysticus luctuosus* (Blackwall, 1836)

Description: Female carapace length and width 2.5 mm; abdomen length 4.5 mm, width 4.3 mm. Male carapace length 2.5 mm, width 2.4 mm.

♀ The carapace is bright with a brown-red and dark venation. The dorsal band is very broad and shingle-like in its posterior part; in its anterior part it becomes a broad brown reddish band. The eye region is shingle-like, with almost equal length and width of the ME quadrangle. The surface is smooth and dorsally flat. The legs are dark yellow; femora, patellae and tibiae of legs I and II are covered with black marks and spots. Femora, tibiae and metatarsi each bear a black annulation.

The abdomen is dark cinereous brown and with numerous brown spots and scattered, almost uniform, short setae. The epigyne bears a large brick-colored depression, which is wider than long (Fig. 289).

♂ The carapace is brown-blackish, changing into brown near the edges; it bears a broad longitudinal dark brown band, which is elongated in its posterior part but in its anterior part it bears a large narrow brown spot. The surface is almost smooth, with short setae. The abdomen is black-white, very broad and spotted.

The legs are dark brown-red. Femora I and II are dorsally darkened and spotted with brown spots. The palpus is brown red, its tibia in dorsal view as long as wide, like the patella (Figs. 287, 288).

Habitat: In grass, under rocks.

Distribution: Europe, Siberia, Kamchatka Peninsula, NE China (Manchuria), native to Europe and Siberia. **In Georgia:** Batumi (Tsikhisdziri),

Tshakvi, Kobuleti, Tbilisi (1959). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus luctuosus* (Blackwall, 1836).

2.3 *Xysticus lineatus* (Westring, 1851)

Description: Female carapace length and width 2.5 mm; abdomen length 4.9 mm, width 4.5 mm. Male carapace length and width 1.9 mm.

♀ The carapace is black with brown spots, especially in the posterior part. Its dorsal part is swollen and inclined towards the front. The clypeus is broad and somewhat curved inwards. The mounds of the LE are weakly developed and the anterior edge (clypeus) bears seven long spines, of which the median spines are the longest. The ME are uniform, forming a quadrangle, which is longer than wide.

The abdomen is brown blackish or reddish; the broad fringe is brighter and less distinctive. In its second half it bears four transversal white bands. Femora I and II are black, metatarsi and tarsi brown red. The epigynal plate is reddish or black (Fig. 292).

♂ The carapace is black, with a median band consisting of two small brown lines and forming a dark triangular mark in the posterior part. The surface is rough, the sides bear setae. The clypeus is very broad and cut-off. The mounds of the LE are small, its anterior edge (clypeus) bears seven spines. The legs are comparatively thin and long. The palpus is dark brown, with brown marks (Figs. 290, 291).

The abdomen is dark brown red, with a thin white edge, which is enlarged in its anterior part and shaped like a mark.

Habitat: In grass.

Distribution: In Western Europe, Palestine, in the former USSR in the European part and regions of Murmansk, Moscow and Kursk. Caucasus. **In Georgia:** Betania, Manglisi, Mestia (Mcheidze 1948). First record in Georgia.

Taxonomy: Platnick (2013): *Xysticus lineatus* (Westring, 1851).

2.4 *Xysticus kempeleni* Thorell, 1872

Description: Female body length 6 mm, male 3.5 mm.

♀ The abdomen is pale gray with four transversal white lines, which are covered with black setae.

♂ The carapace is brown-black or with a well-developed white V-shaped figure and a thin white line near the edge. Palpus like Figs. 293, 294. The abdomen is brownish black with a white fringe, a broad white median band and three transversal white lines.

Habitat: Steppe species, in high grass and on shrubs.

Distribution: Central Europe, in the former USSR in the Ukraine, Crimea,

Caucasus, regions of Moscow, Kaluga, Rostov, Southern Urals and Kazakhstan (Europe-Siberia). First record in Georgia⁷¹.

Taxonomy: Platnick (2013): *Xysticus kempeleni* Thorell, 1872⁷².

2.5 *Xysticus striatipes* L. Koch, 1870

Description: Female body length 5–6.5 mm, male 3–5.5 mm. The central part of the carapace is yellow, its sides bear sharp straight lines. The sternum is yellow. The dorsum bears a broad whitish median area, which is bordered by a grayish brown band. Epigyne like Fig. 298. Male palpus like Figs. 296, 297.

Habitat: In grass, under rocks, in tree-steppe fields.

Distribution: NE China (Manchuria), widely distributed in the steppe zone of the former USSR and in Central Asia (Europe-Siberia). **In Georgia:** Tbilisi (Lake Kus), Kodzhori, Kiketi (forest places), Kharagauli (Mcheidze 1960). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus striatipes* L. Koch, 1870. Mcheidze also lists the synonym *X. perogaster* Thorell, 1872.

2.6 *Xysticus ninnii* Thorell, 1872

Description: ♀ The carapace is brown, lighter in the center. The abdomen is grayish brown. Epigyne like Fig. 301.

♂ The carapace bears an arched white band. The abdomen is almost black and bears a serrate yellowish median band and a thin white edge. Palpus like Figs. 299, 300.

Habitat: In grass, steppe species.

Distribution: Southern Europe, Lesser Asia (Mediterranean species). In the former USSR in the regions of Moscow, Saratov, Southern Urals, Crimea and Central Asia. **In Georgia:** Kodzhori (Udzo), Kiketi, Betania, Manglisi, Khashuri, Tusheti Mts., Kazbegi, Sioni (Mcheidze 1939–1970). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus ninnii* Thorell, 1872.

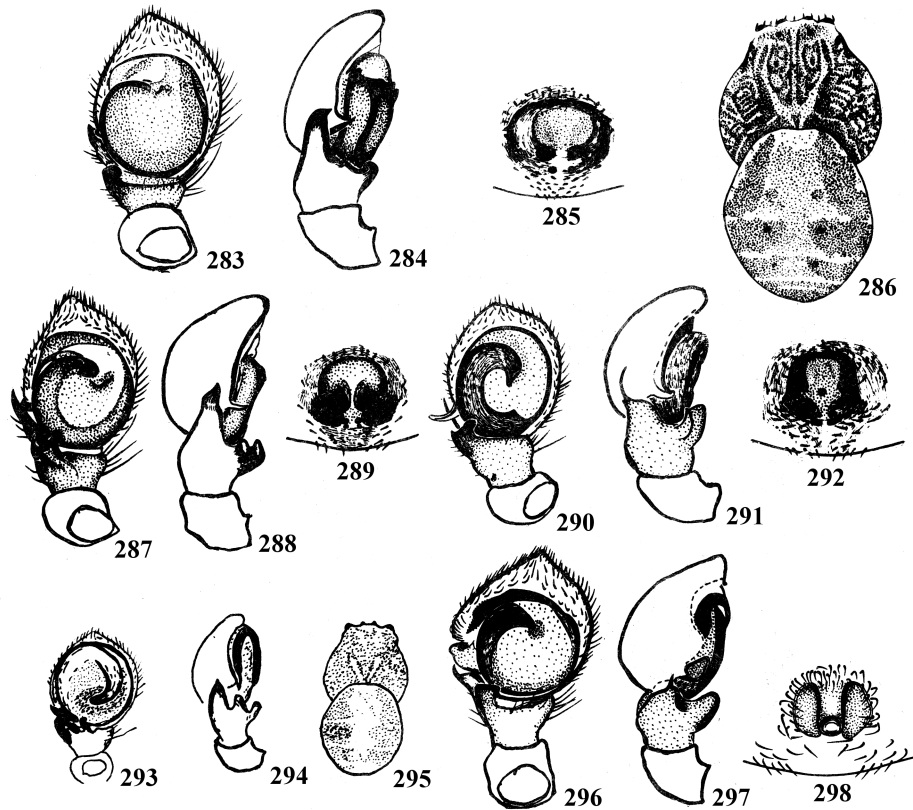
2.7 *Xysticus sabulosus* (Hahn, 1832)

Description: Female carapace length 3 mm, width 2.8; abdomen length 4 mm, width 3.5 mm. Male carapace length and width 2.4 mm.

♀ The carapace is yellowish, more or less dark and darker on the sides. The longitudinal dorsal band is broad, cinereous and somewhat darker in its anterior part. The dorsal carapace is weakly bulged. The clypeus is broad

⁷¹No specific locations in Georgia listed in Mcheidze (1997).

⁷²Mcheidze (1997) also lists the synonym [sic]: '*X. flater* Herm., 1879', lapsus referring to *X. frater* Herman, 1979.



Figs. 283–298. *Thomisidae*, *Xysticus* (*sabulosus* group, in part.). *X. acerbus*: 283 – ventral male palpus; 284 – lateral palpus; 285 – epigyne; 286 – male habitus. *X. luctuosus*: 287 – ventral male palpus; 288 – lateral palpus; 289 – epigyne. *X. lineatus*: 290 – ventral male palpus; 291 – lateral palpus; 292 – epigyne. *X. kempeleni*: 293 – ventral male palpus; 294 – lateral palpus; 295 – habitus. *X. striatipes*: 296 – ventral male palpus; 297 – lateral palpus; 298 – epigyne.

and bears a blunt apophysis; its surface is shagreen with thick and long spines. The ME form a square.

The abdomen is gray with a broad fringe; its median band is bright and bears three pairs of lateral pointed teeth in the second half. Often, the bands are separated by transversal yellowish lines. The setae are thick and irregular.

♂ The carapace is brown black, its sides bear a dark venation and spots. The dark dorsal median band is of the same color as the sides and ends in numerous points, which are directed towards the posterior third. The surface is rough and bears short thick dorsal setae. The clypeus is comparatively narrow, flat and armed with a row of 13 spines. The palpus is whitish, and spotted white (Figs. 302, 303).

The abdomen is blackish and broad, with a white fringe. The anterior part bears a large elongated white mark and the dorsum bears a longitudinal brown band. The posterior part bears a transversal white band with an enlarged anterior part. In the middle, this band is triangular with black spots. The dorsum bears numerous short setae.

Habitat: Thermophilous species, living in open sunny places, forest steppe (Kiketi, Betania), in low grass, under rocks. They mate in early fall (September, October).

Distribution: Europe, Tunis (Mediterranean), in the former USSR in St. Petersburg, regions of Kalinin, Moscow, Saratov, Central Asia. **In Georgia:** Kodzhori, Kiketi, Betania, Manglisi, Khashuri (Mcheidze 1967). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus sabulosus* (Hahn, 1832). In Mcheidze (1997) author sic: '(Hahn, 1831)'.

2.8 *Xysticus marmoratus* Thorell, 1875

Description: Female carapace length 2.8 mm, width 2.75 mm. Male carapace length and width 2 mm.

♀ The carapace shape is similar to the carapace of the male. It is dark ferruginous brown; its sides bear small-sized dull marks, its median part is broad. The chelicerae are brick-colored brown. The palpus and legs are covered with cinereous brown spots and marks.

The shape and coloration of the abdomen are similar to the male's. Its venter is cinereous white and densely covered with scattered brown spots. The epigyne has a dark opening.

♂ The dorsal side of the carapace is smooth, ferruginous brown, light. The median band is broad, dull brick-colored. The eye region is largely white. The clypeus area is armed with ten spines in one row. The sternum is whitish shingle-colored and densely covered with black spots. The ME quadrangle is almost rectangular, with the AME being more distant from each other than

the PME. The chelicerae are brick-colored with brown marks. The palpus is dull brownish brick-colored (Figs. 305, 306).

The abdomen is elongated, dark cinereous and with a paired band all around; its dorsum is rounded and its venter cinereous brown and white.

Habitat: In grass, under rocks.

Distribution: Regions of Moscow, Saratov, Rostov, Southern Ukraine.

In Georgia: Tbilisi (Shavnabada), Okroqana, Aspindza (Mcheidze 1973). First record in the Caucasus.

Taxonomy: Platnick (2013): *Xysticus marmoratus* Thorell, 1875.

2.9 *Xysticus charitonovi* Mcheidze, 1971

Description: ♀ Carapace length 2.2 mm, width 2.1 mm The dorsal side of the carapace is brown with a bright median band originating from the PME and terminating in front of the pedicel. This band is very broad and decorated with a triangular brown mark. The eye region is bright yellow, and the ME rectangle is wider than long. The clypeus area is armed with 11 pointed spines. The sternum is yellow with brown sprinkles. The legs are yellow and bear a longitudinal dorsal brown band and fine sprinkles.

The abdomen is oval, its dorsum is bright yellow with hardly recognizable brown markings. The venter is yellow gray, on the sides with slanted bright marks (Fig. 308). The epigyne is characteristic (Fig. 307).

Habitat: Alpine zone (2650 m a.s.l.), in grass, under rocks (Mcheidze 1941). Georgian endemic species.

Distribution: Nine-Springs Pass (Borjomi rayon),

Taxonomy: Platnick (2013): *Xysticus charitonovi* Mcheidze, 1971. In Mcheidze sic: 'charitonovi', lapsus.

2.10 *Xysticus bacurianensis* Mcheidze, 1971

Description: ♀ Carapace length 2.3 mm, width 2.2 mm, the dorsal side is yellowish brown, with a bright median band, originating from the PME and terminating in front of the pedicel; on the anterior slope it is decorated with a V-shaped yellowish mark. The lateral relief is somewhat darkened. The ME quadrangle is wider than long. The clypeus area bears 11 spines. The yellow sternum bears brown sprinkles. The legs are light brown with fine spots.

The dorsum of the oval abdomen is yellow with brown markings; its sides are yellow (Fig. 310). The venter is yellow with fine brown sprinkles. Epigyne like Fig. 309.

Habitat: In grass under rocks.

Distribution: North Caucasus (Ovtsharenko 1979). **In Georgia:** Nine-Springs Pass (Borjomi rayon, Mcheidze 1939). Georgian endemic species.

Taxonomy: Platnick (2013): *Xysticus bacurianensis* Mcheidze, 1971.

3. *robustus* group

Key to species

X. nubilus (p. 205) and *X. tristrami* (p. 205) are not keyed.

- 1(4) Females. **2**
- 2(3) Epigyne like Fig. 311. Posterior carapace slope and lateral part dark brown and brick-colored. Eye region and hardly visible V-shaped markings on the anterior slope yellow brown. Abdomen yellow white with black marks of unspecific shape. Basal part of femur yellow, distal part darker, the remaining segments brown. ME quadrangle rectangular, somewhat longer than wide. Carapace width 2.2 mm. **3.1 *X. cribratus*** (p. 203)
- 3(2) Epigyne like Fig. 312; its anterior part with a raised W-shaped appendage and hook-like cylinders on the sides. Dorsal carapace brown, anterior slope with yellow sprinkles, median part of the posterior slope bright. Lateral parts somewhat dark and with less distinct lines (Fig. 313). Eye region brown, ME quadrangle almost rectangular. Clypeus area with 1–19 spines. Thoracic region yellow and with brown sprinkles. All legs brown with weakly yellowish fine bands. Carapace width 3.9 mm. **3.2 *X. adsharicus*** (p. 204)
- 4(1) Males. Carapace more or less of uniform coloration: dark brown, brick-colored red. Tibiae and basal half of metatarsus yellow brown. Distal half of metatarsus and tarsus dark brown. Abdomen with indistinct dorsal markings. Copulatory organs like Figs. 314, 315. ME quadrangle trapezoid, somewhat wider than long; AME somewhat closer together than PME. Carapace length 3 mm. **3.3 *X. robustus*** (p. 204)

3.1 *Xysticus cribratus* Simon, 1885

Description: The posterior carapace slope and the sides are dark brown, brick-colored red. The eye region and the V-shaped figure on the anterior slope are yellowish brown. The abdomen is yellowish white with black marks and indistinct markings. The basal part of the femur is yellow, its tip is darker. The remaining segments are brown. The ME quadrangle is rectangular, somewhat longer than wide. Epigyne like Fig. 311.

Habitat: In grass, on shrubs.

Distribution: Europe, Mediterranean. **In Georgia:** Keda, Tbilisi, Manglisi (Mcheidze 1964). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus cribratus* Simon, 1885.

3.2 *Xysticus adsharicus* Mcheidze, 1970

Description: ♀ Carapace length 4 mm, width 3.9 mm, dorsal part dark brown, anterior slope with yellow sprinkles. The median part of the posterior slope is bright, the lateral parts somewhat dark and with a better visible venation. The eye region is brown. The eyes are somewhat protuberant and weakly bright. The ME quadrangle is almost square. The clypeus area is armed with 17–19 spines. The yellow sternum bears fine brown sprinkles. All legs are brown and bear pale longitudinal bands.

The dorsum is brown, its sides bear fine dark sprinkles; the venter is somewhat bright and sprinkled (Fig. 313). Epigyne like Fig. 312.

Habitat: In grass, under rocks.

Distribution: Tago (Khulo rayon) at 1600 m a.s.l. (Mcheidze 1939). Georgian endemic species.

Taxonomy: Platnick (2013): *Xysticus adzharicus* Mcheidze, 1971.

3.3 *Xysticus robustus* Hahn, 1831

Description: Female carapace length 5.2 mm, width 6 mm; abdomen length 6.2 mm, width 6 mm. Male carapace length and width 3.7 mm.

♀ The carapace is dark brown reddish with a venation on the sides and dorsal spots; its is covered with numerous irregularly arranged setae. The protuberances of the LE are weakly developed. The broad and blunt clypeus area bears a row of irregularly arranged spines. The ME form a rectangle, which is somewhat wider than long.

The abdomen is hazy brown red or marmorate, with black spots or marks and with many very short setae on the entire surface. The legs are very thick, brownish, somewhat rough and bear numerous marks. The epigyne is blackish.

♂ The carapace is black or dark brown, reddish everywhere except the longitudinal band. All LE have a small white mark. The surface is weakly rough, bearing short setae of similar length. The clypeus area is broad and blunt and bears a row of more than 20 thick long spines. The legs are thick and comparatively long; femur and patella are black, all other segments are dark brown. The palpi are dark brown and reddish (Figs. 314, 315).

The abdomen is black, dull, somewhat rough, with thick, thorn-like spines.

Habitat: Under rocks, in grass and mosses.

Distribution: Europe, Algiers, in the former USSR in St. Petersburg, regions of Moscow, Saratov, Kazakhstan, Central Asia, Siberia, Khosta.

In Georgia: Kodzori (Udzo), Khulo (Tago), Nakerala at 1600 m a.s.l., Bakhmaro at 2003 m a.s.l. (Mcheidze 1939, 1958, 1961). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xysticus robustus* (Hahn, 1832).

3.4 *Xysticus nubilus* Simon, 1875

Description: Female carapace length 2.4 mm, width 2.2 mm; abdomen length 3.7 mm, width 3 mm. Male carapace length and width 1.6 mm.

♀ In shape and coloration, the carapace is very similar to the carapace of *X. cristatus*. The setae on the carapace are thick and numerous. The ME quadrangle is square. The abdomen is brown, like in *X. cristatus*, partly red or shingle-colored.

♂ The carapace is dark brown, almost black, near the legs different: brown, sometimes reddish. The surface is finely shagreen, the setae are very long. The clypeus area bears seven long spines. The femur, patella and tibia bases of legs I and II are almost black. The palpus is dark brown.

The abdomen is dark brown or black, with a white fringe and a broad longitudinal brown or white band, forming three pairs of dentate bands in the second half. The setae are short and almost uniform.

Distribution: In Georgia: Lagodekhi (Mcheidze 1939).

Taxonomy: Platnick (2013): *Xysticus nubilus* Simon, 1875. In Mcheidze (1997) author with brackets.

3.5 *Xysticus tristrami* (O. P.-Cambridge, 1872)

Description: Male carapace length 2 mm.

♀ Females are broader than the males and dull, overall similar to the male.

♂ The carapace is of common shape, shining and with fine spots, reddish brown with a reddish yellow median band. The legs are covered with spines. The legs are of the same color as the carapace, except the metatarsi and tarsi. The tibia and patella bear brown yellow sprinkles and white bands. The copulatory organs are well developed and of simple structure.

The abdomen is oval, its posterior part is rounded and somewhat flat, of yellowish color and sprinkled red brown and white. The wrinkled sides bear blackish brown and red marks.

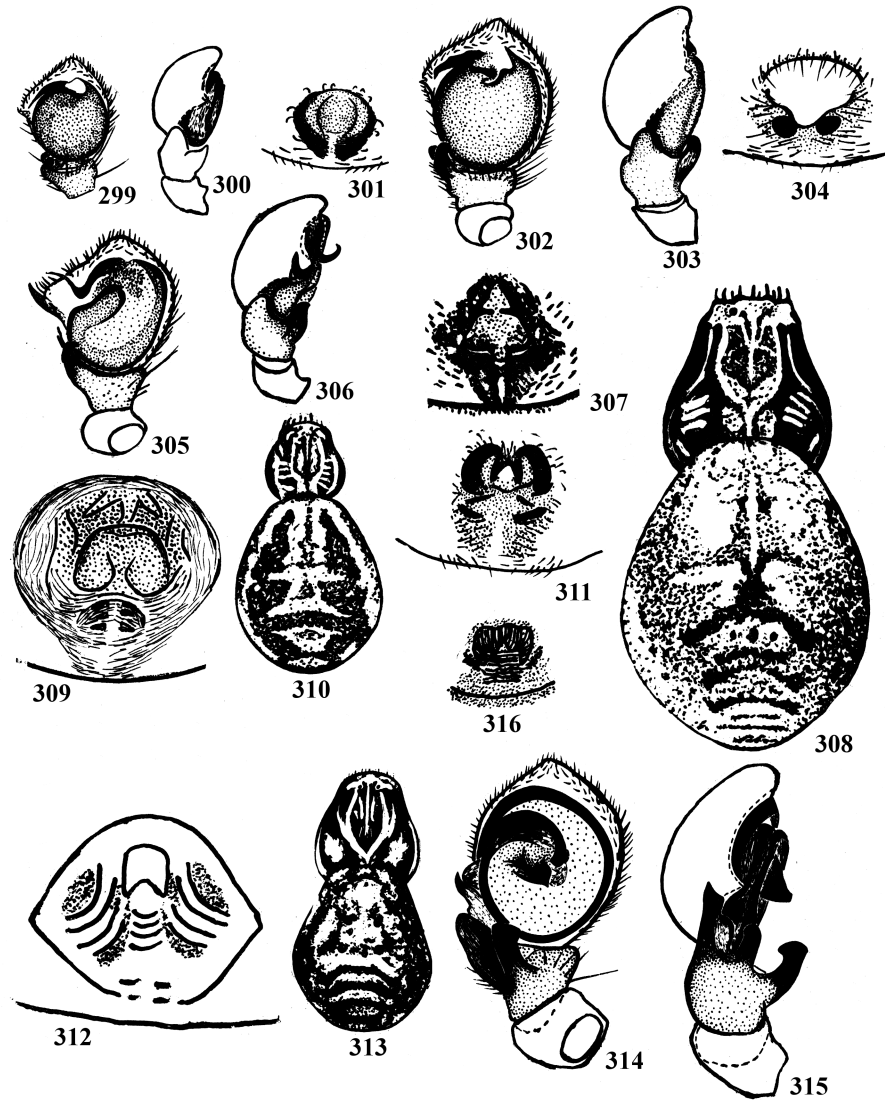
Habitat: The females live under rocks, the males more often on the ground, in grass and on shrubs.

Distribution: Palearctic, Syria, Jerusalem, Jericho, Nazareth, Damascus, Lebanon, in the former USSR in the Caucasus, Turkmenistan. In Georgia: Tbilisi (Botanical Garden), Kareli (Mcheidze 1949, 1959). First record in Georgia.

Taxonomy: Platnick (2013): *Xysticus tristrami* (O. P.-Cambridge, 1872).

7.17 Clubionidae

The carapace is elongated, oval, with a raised cephalic region; its median depression is sharply outlined. The eyes are of almost similar size and ar-



Figs. 299–316. Thomisidae, *Xysticus* (sabulosus group, in part.; robustus group). *X. ninnii*: 299 – ventral male palpus; 300 – lateral palpus; 301 – epigyne. *X. sabulosus*: 302 – ventral male palpus; 303 – lateral palpus; 304 – epigyne. *X. marmoreus*: 305 – ventral male palpus; 306 – lateral palpus. *X. charitonovi*: 307 – epigyne; 308 – habitus. *X. bacurianensis*: 309 – epigyne; 310 – habitus. *X. cribratus*: 311 – epigyne. *X. adsharicus*: 312 – epigyne; 313 – habitus. *X. robustus*: 314 – ventral male palpus; 315 – lateral palpus; 316 – epigyne.

ranged in two transversal rows. The chelicerae are directed vertically and bear dark tips; in the males they are larger and terminate in a curved fang. The cheliceral furrow bears teeth.

The sternum is broader than long, all around with a fringe. The legs bear two claws and have spines. The hind extremities are comparatively long (formula 4.1.2.3); only in *Cheiracanthium* is the first pair of extremities longer. Almost all segments of the extremities bear spines. The copulatory apparatus of the males is complicated and with a well-developed bulbus. The palpus tibia bears one to two apophyses, sometimes the cymbium has a thin elongated apophysis.

The abdomen is elongated. The epigyne is simple; in typical cases it bears one to two or some depressions. The spinnerets are arranged in three rows. They have no colulus.

The coloration is whitish-yellow, yellowish-green, light brown, rarely black. The abdomen is often unicolored, sometimes with markings. The males and females are of almost the same size. The chelicerae of the males are thin and long, their legs bear thick spines.

These spiders do not construct webs for catching prey, but mostly hunt at night and spend the day in retreats spun in rolled-up leaves of plants. Both ends of the retreat are bright and tubiform. They live in grass, on bushes, under the bark of trees, in mosses (on the ground) or below rocks. The female protects the eggs below ground until hatching. After hatching the juveniles stay in the retreat for some time. After molting they come outside and freely make their own retreats. After four molts the juveniles stop growing.

Within this family we find more than 50 species in the European part of the former USSR; in Georgia we find five genera and 17 species.

Key to genera

- 1(2) Three eye rows (subfamily Zorinae). 3. *Zora* (p. 219)
- 2(1) Two eye rows. **3**
- 3(6) Gnathocoxae distinctly cut-off on the outside. Labium significantly longer than wide. Metatarsi I and II with only one thin vertical spine. Tarsi with 10–20 claws, rarely with 6–12 small teeth on the inside (subfamily Clubioninae). **4**
- 4(5) PMA spaced at a wider distance from each other than PLA. 1. *Cheiracanthium* (p. 208)
- 5(4) Eyes of the MER spaced at similar distances from each other or ME closer to the lateral eyes than to each other. Femora I and II with dorsal spines. 2. *Clubiona* (p. 211)
- 6(3) Gnathocoxae not distinctly cut-off on the outside. Labium wider than long. Tarsi I and II with 2–5 pairs of ventral spines. Tarsus claws most often with 2–4 small teeth (subfamily Liocraninae). **7**

- 7(8) Coxa IV divided by a long appendage of the sternum. Thorns outside with a long spine. All tarsi with short scopulae. Small teeth of the claws almost invisible. . . . 4. *Phrurolithus* (p. 220)
- 8(7) Coxae IV touching the sternum or divided by a short conical appendage. Chelicerae lacking long lateral thorns. Tarsi I and II without a scopula. Tarsus claws always with small teeth. 9
- 9(10) PER almost straight or weakly curved backwards. Anterior spinnerets not touching each other. Tarsi without pinhead-like spines between their claws. 5. *Liocranum* (p. 220)

7.17.1 *Cheiracanthium* C. L. Koch, 1839

Key to species

- 1(12) Males. 2
- 2(3) Palpus tibia with one apophysis. Body length 6–7 mm.
. 1. *Ch. mildei* (p. 209)
- 3(2) Palpus tibia with one apophysis.⁷³ 4
- 4(9) Dorsum with a longitudinal, median brown to dark brown or shingle-colored red band. 5
- 5(6) Upper part of the cymbium forming a raised angular protuberance (Fig. 319). 2. *Ch. erraticum* (p. 209)
- 6(5) Upper part of the cymbium not forming a protuberance. 7
- 7(8) Terminal end of cymbium apophysis truncated (Fig. 321).
. 3. *Ch. pennyi* (p. 210)
- 8(7) Terminal end of cymbium apophysis not truncated. 9
- 9(4) Dorsum uniformly colored, without brown or red bands. 10
- 10(11) Palpus tibia apophysis tip furcated with both branches of comparable length (Fig. 325). 4. *Ch. punctorium* (p. 210)
- 11(10) One of the branches of the furcated tibia apophysis markedly longer than the other (Fig. 328). 5. *Ch. virescens* (p. 211)
- 12(1) Females. 13
- 13(16) Dorsum with a longitudinal, median brown to dark brown or shingle-colored red band. 14
- 14(15) Dorsum with a longitudinal dark brown band. Width of the epigynal opening exceeding its length (Fig. 322). Body length 7.5 mm. 3. *Ch. pennyi* (p. 210)
- 15(14) Dorsum with a longitudinal shingle-colored red band. Epigynal opening not wider than long (Fig. 320). Body length 7.5 mm. 2. *Ch. erraticum* (p. 209)
- 16(13) Dorsum of uniform color, greenish-yellow or greenish-gray; not brown or red (Fig. 318). 17

⁷³Sic Mcheidze (1997), compare instance 2.

- 17(18) Epigynal opening shallow, its posterior part closed and the posterior edge of the extra-epigynal part almost as long as the diameter of the epigyne (Fig. 317). Body length 7–8.5 mm. 1. *Ch. mildei* (p. 209)
- 18(17) Epigynal opening deep, its posterior part more or less bright, separated from the posterior edge or close to it, this distance shorter than the opening's diameter (Fig. 326). 19
- 19(20) Tarsi I–IV sharply or markedly darkened (almost black). Inner edge of cheliceral furrow with one large and some comparably smaller teeth. Body length 10+ mm. 4. *Ch. punctorium* (p. 210)
- 20(19) Tarsi I–IV gradually and very weakly darkened. Inner edge of cheliceral furrow with a number of similar-sized teeth. Epigynal opening small, longer than wide (Fig. 329). Body length 8–8.5 mm. 5. *Ch. virescens* (p. 211)

1. *Cheiracanthium mildei* L. Koch, 1864

Description: Female body length 7–8 mm, male 6–6.5 mm. The abdomen is unicolor: white, yellow or greenish, bordered by dark lines of the same color as the dorsum (Fig. 318). The palpus tibia is armed with two almost identical apophyses. Metatarsus IV bears 12–15 ventral spines arranged in a median row. Epigynal opening deep (Fig. 317).

Ecology: In grass, on bushes, on branches of woody plants and on leaves. Abundant on *Paliurus spina-christi*, vines, rarely on coniferous trees. It rolls up a leaf, oviposits and then guards the eggs inside the rolled-up leaf.

Distribution: Syria, Palestine, Southern Europe, North Caucasus. **In Georgia:** Sukhumi (Lake Ritsa), Kutaisi, Zamtredia, Terdzhola, Gurdzhaani (Mcheidze 1953, 1956). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Cheiracanthium mildei* L. Koch 1864⁷⁴.

2. *Cheiracanthium erraticum* (Walckenaer, 1802)

Description: Female body length 8–9 mm, male 5.5–6 mm. The carapace is yellow, the chelicerae are yellow-reddish with darkened tips (black). The sternum is brown and brighter in the center. The dorsum is greenish-gray, shingle-colored red with a longitudinal band and bordered by a yellow line. Epigyne like Fig. 320. Male palpus like Fig. 319.

Habitat: This hygrophilous species lives on grasses (reed and rush) and bushes near waterbodies and in mires. It feeds on midges and dragonflies.

Distribution: Europe, Kamchatka Peninsula, Central Asia, Anatolia, in the European part of the former USSR, St. Petersburg and Arkhangelsk

⁷⁴In Mcheidze (1997) with author C. L. Koch 1864, lapsus.

regions. **In Georgia:** Sukhumi (Spassky 1937), Poti, Kobuleti, Lagodekhi, Kotshalo, Kodzhori (Mcheidze 1938–1940).

Taxonomy: Platnick (2013): *Cheiracanthium erraticum* (Walckenaer, 1802). Mcheidze (1997) also lists the synonym, sic: *Chiracanthium erroneum* Rick.-Cambr., 1873, lapsus.

3. *Cheiracanthium pennyi* O. P.-Cambridge, 1873

Description: Female body length 6–8 mm, male 6 mm. The carapace is light brown with a longitudinal dark band and brown chelicerae with black tips. The sternum is brownish-yellow and darkened at the edges. The abdomen is brownish-yellow, with a longitudinal red-brown band, which is bordered by yellow lines. Female habitus like Fig. 323, epigyne like Fig. 322. Male habitus like Fig. 324, palpus like Fig. 321.

Ecology: This steppe species mostly lives on the spikes of grasses, constructing its retreat in rolled-up leaves, which are bound by silk. The inside of this retreat is covered with a white layer of silk, where the female guards its eggs. Besides, it lives on the leaves of woody plants and vines. It feeds on aphids and spider mites.

Distribution: Europe, China, in the former USSR in southern and central regions, Siberia, Transcaucasus. **In Georgia:** Gurdzhaani, Tshumlaqi, Akhalsheni, Velistsikhe, Akhmeta, Tbilisi, Kodzhori, Khashuri, Akhaldaba, Baghdati, Lantshkhuti, Mt. Kheta-Urta (Mcheidze 1939, 1942, 1965). First record in Georgia.

Taxonomy: Platnick (2013): *Cheiracanthium pennyi* O. P.-Cambridge, 1873). In Mcheidze (1997) author with brackets.

4. *Cheiracanthium punctorium* (Villers, 1789)

Description: Female body length 10–14 mm, male 7.5–11 mm. Carapace reddish-yellow, chelicerae yellowish-red with black marks near the end. The sternum is greenish-yellow. The abdomen is greenish-yellow or greenish-gray, dark, green, with a longitudinal band (Fig. 327). Epigyne like Fig. 326. Male palpus like Fig. 325.

Ecology: This hygrophilous species lives in bushes, on high grass and on the leaves of vines, coniferous plants, on *Paliurus spina-christi*. This species is poisonous; its bite is very painful.

Distribution: Palearctic (except North Africa and Japan), New Zealand, in the former USSR in Uzbekistan, Kazakhstan, Altai. **In Georgia:** Poti (Simon 1899), Sighnaghi, Bakuriani (lakes), Betania, Tshokhatauri (Partskhma), Baghdati, Rokiti (Mcheidze 1939, 1960, 1963).

Taxonomy: Platnick (2013): *Cheiracanthium punctorium* (Villers, 1789)⁷⁵.

⁷⁵In Mcheidze (1997) sic: 'Chiracanthium punetorium', lapsus.

5. *Cheiracanthium virescens* (Sundevall, 1833)

Description: Female body length 7.5–9 mm, male 7 mm. The sternum is yellow and yellowish-red; the chelicerae have blackend tips. The abdomen is gray-green with a darker median band, which is bordered by curving yellow bands and densely covered with black setae (Fig. 330). Epigyne like Fig. 329. Male palpus like Fig. 328.

Habitat: It lives on the spikes of grass.

Distribution: Central and Northern Europe, in southern regions of the former USSR. **In Georgia:** Poti, Shovi (Mcheidze 1940, 1970). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Cheiracanthium virescens* (Sundevall, 1833).

7.17.2 *Clubiona* Latreille, 1804

Key to species

- | | | |
|--------|---|-----------------------------------|
| 1(12) | Males. | 2 |
| 2(3) | Dorsal branch of the palpus tibia apophysis with a gap (Fig. 331).
Body length 6.5–7.5 mm. | 1. <i>C. pallidula</i> (p. 212) |
| 3(2) | Dorsal branch of the palpus apophysis without gap. | 4 |
| 4(7) | Ventral branch of the palpus tibia apophysis longer than dorsal
branch. | 5 |
| 5(6) | Embolus running alongside the ventral membrane of the bulbus
(Fig. 334). Dorsum grayish-yellow with white setae. Body length
5.5 mm. | 2. <i>C. neglecta</i> (p. 214) |
| 6(5) | Embolus not running alongside the ventral membrane of the bulbus
(Fig. 337). Dorsum reddish-brown with a longitudinal, bright ⁷⁶
mark (Fig. 339). Body length 5 mm. | 3. <i>C. similis</i> (p. 214) |
| 7(4) | Ventral branch of the palpus tibia apophysis not longer than dorsal
branch. | 8 |
| 8(9) | Ventral branch of the palpus tibia narrowed (Fig. 341). Body
length 5–6 mm. | 4. <i>C. germanica</i> (p. 214) |
| 9(8) | Ventral branch of the palpus tibia blunt and with a broadened tip
(Fig. 344). Near the cymbium tip with a depression, in which the
embolus is situated. | 5. <i>C. lutescens</i> (p. 216) |
| 10(11) | Both branches of the palpus apophysis blunt, the tip of the ventral
branch somewhat broad (Fig. 347). . | 7. <i>C. frutetorum</i> (p. 217) |
| 11(10) | Middle branch of the palpus apophysis with a weak bump (Fig.
349). | 8. <i>C. stagnatilis</i> (p. 217) |
| 12(1) | Females. | 13 |

⁷⁶Possibly lapsus, Fig. 339 bears a dark longitudinal mark.

- 13(14) Posterior part of the epigyne with two diagonally arranged shining protuberances, which in the anterior part are not bordered by lateral furrows (Fig. 332). Body length 7–12 mm. 1. *C. pallidula* (p. 212)
- 14(13) Posterior part of the epigyne without such protuberances. ... 15
- 15(16) Epigyne with two openings of semilunar shape. Body length 7–9 mm. 5. *C. lutescens* (p. 216)
- 16(15) Epigynal openings not developed or developed as two rounded, oval or crevice-like openings. 17
- 17(20) Epigynal openings large, the distance between them not exceeding their diameter. 18
- 18(19) Epigyne like Fig. 335. Body length 5.5–8 mm. 2. *C. neglecta* (p. 214)
- 19(18) Epigyne like Figs. 342 and 342 a. Body length 5.5–7.5 mm. 4. *C. germanica* (p. 214)
- 20(17) Posterior part of the epigyne with crevice-like developed openings or without such openings. 21
- 21(22) Epigyne with two crevice-like openings, which open in the posterior part (Fig. 340). Body length almost 8 mm. 3. *C. similis* (p. 214)
- 22(21) Epigyne like Fig. 345. 6. *C. liachviana* (p. 216)
- 23(24) Posterior part of epigynal plate curved (Fig. 348). 7. *C. frutetorum* (p. 217)
- 24(23) Epigynal plate not curved, significantly broader than long (Fig. 350). 8. *C. stagnatilis* (p. 217)

1. *Clubiona pallidula* (Clerck, 1757)

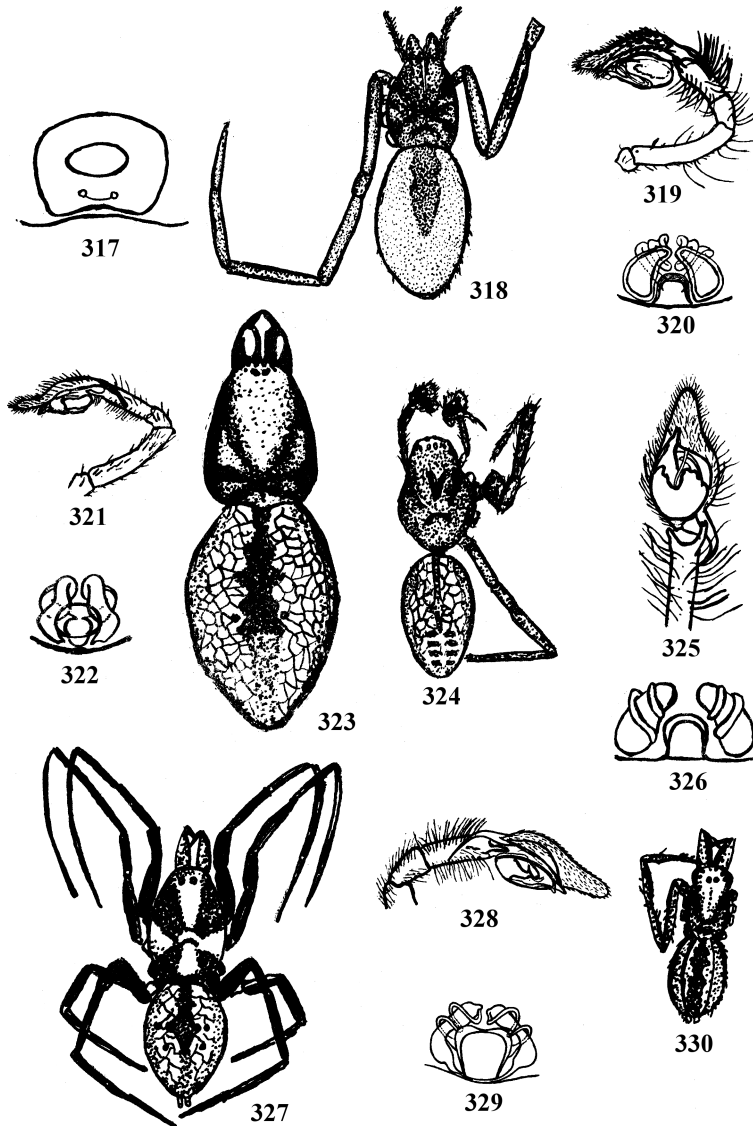
Description: Female body length 8–11 mm, male 6–7 mm. The carapace is brown; its anterior part is darkened black with red lines. Sternum and chelicerae are blackish brown. The dorsum is brown-red, sometimes brownish black; it is covered with white setae (Fig. 333). Epigyne like Fig. 332. Male palpus like Fig. 331.

Ecology: This forest species often lives on trees, the forest edge, on bushes. It constructs its retreat in 2–3 rolled-up leaves. It feeds on pest species of trees.

Distribution: USA, Cuba, Argentina, in the European part of the former USSR (except the extreme North), Siberia. **In Georgia:** Batumi (Simon 1839), Tbilisi (Lake Kus), Khulo (Tago) (Mcheidze 1970).

Taxonomy: Platnick (2013): *Clubiona pallidula* (Clerck, 1757)⁷⁷.

⁷⁷Mcheidze (1997) also cites sic: '*Cl. holoseriica* Linnaeus, 1758', lapsi.



Figs. 317–330. Clubionidae, *Cheiracanthium*. *Ch. mildei*: 317 – epigyne; 318 – female habitus. *Ch. erraticum*: 319 – male palpus; 320 – epigyne. *Ch. pennyi*: 321 – male palpus; 322 – epigyne; 323 – female habitus; 324 – male habitus. *Ch. punctorium*: 325 – male palpus; 326 – epigyne; 327 – female habitus. *Ch. virescens*: 328 – male palpus; 329 – epigyne; 330 – female habitus.

2. *Clubiona neglecta* O. P.-Cambridge 1862

Description: Female carapace length 3 mm, width 2 mm; abdomen length 3.5–4 mm, width 2.4 mm. Male carapace length 2.6 mm, width 2 mm.

♀ The carapace is dark yellow, reddish, with a darkened anterior part without marginal lines. The sternum is brown or shingle-colored brown. Tibia and patella IV are shorter than the carapace. The abdomen is gray brown and covered with white setae (Fig. 336). The length and width of the epigyne are not similar; it bears two large anterior depressions (Fig. 335).

♂ Dorsal palpus femur with 3–1 or 4–1 spines. The bulged tibia is short and broad. The bulbus is brown, elongated and covered with long spines (Fig. 334).

Habitat: It lives on woody plants, more often on bushes, under rocks, in grass.

Distribution: Europe, Kazakhstan, Siberia, Almaty, Baikal region, in the former USSR in the regions of Moscow, Saratov and Belgorod, Mikhailovski Pass (west of Sukhumi, Spassky 1937). **In Georgia:** Kazbegi (Gergeti), Quro (at 2100 m a.s.l.), Abastumani, Agopeli, Akhaltsikhe, Tshvinta, Lagodekhi (Mcheidze 1939, 1972).

Taxonomy: Platnick (2013): *Clubiona neglecta* O. P.-Cambridge 1862.

3. *Clubiona similis* L. Koch, 1867

Description: Female body length 7–8 mm, male 4.5–5 mm. The carapace is yellowish-red with a yellow, and near the edges brown, sternum. The dorsum is reddish-gray and covered with yellowish setae (Fig. 339). Epigyne like Fig. 340. Male palpus like Fig. 338.

Habitat: This species lives on grass and under rocks, where it constructs silken retreats.

Distribution: Central and Eastern Europe, in the former USSR in the Moscow region, Ukraine and the Southern Urals. **In Georgia:** Kazbegi (Quro), Adigeni, Abastumani, Zekari, Sairme, Lagodekhi, Khulo (Mcheidze 1939, 1940, 1959). First record in the Transcaucasus (Mcheidze 1964).

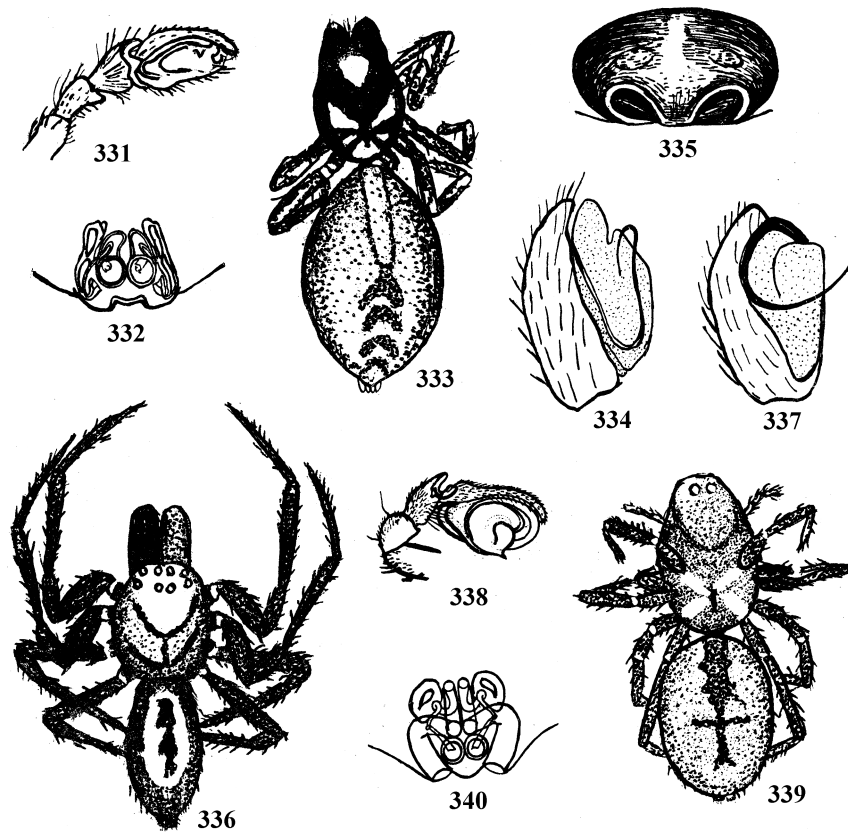
Taxonomy: Platnick (2013): *Clubiona similis* L. Koch, 1867⁷⁸.

4. *Clubiona germanica* Thorell, 1871

Description: Female body length 5.5–7.5 mm, male 5–6 mm. The carapace is yellowish-brown with a dark brown sternum. The abdomen is reddish-brown (Fig. 343). Epigyne like Fig. 342 and 342 a. Male palpus like Fig. 341.

Habitat: This forest species lives on bushes and broad-leaved plants.

⁷⁸In Mcheidze (1997) with author C. L. Koch, 1866, lapsus.



Figs. 331–340. Clubionidae, *Clubiona* (in part.). *C. pallidula*: 331 – male palpus; 332 – epigyne; 333 — female habitus. *C. neglecta*: 334 – terminal segment of male palpus; 335 – epigyne; 336 – dorsal habitus. *C. similis*: 337 – terminal segment of male palpus; 338 – male palpus; 339 – dorsal habitus; 340 – epigyne.

Distribution: Central and Northern Europe, in the Central and Northern European parts of the former USSR and Western Siberia. **In Georgia:** Poti, Gagra (Mcheidze 1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Clubiona germanica* Thorell, 1871. In Mcheidze (1997) author with year 1870.

5. *Clubiona lutescens* Westring, 1851

Description: Female carapace length 3.3 mm, width 2.4 mm; abdomen length 5.5 mm, width 3.2 mm. Male carapace length 2.7 mm, width 1.9 mm.

♀ The carapace is dark yellowish shingle-colored with a weakly darkened anterior part without marginal lines. The sternum is brown. Patella and tibia IV are of the same length as the carapace. The abdomen is gray-violet and covered with white, yellow setae and pubescence. The epigynal plate is as long as wide, spotted and laterally bordered by a fine, smooth and black fringe.

♂ The chelicerae are brown to red or black, often very long. The palpus femur bears 3–1 dorsal spines. The tarsus is oval and comparatively broad in its second half. The bulbus is somewhat broadened and cut near the tip (Fig. 344).

Habitat: In high grass in grassy places and forests.

Distribution: Europe, Japan. In the European part of the former USSR reaching the St. Petersburg Region in the North, Latvia. **In Georgia:** Manglisi, Kodzhori, Shovi, Kotshalo, Lagodekhi, Eldari (Mcheidze 1940-1969). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Clubiona lutescens* Westring, 1851. In Mcheidze (1997) author with brackets.

6. *Clubiona liachviana* Mcheidze, 1997

Description: ♀ Carapace length 2.5 mm, width 1.5 mm; abdomen length 4.5 mm, width 2.5 mm. The carapace is dark yellow. The cephalic region bears pale grayish markings with four pairs of radial muscle marks originating from this part. The median longitudinal black line of the carapace is more or less similar to the ME trapezoid.⁷⁹ The ME trapezoid is wider than long. When viewed from the front, the AER is weakly curved forwards and almost straight. The eyes of the AER are almost of the same size. The PME are larger than the other eyes.

The chelicerae are light brown and almost as long as metatarsus I. The sternum is yellow, velvety and bears fine spots arranged longitudinally opposite of each appendage. The legs are unicolored yellow, as the sternum.

⁷⁹Sic Mcheidze 1997.

Leg Armament: Femora: 1.1.1d spines. All legs bear one anterior and one posterior spine near the tip. Ventral patellae I and II bear two spines near the base.

III-IV:⁸⁰ in the middle 1v spine, 1.1.1ad, 1pv spine, 1a spine. 1p spine, 1.1.1av spine, 1.0.1pv spine.

Tibiae: I-II 2.2v spines; III 1.1.0v spines, 1.1av, 1.1pv spines.

The abdomen is yellowish cinereous, in its anterior half with a thin reddish-yellowish wedge-like band, which does not reach the second half of the abdomen. The anterior part of the abdomen bears some (up to ten) long projecting black setae and a number of short setae as well. The spinnerets are long.

The described species is close to *Clubiona alpicola* Kulcz. and *Cl. hilaris* Sim., but differs from them in the structure of the epigyne, leg armament and coloration. Epigyne like Fig. 345. The male is unknown.

Material: 1 ♀ (holotype): Zemo Khviti (near Gori), under rocks, in grass, 2. VII 1938. 2 ♂ (paratypes): Baghdati, Zegani, 10. VIII 1948.

Taxonomy: Platnick (2013): *Clubiona alpicola* Kulczyński, 1882..

7. *Clubiona frutetorum* L. Koch, 1867

Description: Female body length 5.7 mm, male 4–5 mm. The carapace is reddish-yellow; the chelicerae are brown-red and almost vertically oriented. The sternum is yellow, narrow and bears a brown fringe. The abdomen is reddish, brown and covered with white setae. Epigyne like Fig. 348. Male palpus like Fig. 347.

Ecology: This forest species lives on the lower branches of woody plants, on bushes and high grass near the edge of a forest. During the day they stay in rolled-up leaves and come out at night for hunting.

Distribution: Central and Northern Europe, in the central and southern European parts of the former USSR, Mikhailovski Pass (west of Sukhumi, Spassky 1937), Transcaucasus. **In Georgia:** Keda, Bakhmaro, Ozurgeti (Mcheidze 1939, 1945).

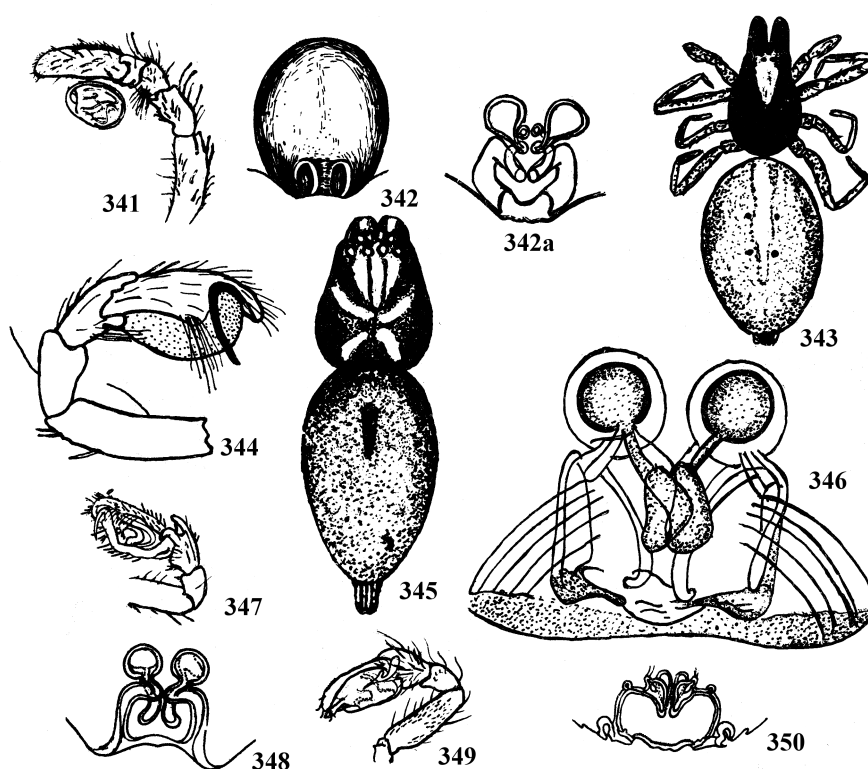
Taxonomy: Platnick (2013): *Clubiona frutetorum* L. Koch, 1867⁸¹.

8. *Clubiona stagnatilis* Kulczyński, 1897

Description: Female body length 6–8 mm, male 4.5–6.5 mm. The carapace is brownish-yellow with a darkened anterior part. The sternum is brown, the chelicerae brown-black. The dorsum is red-brown, even darker and with a median band in its anterior part. The venter is yellow or yellowish with two white spotted bands. The terminal parts of the yellow spinnerets are gray. Epigyne like Fig. 350. Male palpus like Fig. 349.

⁸⁰Segment not specified in Mcheidze 1997.

⁸¹In Mcheidze (1997) with author C. L. Koch, 1866, lapsus.



Figs. 341–350. **Clubionidae, *Clubiona* (in part.)**. *C. germanica*: 341 – male palpus; 342, 342 a – epigyne; 343 – female habitus. *C. lutescens*: 344 – male palpus. *C. liachviana*: 345 – female habitus; 346 – epigyne. *C. frutetorum*: 347 – male palpus; 348 – epigyne. *C. stagnatilis*: 349 – male palpus; 350 – epigyne.

Habitat: This species lives in swampy locations near the water. It constructs its package-like retreat using the leaves of gramineous plants.

Distribution: Regions of Perm, Moscow, Ulyanovsk and Chelyabinsk, Estonia, Chuvashia, Western Siberia. **In Georgia:** Poti (Lake Paliastomi, Mcheidze 1968). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Clubiona stagnatilis* Kulczyński, 1897⁸².

⁸²In Mcheidze (1997) sic: '*Clubiona stagnalis*, Kylcz., 1897', lapsus.

7.17.3 *Zora* C. L. Koch, 1847⁸³

Key to species

- 1(2) Male palpus tibia apophysis tip branched. Femora of both male and female with numerous dark brown spots. Body length 4 mm. 1. *Z. pardalis* (p. 219)
- 2(1) Male palpus tibia apophysis tip not branched. Femur I with a row of 3–4 postero-lateral spines. Distal part of tibia and metatarsus reddish-yellow. Patella, tibia and metatarsus dark. Body length 6–7 mm. 2. *Z. spinimana* (p. 219)

1. *Zora pardalis* Simon, 1878

Description: Female carapace length 2 mm, width 1.5 mm; abdomen length 3.3 mm, width 2.2 mm. Male carapace length 2.2 mm, width 1.9 mm.

♀ The carapace is very bright, brown-shingle-colored; the marginal lines reach the anterior appendages. The lower broad, serrated and slanted marginal band is situated close to these lines. The eye region and median part are brown-black. The sternum is brown to dark brown with dark brown spots. The chelicerae are brown with a dark brown band. The legs are brown shingle-colored; the femora are covered with numerous longitudinally arranged spots.

The abdomen is brown-shingle-colored, sometimes bright; its sides are irregularly marked with brown spots. The dorsum bears a lancet-shaped brown band; its ventral side is strongly spotted. The epigynal plate is brown red and rough and exhibits a small longitudinal depression.

♂ The coloration is similar to the female. The legs are brown reddish, the femora bear irregular brown lines. Patellae, tibiae and metatarsi I, II and IV are very dark. The palpus is shingle-colored, the tarsus is brown reddish.

Habitat: On grass near the forest edge.

Distribution: Rostov Region, Central Asia. **In Georgia:** Nadzvnari (near Manglisi, Mcheidze 1957). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Zora pardalis* Simon, 1878. In Mcheidze (1997) author with brackets.

2. *Zora spinimana* (Sundevall, 1833)

Description: Female body length 6–7 mm, female 3.5 mm. The carapace and abdomen are brown yellow, the legs reddish-yellow. The outer parts of

⁸³In Mcheidze (1997) with year 1848, lapsus.

femur I are armed with 3–4 spines, forming an inclined row. The epigynal plate bears a narrow median depression.

Habitat: This forest species lives in leaf litter and under rocks.

Distribution: In the forest zone of the European part of the former USSR.

In Georgia: Batumi (Simon 1899), Nasakirali (near Ozurgeti, Mcheidze 1955).

Taxonomy: Platnick (2013): *Zora spinimana* (Sundevall, 1833). In Mcheidze (1997) with year 1832.

7.17.4 *Phrurolithus* C. L. Koch, 1839⁸⁴

1. *Phrurolithus festivus* (C. L. Koch, 1835)

Description: Palpus tibia apophysis tip cut-off (Fig. 351).

Habitat: In forests under rocks, near the forest edge, in mosses.

Distribution: In the regions of Moscow, Briansk, Rostov, Chuvashia, Crimea, Caucasus (Khosta). **In Georgia:** Cross Pass (near Kazbegi, Koch 1878), Mamisoni Pass (3000 m a.s.l.), Mtirala (in Adjara, Mcheidze 1940, 1953).

Taxonomy: Platnick (2013): *Phrurolithus festivus* (C. L. Koch, 1835).

7.17.5 *Liocranium* L. Koch, 1866⁸⁵

1. *Liocranium rutilans* (Thorell, 1875)

Description: Female body length 4 mm, width 3.2 mm; abdomen length 6 mm, width 4 mm. Male carapace length 4.5 mm, width 3.8 mm.

♂ The carapace is bright yellow, reddish with simple, flat and stained small spots and marginal fine black lines. The dorsal carapace is covered with a scale-like, shining white, iridescent pubescence. The sternum is brown, reddish, simple and not flat.

The legs are brown or brown-reddish with short, strongly iridescent setae. Patella and tibia IV are longer than the carapace. The ventral tibiae I and II bear two rows of very long and thick spines. The scopula on the distal ends of the tibiae and metatarsi I and II are somewhat dense and form two narrow bands in the tarsal area.

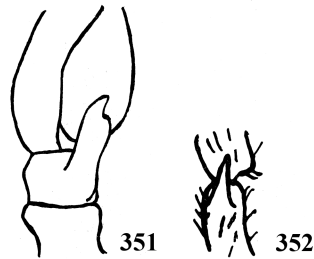
The oval abdomen is flattened, the dorsum is black and covered with almost scale-like white, shining iridescent setae. The venter is shingle-colored; the anterior spinnerets are weakly separated from the base. The brown epigynal plate is simple and very long, almost twice as long as wide. Its anterior part is narrowed and flat, its posterior part is gradually widening.

♂ The thin palpus bears a straight brown tibia apophysis (Fig. 352).

Habitat: In grass, under rocks, on bushes.

⁸⁴Mcheidze (1997) also lists the genus *Micariosoma* Simon, 1878 as a synonym.

⁸⁵In Mcheidze (1997) sic: 'C. L. Koch, 1866', lapsus. She also lists the synonym *Sagana* Thorell, 1875.



Figs. 351–352. Clubionidae, *Phrurolithus*, *Liocranium*. *P. festivus*: 351 – tibia apophysis of male palpus. *L. rutilans*: 352 – tibia apophysis of male palpus.

Distribution: Khosta (Spassky 1937). **In Georgia:** Batumi (Spassky 1937), Poti, Makhindzhauri (Mcheidze 1970).

Taxonomy: Platnick (2013): *Sagana rutilans* Thorell, 1875.

7.18 Theridiidae

The eight eyes of the spiders are arranged in two rows; the AME are dark, the others bright. The labium is broad; the gnathocoxae are parallel. A furrow separates the labium from the sternum. The chelicerae are arranged vertically and not large (except *Theridium*). The chelicerae sometimes bear no teeth, sometimes strong teeth.

The legs have no thick spines. The tarsus bears three claws, tarsus IV thick spines. The abdomen is variable, rounded or elongated. The six spinnerets are well developed. The male copulatory organs are comparatively simple and without a paracymbium. The palpus tibia does not bear an apophysis. The epigyne is of simple structure, usually with a single opening.

We find the spiders of this family in various habitats: forests, open cultural landscapes, the desert etc. We often find them in caves and apartments. Cosmopolitan and synanthropic species are *Theridium tepidariorum* and *Teutana grossa*.

One poisonous species needs to be mentioned: the karakurt *Latrodectus tredecimguttatus*, in which the females devour the males after mating. Afterwards it constructs a thick egg sac, which is suspended on a thread within the retreat and guarded by the female until the eggs hatch. During the first oviposition 30–100 eggs are laid in one egg sac, in the second oviposition their number increases to 500–700 eggs per sac.

The spiderlings first shed their skin when they are still in the egg sac. After emerging from the egg sac the small spiderlings do not leave the retreat but are fed by their mother with a special 'milk'. Males shed their skin 6–7 times, females nine times. During one year the karakurt spawns one

generation. The juveniles hibernate, whereas the female dies in fall, the males already after mating.

In total, 1300 species are known, in the European part of the former USSR 60 species, in Georgia 12 genera and 30 species.

Key to genera

- 1(4) Distance between ALE and PLE reaching or exceeding eye diameter. **2**
- 2(3) Abdomen circular, shining, black. Female with unicolored dorsum (Fig. 353), but male with small red marks situated within the centers of white marks. 1. *Latrodectus* (p. 223)
- 3(2) Abdomen elongated, of bright color (Fig. 356), male without such marks. 2. *Episinus* (p. 224)
- 4(1) ALE and PLE touching each other or spaced at a distance not exceeding their radii⁸⁶. **5**
- 5(8) AME larger than PME. **6**
- 6(7) Posterior end of abdomen rounded, dorsum white with brown and black marks. 3. *Dipoena* (p. 225)
- 7(6) Posterior end of abdomen rounded, dorsum blackish-brown, shining; with a characteristic longitudinal white line and a white anterior edge (Fig. 359). 4. *Steatoda* (p. 226)
- 8(5) Size of AME not exceeding or barely exceeding size of ALE. Male with or without stridulatory organ. **9**
- 9(12) Distance between ALE and PLE similar to the length of their radii. **10**
- 10(11) Sternum with spot-like indentions. ME quadrangle trapezoid, its base broader than its height. Abdominal markings like Fig. 362. Apical male femora II with thick spine-like apophyses (Fig. 183). 5. *Asagena* (p. 226)
- 11(10) Sternum without spot-like indentions. ME quadrangle almost square. Abdominal markings not like in instance 10. Male femora II without apophyses. 6. *Lithyphantes* (p. 226)
- 12(9) ALE and PLE of similar size. **13**
- 13(14) Legs thick and comparably short. Legs I and IV of the usual length. Males with well-developed stridulatory organ. 7. *Teutana* (p. 229)
- 14(13) Legs thin. Legs I often longer than legs IV. Males without stridulatory organ. **15**
- 15(16) AER straight or almost straight. PE of almost the same size. 8. *Theridium* (p. 232)
- 16(15) AER curved; PME somewhat larger than PLA.

⁸⁶Sic Mcheidze (1997).

- 9. *Theridula* (p. 245)
 17(18) ALE and PLE close to each other. 10. *Robertus* (p. 247)
 18(17) AME larger than PME. ALE and PLE not close to each other. .
 11. *Euryopis* (p. 247)
 19(19) Labium triangular and wider than long. Sternum as long as
 wide. 12. *Ulesanis* (p. 247)

7.18.1 *Latrodectus* Walckenaer, 1805

1. *Latrodectus tredecimguttatus* (Rossi, 1790)

Description: Female body length 10–20 mm, depending on feeding state. Male body length exceeding 4–7 mm.

♀ The carapace of the female is comparatively small and flattened; a deep furrow is well visible on the dorsal side near the location, where the muscle foveae of the legs, pedipalpi, chelicerae and digestive tract are located. The thin metatarsi and tarsi I and II are the longest. The legs are covered with numerous short and curved setae. All tarsus tips bear two dentate and one simple spine, which hold the silken threads. The pedipalpus is comparably short and thin; its terminal segment bears only one dentate spine.

The body size compared to leg length is smaller in state of hunger or after oviposition; in the opposite case it is formed like a nut, with the legs appearing much smaller. The black venter bears one or two transversal red, orange or yellowish bands. Four additional small yellow, orange or reddish marks can be found near the spinnerets. The dorsum bears 20 spot-like indentions, of which 12 are especially well visible (Fig. 353).

♂ The male is somewhat smaller than the female. The legs are thin and long. The tarsus is similar to the tarsus of the female. It moves around fast. The abdomen is elongated; its coloration is comparatively bright, with shining light-red markings, which are bordered by a white arch. The red and white marks vary in form, size and number. The sense of vision is better developed in males than females. The copulation apparatus is of complex structure (Fig. 354)

Habitat: It is a characteristic species of the desert and semi-desert fauna, however (Marikovskii 1956) mentions this species for high mountains (Turgai Mountains at 1800 m a.s.l.). We could verify Marikovskii's information by recording this species in Georgia in the subalpine zone at 1200 m a.s.l. in Aspindza rayon. Often they inhabit the steppe zone (Central Asia, Crimea, Caucasus) and prefer *Artemisia* badlands, often settling in crevices and depressions on the slopes of creeks and small valleys.

Ecology: In xerophytic vegetation in barren places, the karakurt lives in empty rodent burrows. Towards the outside the burrow is covered by pieces of grass or earth. Irregularly arranged catching threads extend from the

burrow's wide opening. In some burrows 2–4 pear-shaped egg sacs with one tapering end are suspended on silken threads (Fig. 353). The female lays eggs once and the juveniles emerge in spring (March, April).

The juveniles often feed on flying insects. We find adults in June and July. The karakurt has a large number of offspring and in this period exhibits a mass reproduction. After copulation the female makes a second migration and constructs a permanent retreat and egg sac, dying afterwards. After the death of the female in fall, the eggs hatch and the juveniles hibernate in the web next to the suspended dead female.

Poison: The adult females are very poisonous; their poison is 15x stronger than the poison of rattle snakes. Most often they bite during the night (on pastures, while sleeping). Small but growing red marks are visible at the site of the bite. 10–15 minutes after the bite strong pains start as well as an overall paralysis of the organism. Without medical help a human perishes after 1–2 days. In the field, where it is impossible to get quick medical help, one is advised to burn the bite with a match two minutes after the bite (Marikovskii 1956). Due to the heating, the poison cannot enter and harm the organism. This method is good because of its simplicity.

The karakurt is harmful to domestic animals: horses, camels and horn-bearing animals, of which thousands become victims of the bite of this species. Its poison is a bitter-tasting, transparent, colorless and alkaline liquid. It contains proteins, which coagulate in heat. Its toxicity depends on the temperature, being higher at higher temperatures. The poison is well soluble in water and not soluble in alcohol. It denatures at 75–100°C.

Distribution: Southern Europe, Greece, Anatolia, Africa, Madagascar. In the former USSR in the Caucasus, Central Asia, Kazakhstan, Uzbekistan, Tajikistan. **In Georgia:** The karakurt was first recorded in Georgia in 1949 in Gori, on the Southern slope of Kvernaki⁸⁷. Further records are from Tbilisi Botanical Garden (Southern slopes towards Krtsanisi). In 1950 it was recorded from the pastures of Eldari and Shiraki, and in 1973 from Aspindza (on the road towards Khizabavra near the town Saro at 1200 m a.s.l. on subalpine pastures (Mcheidze 1949–1973).

Taxonomy: Platnick (2013): *Latrodectus tredecimguttatus* (Rossi, 1790).

7.18.2 *Episinus* Latreille, (Rossi, 1809)⁸⁸

1. *Episinus truncatus* Latreille, 1809

Description: Female body length 5 mm, male 4–4.5 mm. The carapace is brown with radiating markings of brighter color. The legs are yellow with a broad yellow annulation. The abdomen bears lateral humps on the outside of the posterior quadrangle. The dorsum is brown with a well-visible black

⁸⁷In Mcheidze (1997) sic: 'Kvernavi' (კვერნავი), lapsus.

⁸⁸In Mcheidze (1997) sic 'Latr., (Rossi, 1890)', probably lapsus.

fringe. The sides and the area behind the humps of the abdomen are dirt-colored white and bear brown sprinkles and lines (Fig. 356). The epigyne is reddish brown (Fig. 358). Male palpus like Fig. 357.

Habitat: Forest zone, on bushes and high grass, sometimes inhabiting caves (pseudo-troglobiontic).

Distribution: Europe, North Africa, North America, in the former USSR in the region of Moscow, Southern Ukraine (Crimea), Southern Urals, Caucasus (Khosta). **In Georgia:** Tbilisi, Adzaba Cave (Sukhumi region), Sukhumi (Spassky 1937, Mcheidze 1953).

Taxonomy: Platnick (2013): *Episinus truncatus* Latreille, 1809.

7.18.3 *Dipoena* Thorell, 1869⁸⁹

1. *Dipoena melanogaster* C. L. Koch, 1837

Description: Female carapace and abdomen length 2.3 mm; abdomen width 2.3 mm. Male carapace length 1.2 mm.

♀ The carapace is black or brown, dark green, almost plain. The legs are not long, bear rings and are similar to the legs of the male.

The abdomen is very swollen, of similar length and width, almost circular and protruding above the carapace. Its anterior edge is somewhat cut off; its sides are gray-brown and its front bears white spot-like lines and a black fringe. The abdomen is covered with long and thick spines. The venter is blackish, in all parts bearing large circular white marks.

The epigyne is shingle-colored, with a depression and is longer than wide; its sides are parallel to each other. The epigyne is lined by a close, reddish and curved edge.

♂ The carapace is of the same color as in the female, almost plain and tapering towards the front. The sternum is black, shining, plain and quadrangular. The legs are long, brown with dark brown rings. The palpus is dark brown; its tarsus and bulbus brown-reddish; the tibia is long, diagonally cut-off. The tarsus is large and oval.

The oval abdomen is weakly elongated towards the end and with a dark brown and black dorsum with transversal lines, sometimes gray with brown spots. The venter is blackish. The abdomen is longer than wide.

Habitat: On bushes and woody plants.

Distribution: Transcaucasus, Crimea, Khosta. **In Georgia:** Batumi (Botanical Garden, Mcheidze 1959). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Dipoena melanogaster* (C. L. Koch, 1837).

⁸⁹In Mcheidze (1997) also with the synonym *Laseola* Sim. 1881.

7.18.4 *Steatoda Sundevall, 1833*

1. *Steatoda bipunctata* (Linnaeus, 1758)

Description: Female body length 5–7 mm, male 3.5–5 mm. Carapace, sternum and legs are brown; the legs bear wide gray rings. The eight eyes are situated on a protuberance. The dorsum is black, brownish and has a white front and a longitudinal median line consisting of white marks (Fig. 359).

The male palpus bears a large black appendage (Fig. 360).

Habitat: This species lives in apartments and backyard buildings, under bark, in tree hollows, in rock crevices, in coniferous forests (e.g. in Borjomi Valley). It lives 24 cm deep in coniferous wood fibers, feeding on pest insects like the eggs and larvae of bark beetles.

Distribution: Europe, North America. It is widely distributed in the former USSR. **In Georgia:** Tbilisi, Borjomi, Tsaghveri, Aspindza, Vardzia, Lagodekhi, Ambrolauri, Shovi, Tsageri (Mcheidze 1940, 1957, 1975).

Taxonomy: Platnick (2013): *Steatoda bipunctata* Linnaeus, 1758.

7.18.5 *Asagena Sundevall, 1833*

1. *Asagena phalerata* (Panzer, 1801)

Description: Body length 6–6.5 mm. The carapace is brown with a thin black fringe and a darkened eye region. The sternum is black, the legs are red-brownish with darkened rings on the joints. The abdomen is black with a thin shining white band on the anterior edge and a paired transversal thin mark near the 2/3-mark of the abdomen, behind which is a longitudinal band (Fig. 362).

The epigyne is large, transversal-rectangular with a longitudinal septum (Fig. 365). The male palpus is armed with a long chitinized appendage (Fig. 364). Male leg II like Fig. 363.

Habitat: We find this species in open places, hidden under rocks, in plant parts in a silken sac, where it keeps its eggs.

Distribution: Southern Europe, North Africa, in the Central and Southern regions of the European part of the former USSR. **In Georgia:** Batumi (Kulczyński 1884, Simon 1899), Tbilisi, Gori, Ateni Valley, Adigeni, Utqisi, Khulo, Tago, Nakerala, Kobuleti, Ozurgeti (Mcheidze 1941, 1961, 1973).

Taxonomy: Platnick (2013): *Steatoda phalerata* (Panzer, 1801).

7.18.6 *Lithyphantes Thorell, 1869*

Key to species

- 1(2) Carapace length at least 3.5 mm. Abdomen like Fig. 366.

- 1. *L. paykullianus* (p. 227)
 2(1) Carapace length not exceeding 2.5 mm. Abdomen like Fig. 367.
 2. *L. albomaculatus* (p. 227)

1. *Lithyphantes paykullianus* Walckenaer, 1805

Description: Female body length 4 mm, width 3.2 mm; abdomen length 8 mm, width 6.5 mm. Male carapace length 2.8 mm.

♀ The carapace is black or brown-red with dark shagreen markings with a fine scattered granulation, mostly in the cephalic region. The thick and short legs are black.

The bulged oval abdomen is black with white or orange markings and sparsely covered with short shining setae (Fig. 366). Often we find a variation in the coloration of the abdomen, where the whole abdomen is black, its front with a red or orange semicircular band. Sometimes this semicircle is white or yellow and with two lateral curved marks. The epigyne bears a straight transversal depression.

♂ The carapace is dark brown or black. The sternum is longer than wide and marked with black sprinkles. The abdomen is oval and short. The chelicerae are brown-red, shining, vertically arranged, thick and bulging. Its fangs are short and have thick bases. The legs are dark red, with brown rings on the femora and at the terminal ends of the patellae. The palpus is brown.

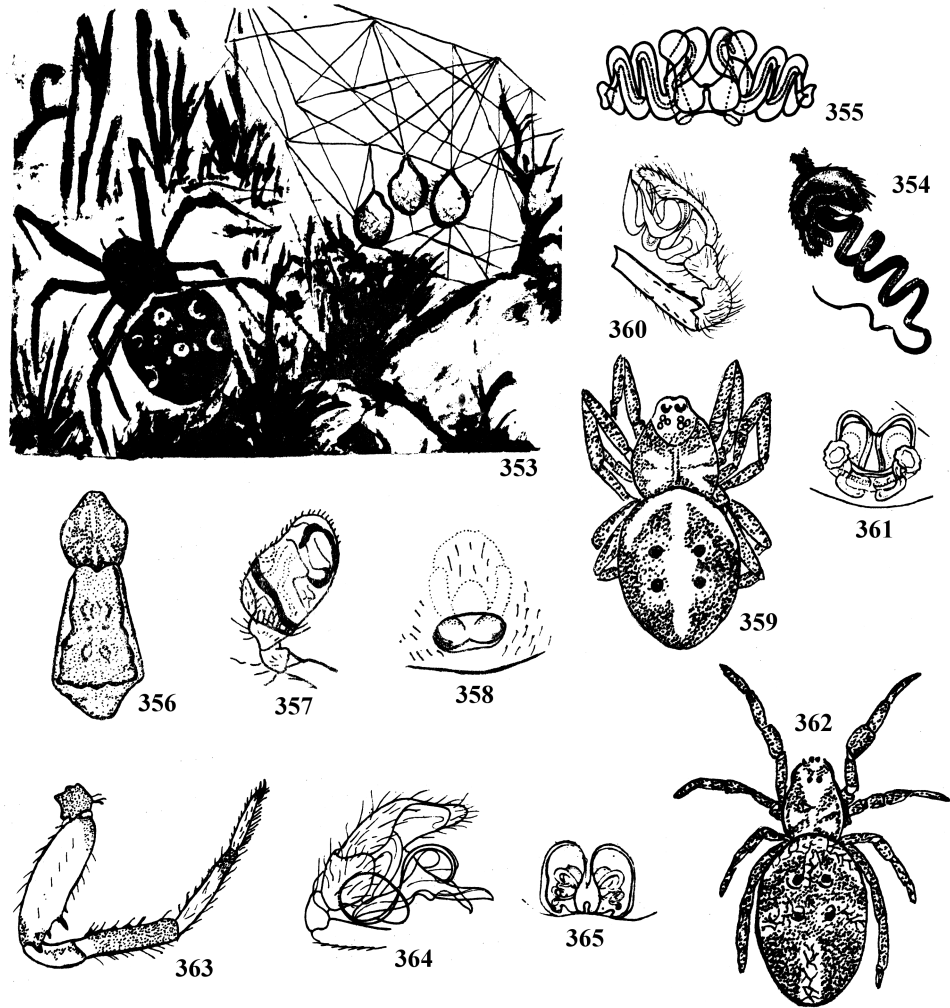
Ecology: This species matures in early fall and inhabits the same burrows as the karakurt, which is active in spring and summer. Besides it can be found under rocks in a small hollow. At the end of summer it starts laying eggs and suspends them in egg sacs with 200 eggs. Afterwards it perishes. The young karakurt females appear and guard the eggs and hatched juveniles of the *Lithyphantes*.

Distribution: Western Europe, in the Southern part of the European part of the former USSR, Central Asia, Kazakhstan, Crimea, Caucasus. **In Georgia:** Gelati (Kulczyński 1895), Gagra (Simon 1899), Tbilisi, Telavi, Gurdzhaani, Vedzhini, Akhaltsikhe (Tatanisi), Adigeni, Baghdati, Tshokhatauri, Batumi, Keda, Sukhumi (Mcheidze 1938, 1956, 1966, 1973).

Taxonomy: Platnick (2013): *Steatoda paykulliana* (Walckenaer, 1805). In Mcheidze (1997) with year '1806', lapsus.

2. *Lithyphantes albomaculatus* (De Geer, 1778)

Description: Female body length 7 mm, male 3.5–4 mm. The body coloration is black-brownish; the abdomen bears white dorsal markings, consisting of a wave-like band and a line of five pairs of marks arranged like a fir branch. In the female these marks are fused (Fig. 367). The venter bears three longitudinal white bands.



Figs. 353–365. Theridiidae, *Latrodectus*, *Episinus*, *Steatoda*, *Asagena*. *L. tredecimguttatus*: 353 – habitat; 354 – male palpus; 355 – epigyne. *E. truncatus*: 356 – dorsal habitus; 357 – male palpus; 358 – epigyne. *S. bipunctata*: 359 – dorsal habitus; 360 – male palpus; 361 – epigyne. *A. phalerata*: 362 – dorsal habitus; 363 – male leg II; 364 – male palpus; 365 – epigyne.

The male palpus bears a large hook-like appendage and a thin sharp spine (Fig. 368). Epigyne like Fig. 369.

Distribution: Holarctic. Widely distributed in the former USSR. **In Georgia:** Batumi (Spassky 1927), Sukhumi, Kelasuri, Eshera, Batumi, Keda, Khulo, Akhaltsikhe, Borjomi (Mcheidze 1947–1973).

Taxonomy: Platnick (2013): *Steatoda albomaculata* (De Geer, 1778).

7.18.7 *Teutana* Simon, 1881

Key to species

- 1(4) Labium wider than long (Fig. 370). **2**
- 2(3) Male palpus tibia shorter than cymbium (Fig. 371). Epigyne like Fig. 372. Male body size 5–7 mm, female 7–10 mm.
 1. *T. grossa* (p. 229)
- 3(2) Male palpus tibia longer than cymbium. Epigyne like Fig. 374. Male body size 5–6 mm, female 6–7 mm. 2. *T. castanea* (p. 229)
- 4(1) Labium longer than wide (Fig. 375). Male palpus tibia longer than cymbium. Comparatively small body size: male 3.5–4 mm, female 4–5 mm. 3. *T. triangulosa* (p. 230)

1. *Teutana grossa* (C. L. Koch, 1838)

Description: Female body size 7–10 mm, male 7–8 mm. Carapace, legs and sternum are brown. The abdomen is dark brown or black and bears a longitudinal row of bright triangular marks as well as some bright marks on the sides. A curved mark is situated on the anterior edge of the abdomen. These markings are poorly developed in dark specimens (found in dark places, Fig. 373).

The epigynal opening is large, wide and exhibits a sharply raised posterior edge (Fig. 372). The male palpus bears a long sharp appendage (Fig. 371).

Habitat: Under rocks, in apartments and buildings of all kinds.

Distribution: Europe, North America, widely distributed in the former USSR, cosmopolitan. **In Georgia:** Everywhere in Western and Eastern Georgia.

Taxonomy: Platnick (2013): *Steatoda grossa* (C. L. Koch, 1838).

2. *Teutana castanea* (Clerck, 1757)

Description: Female body length 8.5–9.5 mm, male 5–6 mm.

♂ The thoracic region of the carapace is rough, with a clay-colored dorsal side and a fur-like, pale brown ventral side. The legs are gold-brown with brown rings. Patella and tibia of the legs I are 4 mm long, the metatarsus 3 mm.

The abdomen is gold-brown with a black fringe; the dorsum bears continuous or broken marks and three curved whitish lines, which are arranged like a cross. The venter is pale with black-brown marks in both parts. Epigyne like Fig. 374.

♂ The AE are arranged in a somewhat curved row. The eyes of the female are smaller than in the male and not as shining. The AER is weakly curved. The distance between the AME is as long as their diameter.

Habitat: Under rocks, often in apartments, on outer and inner walls (semi-anthropogenic species), feeding on insects.

Distribution: Eastern and Northern Europe, including the European part of the former USSR. **In Georgia:** Tbilisi, Gori, Zeda Khviti, Lagodekhi, Sighnaghi, Nukriani, Telavi, Atsquri, Kazbegi, Devdorak Glacier, Borjomi, Abastumani, Kharagauli, Tshiatura, Ambrolauri, Tqibuli, Lantshkhuti, Ozurgeti, Lentekhi (Mcheidze 1939–1974). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Steatoda castanea* (Clerck, 1757).

3. *Teutana triangulosa* (Walckenaer, 1802)

Description: Female carapace length 2.1 mm, width 2 mm; abdomen length 6.5 mm, width 4.8 mm. Male carapace length 2.1 mm, width 1.7 mm.

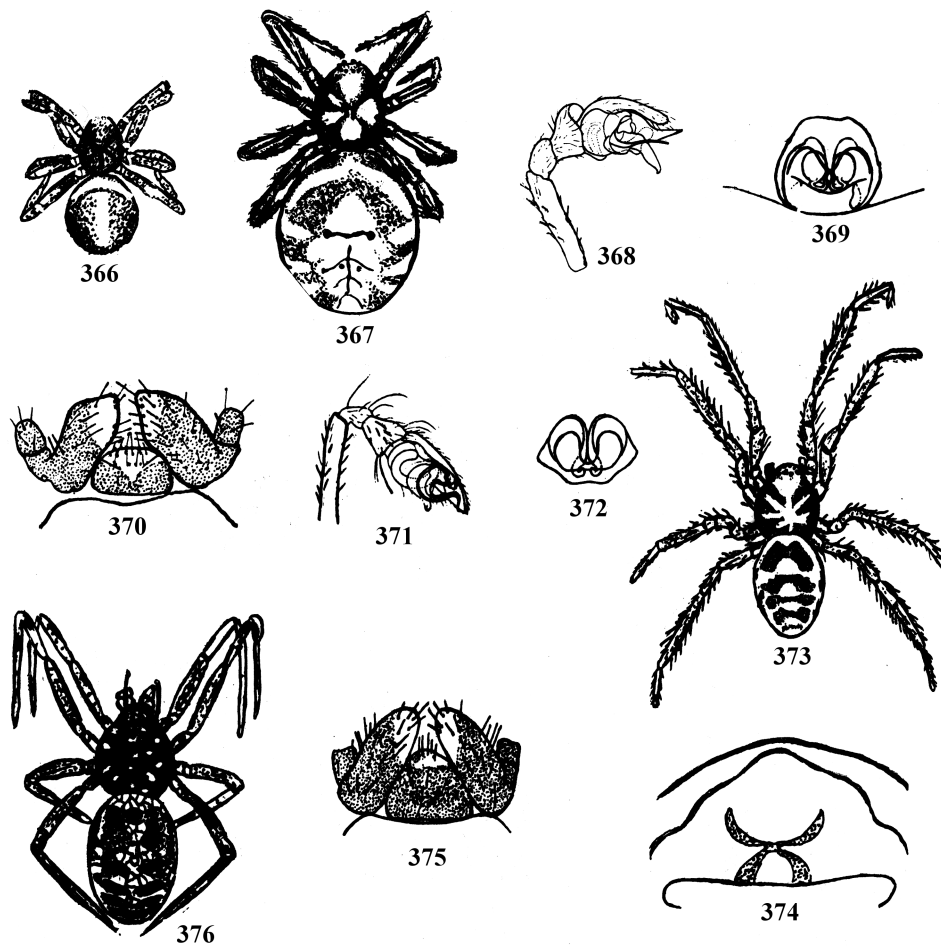
♀ The carapace is brown-red. The legs are brown to dark-green. The abdomen is bulged, almost as wide as long and bears brown, violet and white marks (Fig. 376). The venter is blackish with two shingle-colored bands. The epigyne has one opening.

♂ The carapace is brown-red with a bright granulation, especially on the sides, bearing a dentate edge. The brown-red, very rough sternum is longer than wide. The legs are long, brown/dark-green or bright. The abdomen is short and oval; its epigastric furrow is very dense.

Habitat: In apartments, cellars, under rocks, forest meadows.

Distribution: Widely distributed throughout the Palearctic, in the European part of the former USSR. **In Georgia:** Sukhumi, Batumi (Spassky 1937), Tbilisi, Telavi, Sighnaghi, Qvareli, Gurdzhaani, Lagodekhi, Akhaltsikhe, Adigeni, Satshkhere, Mestia, Batumi, Sukhumi, Poti (Mcheidze 1940, 1954, 1973).

Taxonomy: Platnick (2013): *Steatoda triangulosa* (Walckenaer, 1802).



Figs. 366–376. Theridiidae, *Lithyphantes*, *Teutana*. *L. paykullianus*: 366 – dorsal habitus. *L. albomaculatus*: 367 – dorsal habitus; 368 – male palpus; 369 – epigyne. *T. grossa*: 370 – mouth parts; 371 – male palpus; 372 – epigyne; 373 – dorsal habitus. *T. castanea*: 374 – epigyne. *T. triangulosa*: 375 – mouth parts; 376 – vulva.

7.18.8 *Theridium* Walckenaer, 1805⁹⁰Key to species⁹¹

- 1(2) Dorsum center with a small protuberance (Fig. 407). Body length 3.5 mm. 1. *Th. tuberculatum* (p. 235)
- 2(1) Dorsum without dorsal protuberance. 3
- 3(30) Males. 4
- 4(7) Tarsus I with 9–10 thick short ventral spines. 5
- 5(6) Palpus femur very short, its length shorter than the last palpal segment. Main part of the embolus freely suspended and well visible from the outside (Fig. 377). Body length 3 mm. 2. *Th. vittatum* (p. 235)
- 6(5) Palpus femur long, almost as long as the last palpus segment (Fig. 379). Only the end of the embolus is suspended freely and visible from the outside. Body length 3.7 mm 3. *Th. pulchellum* (p. 236)
- 7(4) Metatarsus⁹² I without such spines. 8
- 8(11) Chelicerae very long, not close together and with a thick conical appendage. 9
- 9(10) Outer part of the chelicerae without a thick and long conical appendage but with two small teeth (Fig. 381). Distance between PME markedly shorter than the distance between ME and LE. Body length 3.5–5 mm. 4. *Th. ovatum* (p. 236)
- 10(9) Outer chelicerae with thick and comparatively short, conical appendages without teeth. All PE spaced at similar distances. . 11
- 11(8) Chelicerae of normal structure, without tooth-like appendages. 12
- 12(13) Palpus tibia with a long and blunt appendage. Abdomen dull white with black marks (Fig. 384). Body length 2.7–3 mm. 5. *Th. nigrovariegatum* (p. 237)
- 13(12) Palpus tibia without such appendage. 14
- 14(17) Base of palpus femur thickened and covered with small humps, each bearing a long spine (Fig. 385). 15
- 15(16) Apical bulbus apophysis⁹³ straight and short. Body length 2.5–4 mm. 6. *Th. sisypium* (p. 237)
- 16(15) Apical bulbus apophysis long, almost as long as the last palpus segment (Fig. 388). Body length 2.5–4 mm. 7. *Th. impressum* (p. 238)
- 17(14) Apical apophysis of the bulbus basally not thickened and humps short. 18

⁹⁰*Theridion* Walckenaer, 1805, see Platnick (2012).⁹¹*Theridium cinereum* is not keyed.⁹²Sic Mcheidze 1997, see instance 4.⁹³Probably referring to the embolus.

- 18(19) Sternum pale, its edge and center with black marks. Body length 2.5–3.55 mm. 8. *Th. tinctum* (p. 239)
- 19(18) Sternum without black marks, rarely with a dark edge. 20
- 20(23) Apical bulbus apophysis thick and blunt, its tip not branched and spaced far from the tip of the last palpus segment (Fig. 392). Legs without dark rings, tibia IV with only one dark apical ring. . . 21
- 21(22) ME quadrangle longer than wide. Distance between PME weakly shorter than their diameter. All ME similar to each other. Palpus like Fig. 392, its sides without a bright mark. Body length 3.5–4 mm. 9. *Th. tepidariorum* (p. 239)
- 22(21) ME quadrangle almost square. Distance between PME somewhat larger than their diameter. PME smaller than AME. Palpus like Fig. 394. Carapace, chelicerae and sternum light brown or blackish-brown (Fig. 396). Body length 2.7–3 mm. 10. *Th. lunatum* (p. 241)
- 23(20) Apical bulbus apophysis not like this. 24
- 24(27) Median bulbus apophysis not visible (Fig. 397). 25
- 25(26) Distal part of apical bulbus apophysis branched (Fig. 397). Body length 2.2 mm. 11. *Th. simile* (p. 241)
- 26(25) Apical bulbus apophysis not branched. Body length 2.5–3.2 mm. 12. *Th. denticulatum* (p. 241)
- 27(24) Bulbus with a long and sclerotized median apophysis. 28
- 28(29) Dorsum with a bright longitudinal band, its sides without sharp and angular apophyses. Median bulbus apophysis with a sharp tip. Body length 2.5–3 mm. 13. *Th. pinastri* (p. 243)
- 29(28) Bright median band of the dorsum with sharp angular fringes (Fig. 402). Tip of the median bulbus apophysis sharp or blunt (Fig. 403). ME quadrangle square. Body length 3–3.5 mm. 14. *Th. pictum* (p. 243)
- 30(3) Females. 31
- 31(34) Posterior edge of the epigynal opening with a forward-directed scapus (Fig. 378). 32
- 32(33) Scapus tip broadened and not reaching the anterior edge of the epigyne (Fig. 378). Body length 3.4 mm. 2. *Th. vittatum* (p. 235)
- 33(32) Scapus tip not broadened and somewhat exceeding the anterior edge of the epigyne (Fig. 380). Body length 4–5 mm. 3. *Th. pulchellum* (p. 236)
- 34(31) Posterior part of the epigyne without scapus or epigyne without opening. 35
- 35(36) Distance between PME shorter than the distance between PME and PLE. Venter with a sharp longitudinal black band. Epigyne like Fig. 382. Body length 6–7 mm. . . 4. *Th. ovatum* (p. 236)
- 36(35) PE evenly spaced. 37

- 37(38) Epigyne with two openings well-separated from each other. Abdomen uniformly white or with small black marks. Body length 2.7–3 mm. 5. *Th. nigrovariegatum* (p. 237)
- 38(37) Epigyne and abdomen coloration not like this. 39
- 39(42) Distance between AME significantly larger than their diameter. 40
- 40(41) Epigynal opening round or oval (Fig. 386). 6. *Th. sisymphium* (p. 237)
- 41(40) Epigynal opening oval (Fig. 389). Body length 3.5–5.5 mm. 7. *Th. impressum* (p. 238)
- 42(39) Distance between AME as long as or shorter than their diameter. 43
- 43(44) Sternum pale, its edge and center with a sharp black mark. Body length 3–4 mm. Habitus like Fig. 406. 8. *Th. tinctum* (p. 239)
- 44(43) Sternum without black marks, sometimes with a dark edge. 45
- 45(50) Abdomen significantly higher than long or spherical; then its bright dorsal band only developed in its second half. 46
- 46(47) Epigynal opening with a small sharp apophysis in its posterior part (Fig. 395). Body length 3.5–5 mm. 10. *Th. lunatum* (p. 241)
- 47(46) Posterior part of the epigynal opening without apophysis (Fig. 393). 48
- 48(49) Posterior and lateral parts of cephalic region with two oval yellow marks, which are well visible on the dark background. 49
- 49(48) Posterior and lateral parts of cephalic region without such marks. Body length 4.5–6.5 mm. 9. *Th. tepidariorum* (p. 239)
- 50(45) Abdomen spherical or weakly oval, usually with a bright, broad, dorsal band, extending along the entire abdomen. 51
- 51(52) Epigyne wider than long (Fig. 404). Body length 3.5–4 mm. 14. *Th. pictum* (p. 243)
- 52(51) Epigyne not wider than long. 53
- 53(54) Femur with or without thin apical rings. Epigyne like Fig. 399. Body length 2.5–4.5 mm. 12. *Th. denticulatum* (p. 241)
- 54(53) Femur and epigyne not like this. 55
- 55(56) Epigynal opening with sharp anterior and posterior edges (Fig. 401). Legs with dark rings. Body length 3–4 mm. 13. *Th. pinastri* (p. 243)
- 56(55) Epigynal opening without sharp anterior and posterior edges. Legs with dark rings or unicolored. 57
- 57(58) Legs unicolored without rings, pale yellow. 11. *Th. simile* (p. 241)
- 58(57) Legs yellow with dark rings. 15. *Th. albipes* (p. 244)

1. *Theridium tuberculatum* (Kroneberg, 1875)

Description: Female body length 3.5 mm.

The carapace of the female is without a dark median band. The carapace of the male is broad, very flat, somewhat longer than wide and has curved edges. The cephalic region is not large and significantly bulged, appearing high when viewed from the front. The thoracic furrow is deep, with three engraved lines radiating from it on each side. The ME form a square, the LE stand close to each other.

The gnathocoxae, labium and legs are of the same color as the carapace and always without marks. Legs I are significantly longer than the other legs, thin and spine-less. Femur I is somewhat longer than the body.

The abdomen is light yellow with a median longitudinal black band and a pair-wise lateral fringe.

Habitat: On bushes on forest edges.

Distribution: Rostov region, Turkmenistan. **In Georgia:** Lagodekhi (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Theridion nigrovariegatum* (Simon, 1873). In Mcheidze (1997) author sic: 'Cron., 1875' and without brackets.

2. *Theridium vittatum* C. L. Koch, 1836

Description: Female carapace length 2.6 mm, width 1.8 mm. Male carapace length 1.4 mm.

♀ The legs are blackish brown with reddish tips. The epigyne bears a short hook; its posterior part is broadened and bears a deep transversal edge (Fig. 378).

The abdomen is bulged, oval and weakly elongated, bearing a broad longitudinal, white or rose band. Sometimes the abdomen is brown-red, almost black or brown with diagonal marks. Its sides are dark brown, often reddish, normally of a hazy shade and with darkened marks. The venter is square with a broad median band, brown or blackish and extending towards the spinnerets.

♂ The oval dark brown-red carapace bears a thin black marginal line and a wide broad median band, which is broadened in its anterior part. The chelicerae are brown-red. The sternum is longer than wide, triangular and dark brown with a thin black edge.

The abdomen is not oval but bulged. The legs are somewhat long and of light brown color. The terminal half of the bulbus is armed with a long curved spine (Fig. 377).

Habitat: On woody plants and bushes.

Distribution: Europe, Crimea, Transcaucasus. **In Georgia:** Zestaponi (Qvirila, Kulczyński 1895⁹⁴), Kharagauli, Kutaisi (Mcheidze 1953).

⁹⁴Mcheidze (1997) sic: '1995', lapsus.

Taxonomy: Platnick (2013): *Anelosimus vittatus* (C. L. Koch, 1836).

3. *Theridium pulchellum* (Walckenaer, 1802)

Description: Female carapace length 1.7 mm; abdomen length 3 mm, width 2.3 mm. Male carapace length 1.7 mm

♀ The carapace is brown-red. The eyes form a trapezoid, which is longer than wide. The legs are shingle-colored brown.

The abdomen is weakly bulged, somewhat elongated and oval. It bears a simple white yellowish or rose longitudinal band; often it is entirely darkened brown. Its sides are dark brown. The epigyne has a deep transversal opening near the epigastric furrow (Fig. 380).

♂ The carapace is long, oval and bright brown-red with a black marginal line and a broad median band. The chelicerae are brown-red. The sternum is triangular, longer than wide, of dark color and with darkened sides and outlined with a thin black edge. The legs are somewhat long, of brown-red color. The palpus is white shingle-colored; tarsus and bulbus are reddish (Fig. 379).

The abdomen is oval; the epigastric furrow is short and not bulged.

Habitat: On bushes.

Distribution: Ukraine, Khosta. **In Georgia:** Akhali Atoni (Mcheidze 1954). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Anelosimus pulchellus* (Walckenaer, 1802).

4. *Theridium ovatum* (Clerck, 1757)

Description: Female body length 6–7 mm; male 3.5–5 mm.

♀ The carapace is bright yellowish with a thin black edge and a black median line extending from the eye region to the posterior end. The sternum is yellowish with a thin dark edge and a black median line. The legs are unicolored yellowish white.

The abdomen is of yellow color; its dorsum bears 4–5 black marks or spots arranged in two rows as well as two red bands, which more or less unite in the posterior part, forming a median oval region. Sometimes this median region is red (Fig. 383). Two black marks are situated near the spinnerets. Epigyne like Fig. 382.

♂ The coloration of the male is similar to the coloration of the female. Whereas the females have a black terminal ring on tibia I, the males have this ring on tibiae II and IV. The chelicerae are long and distant from each other; their inner edge bears a strong thick apophysis and two small teeth (Fig. 381).

Ecology: This species lives on low plants: on Apicaceae, Asteraceae, in gardens on the lower branches of woody plants, in forest meadows. We meet this species on alpine meadows at 1800 m a.s.l. For prey catching the spider

constructs a silken retreat with a signal thread in rolled-up leaves. We can find adult forms of each sex in June and July. The rows of egg sacs, with 150–180 eggs each, are suspended in rolled-up leaves. The color of the silk is light blue-green. The second cohort of egg sacs includes fewer eggs in smaller and thinner sacs. The hatched juveniles stay with the mother for some time and contribute in catching prey.

Distribution: Europe, the Mediterranean region, Japan, North America, in the former USSR in Turkmenistan, Transcaucasus. **In Georgia:** Lagodekhi (Mt. Ninigori), Tbilisi, Kodzori, Kiketi, Betania, Manglisi, Gori, Ateni Valley, Sighnaghi, Sukhumi, Poti, Keda, Ambrolauri, Mestia (Mcheidze 1940–1975). First record in Georgia.

Taxonomy: Platnick (2013): *Enoplognatha ovata* (Clerck, 1757). Mcheidze (1997) also cites the synonym *T. redimitum* Clerck, 1757.

5. *Theridium nigrovariegatum* Simon, 1873

Description: Female body length 3–3.5 mm; male 2.7–3 mm.

♀ The whitish yellow carapace bears a dark median band, which is branched in its anterior part but does not reach the eye region. Sometimes we find a dark red marginal line. The sternum is bordered with a broad black band or is entirely white-yellow.

The abdomen is whitish-yellow with yellow sides or entirely lemon-colored yellow, sometimes with dark, broken lines arranged in rows or with one black median band. The coloration is very variable (Fig. 384). Simon described seven forms of colorations. Sometimes four dark marks are situated at the spinnerets. Two small black spots are situated in the center of the venter. All leg tibiae bear an apical black ring.

♂ The legs bear a variable annulation.

Habitat: On bushes in the steppe and forest zones. We find adult forms of both sexes together with their egg sac in June and July.

Distribution: Spain, Portugal, France, Switzerland (1700 m a.s.l.), Bohemia, Austria, Hungary, Dalmatia, Macedonia, Syria, in the European part of the USSR. **In Georgia:** Lagodekhi (Mt. Ninigori at 2400 m a.s.l. in the alpine zone), Shovi (Tshiora in Upper Ratsha, Mcheidze 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Heterotheridion nigrovariegatum* (Simon, 1873).

6. *Theridium sisyphium* (Clerck, 1757)

Description: Female body length 3–5 mm, carapace length 1.3–1.5 mm. Male body length 3–3.5 mm, carapace length 1.2–1.6 mm.

♀ The carapace is orange-yellow with a thin brown band and a longitudinal brown band in the cephalic region, which does not reach the eye region.

The chelicerae are brown-yellow; the labium is gray-brown. The sternum is orange with a red-brown edge. The legs and palpi are yellow with orange-red rings on the proximal and terminal segments.

The abdomen is white, gray, yellow with a thin furrow and brown and black bands extending laterally from the center. These bands are divided in 3–4 parts with a white median part. Branched furrows originate in the center of the abdomen (Fig. 387). The venter is yellow with a thin transversal pale brown band. The epigyne is blackish-brown (Fig. 386). Three blackish-brown marks are situated around the spinnerets, two in front of the spinnerets and one behind them.

♂ The coloration is similar to the coloration of the female. The abdominal markings are well developed.

Habitat: In high grass, on the branches of bushes.

Distribution: In the European part of the former USSR. **In Georgia:** Lagodekhi, Tqibuli, Pasanauri (Mcheidze 1961–1977). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Phylloneta sisypbia* (Clerck, 1757)⁹⁵.

7. *Theridium impressum* L. Koch, 1881

Description: Female body length 5–5.5 mm; male 3.5 mm. The carapace is light brown with a black fringe on the sides and a longitudinal dark band in the center. The sternum is yellow with a thin black fringe. The legs are brownish yellow with dark rings at the joints.

The abdomen is spherical, its coloration is dirty white or rose. Two longitudinal dark broad bands are situated on the dorsum and are crossed by transversal white lines (Figs. 390, 391). The epigyne is oval (Fig. 389). The male palpus is armed with an apophysis with a complex double lamella (Fig. 388).

Habitat: Near forests. Its retreat is similar to an upside-down funnel or a cocoon; it is situated on high grass or on Apiaceae, often on dry plants from the last year. The spider sits beneath the retreat, together with one or two egg sacs or hatched juveniles.

Distribution: Europe, Anatolia, Algiers, China, in the former USSR in Central Asia, Kazakhstan, Siberia. **In Georgia:** Kutaisi (Kulczyński 1895), Sukhumi (Spassky 1937), Tusheti, Gurdzhaani, Tshumlaqi, Velistsikhe, Lagodekhi (Kotshalo), Borjomi, Sairme, Zekari, Lantshkhuti, Askana, Shovi (Mcheidze 1938, 1960, 1974).

Taxonomy: Platnick (2013): *Phylloneta impressa* (L. Koch, 1881).

⁹⁵In Mcheidze (1997) sic 'Theridium sisiphium', lapsus. Mcheidze (1997) also cites the synonym *T. notatum* C. L. Koch 1758, lapsus.

8. *Theridium tinctum* (Walckenaer, 1802)

Description: Female carapace length 1.5 mm; abdomen length 2.7 mm, width 2.5 mm. Male carapace length 1.5 mm.

♀ The carapace is brown. The legs are very long, white and bear blackish rings.

The abdomen is bulged, short and broader in the middle; its sides are white-yellow or dark brown. In its anterior part the abdomen bears two closely standing black marks and two rows with four spots. Sometimes the abdomen is dark brownish and white-yellowish. Especially in the posterior part black marks along the edges are situated in an elongated bright band. The epigyne is reddish with a broad transversal oval opening.

♂ The carapace is brown shingle-colored bright, with a fine, broken, black, marginal line. The chelicerae are especially long with dark blackish marks at their bases. The sternum is triangular, somewhat longer than wide and with a white shingle-colored line as well as a broken black median band. The legs are long and thin. The palpus is white shingle-colored, its bulbus darkened reddish with an elongated femur.

The abdomen is oval.

Habitat: In forests, juveniles on coniferous and broad-leaved plants and *Azalea pontica*.

Distribution: Latvia, Belarus, Ukraine, Tatarstan; regions of Briansk, Belgorod, Gorki and Rostov, Caucasus. **In Georgia:** Sukhumi (Spasskyi 1937), Kobuleti, Mtsvane Kontskhi, Mtirala, Shovi, Mestia (Ipari), Atsa, Lentekhi, Lagodekhi (Mcheidze 1953–1964).

Taxonomy: Platnick (2013): *Platnickina tincta* (Walckenaer, 1802).

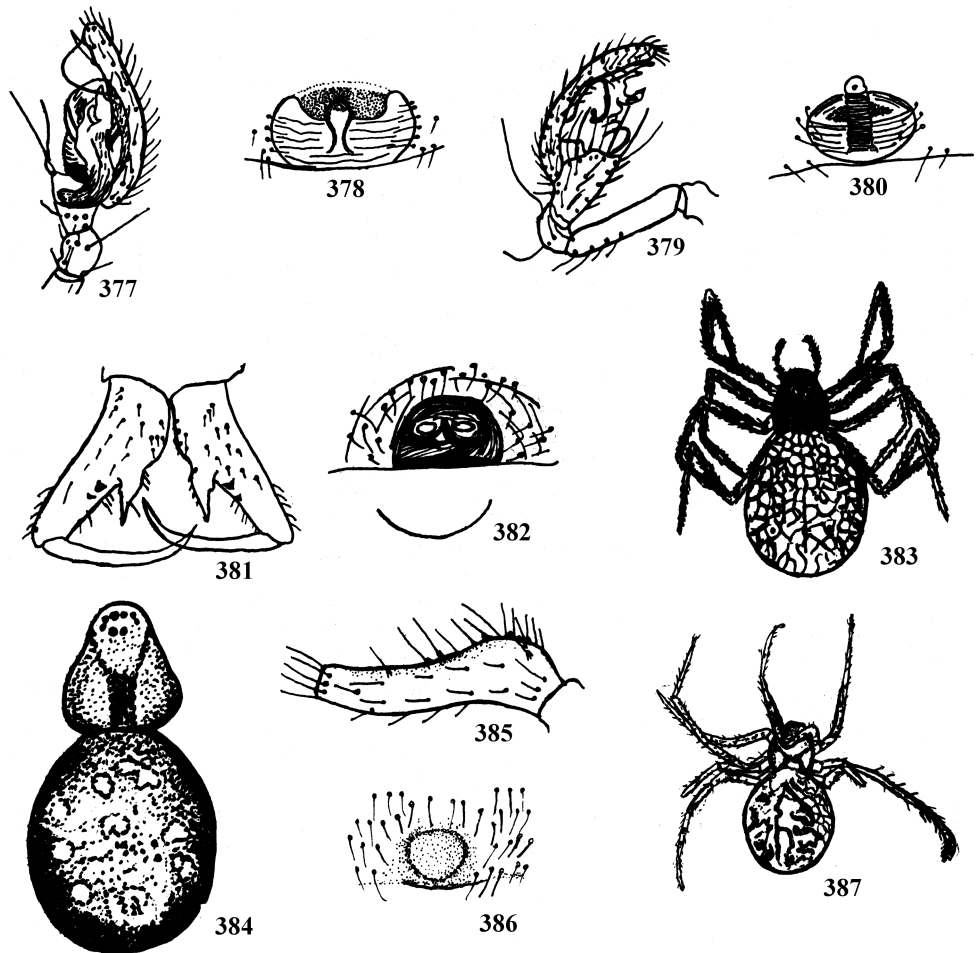
9. *Theridium tepidariorum* C. L. Koch, 1841

Description: Female body length 5.3 mm; male 2.5 mm. The carapace and sternum are brown, in the center brighter. The legs are light brown with dark rings.

The abdomen is very high, of brownish-gray color with hazy black marks and diagonal white lines. The oval epigyne is arranged transversally (Fig. 393). The male palpus apophysis originates far behind the edge of the joint (Fig. 392).

Habitat: In high and low places in forests. In Western Georgia in the corners and on window sills on bright balconies of every house as well as on iron, concrete or wooden guard rails and in parks. A number of egg sacs is suspended in the web together with the spider. They are especially abundant on the Black Sea coast.

Distribution: Holarctis, everywhere in the former USSR. Cosmopolitan. **In Georgia:** Sukhumi (Spasskyi 1937), Western and Eastern Georgia (1938–1974).



Figs. 377-387. Theridiidae, *Theridium* (in part.). *T. vitattum*: 377 - male palpus; 378 - epigyne. *T. pulchellum*: 379 - male palpus; 380 - epigyne. *T. ovatum*: 381 - chelicerae; 382 - epigyne; 383 - dorsal habitus. *T. nigrovariegatum*: 384 - dorsal habitus. *T. sisyphium*: 385 - male palpal femur; 386 - epigyne; 387 - dorsal habitus.

Taxonomy: Platnick (2013): *Parasteatoda tepidariorum* (C. L. Koch, 1841).

10. *Theridium lunatum* (Clerck, 1757)

Description: Female body length 3.2–5 mm; male 2.7–3 mm. The carapace is brown or black. The ME quadrangle is higher than wide. The distance between the PME is larger than their diameter. The carapace of the female is longer than tibia IV. The abdomen is broadened and the dorsum is bulging. Short strong setae cover the abdomen; its markings are white or yellow on a black or brown background (Fig. 396).

The bulbus apophysis of the male is directed forward and curved upwards; on its base it is entirely covered with fine granules (Fig. 394). Tibia IV bears a broad black apical ring.

Habitat: On twigs and leaves of woody plants and bushes. The web is large, the retreat is made of plant remains and contains the somewhat oval egg sacs of thick brown-red tissue.

Distribution: Europe, China, Canada, in the European part of the former USSR, Transcaucasus (Azerbaijan). **In Georgia:** Tbilisi, Lagodekhi, Qvareli, Gremi, Tsaghveri, Borjomi, Manglisi, Akhaltsikhe, Bakhmaro, Mtirala, Mestia (Mcheidze 1940–1972). First record in Georgia in 1964.

Taxonomy: Platnick (2013): *Parasteatoda lunata* (Clerck, 1757).

11. *Theridium simile* C. L. Koch, 1836

Description: Female body length 2.2–2.5 mm (Fig. 398); male 2.2 mm. The legs are unicolor light yellow without dark rings. The tip of the bulbus apophysis is branched (Fig. 397).

Habitat: In coniferous forests, on bushes and grass.

Distribution: St. Petersburg, Rostov Region, Latvia, Ukraine. **In Georgia:** Lagodekhi, Borjomi (Mcheize 1952). First record in the Transcaucasus.

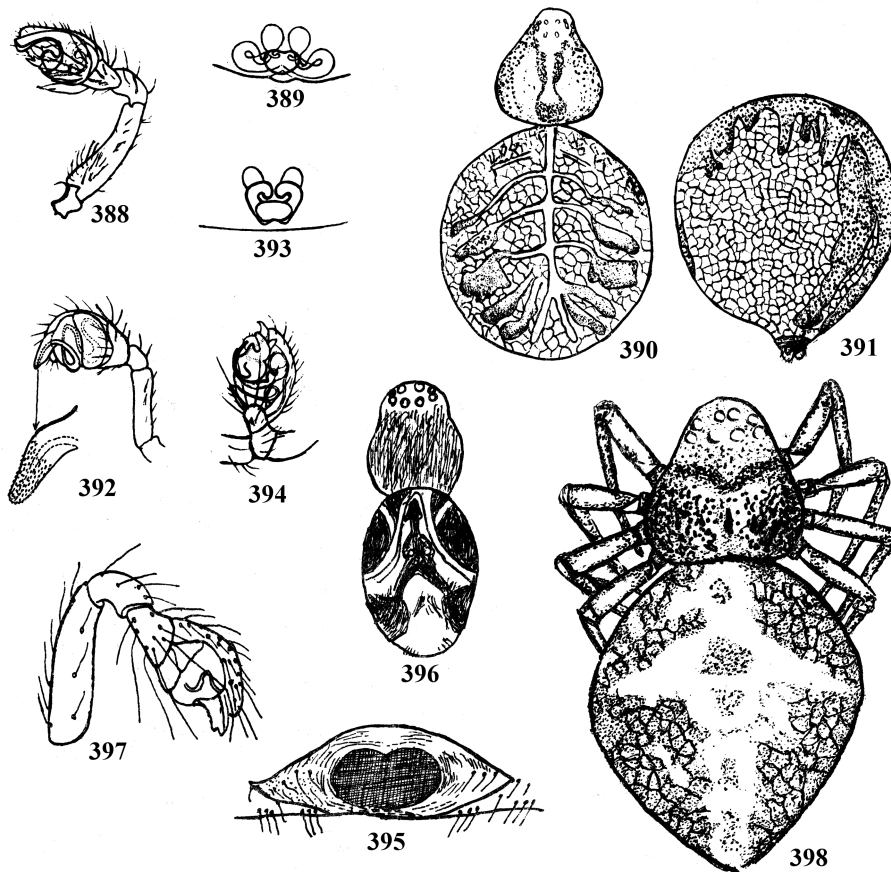
Taxonomy: Platnick (2013): *Simitidion simile* (C. L. Koch, 1836).

12. *Theridium denticulatum* (Walckenaer, 1802)

Description: Female body length 2.5–4.5 mm; male 2.5–3.2 mm. The carapace of the female is blackish brown or hazy yellow. The chelicerae and sternum are blackish brown. The legs are gray with yellow rings.

The abdomen bears a dentate bright median band, which tapers somewhat towards the posterior part of the abdomen (Fig. 400). The lateral longitudinal brown band bears black spots. The venter is dark with white marks behind the epigastric furrow. Epigyne like Fig. 399. The coloration of the male is similar to the coloration of the female.

Ecology: It is a characteristic species of mountainous locations. On steep rocks, rarely on tree trunks bushes or under rocks. In settlements it often



Figs. 388–398. **Theridiidae, *Theridium* (in part.).** *T. impressum*: 388 – male palpus; 389 – epigyne; 390 – dorsal habitus; 391 – lateral opisthosoma. *T. tepidariorum*: 392 – male palpus; 393 – epigyne. *T. lunatum*: 394 – male palpus; 395 – epigyne; 396 – dorsal habitus. *T. simile*: 397 – male palpus; 398 – dorsal habitus.

lives on walls and in corners of buildings or windows. In the Alps it goes up to 1500 m a.s.l., in forests 700 m a.s.l.

We find adult males in May. The ball-shaped egg sacs of approx. 3 mm diameter appear in June and July. They are covered with a thin layer of brown tissue and contain up to 100 eggs. They are suspended near the base of the catching threads. Protective silk forms a bright tube, in which the female guards its egg sacs.

Distribution: Europe, Mediterranean regions, Atlantic islands, Bessarabia, Siberia, in the European part of the USSR, Khosta. **In Georgia:** Lagodekhi Reserve (Kotshalo, subalpine zone), Shovi, Tshiora, Sakao at 1600 m a.s.l. (Upper Ratsha) (Mcheidze 1939, 1975, 1976).

Taxonomy: Platnick (2013): *Theridion melanurum* Hahn, 1831.

13. *Theridium pinastri* L. Koch, 1872

Description: Carapace length 1.4 mm; abdomen length 2.5 mm, width 2.2 mm. Male carapace length 1.4 mm.

♀ The carapace is dark brown. The ME are almost uniform and form a trapezoid, which is higher than wide. The legs are especially long and brown-red. Legs I, II and IV bear brown blackish rings (also in the male).

The abdomen is bulged, spherical and with a somewhat narrowed anterior part; it bears a brown pubescence of conspicuously long setae. The center of the brown abdomen is dull whitish with a bright anterior band and white sides. The venter is shingle-colored, the epigastric furrow and the spinnerets are brown-blackish.

The epigyne has a well-developed oval, transversal opening (Fig. 401).

♂ The carapace surface is leather-like brown with a thin brown blackish edge and fine brown spots radiating from the center. The chelicerae are brown, the sternum is dark brown with a black marginal line or band. The legs are long and dark red. The palpus is dark shingle-colored with a brown tarsus and bulbus. The bulbus bears a fine, curved, black apophysis on its inner side.

The abdomen is oval and bulged, with a well-developed epigastric furrow.

Habitat: In coniferous and broad-leaved forests.

Distribution: Rostov Region, Crimea. **In Georgia:** Mikhailovski Pass (Spasskyi 1937), Manglisi, Adigeni (Mcheidze 1970).

Taxonomy: Platnick (2013): *Theridium pinastri* L. Koch, 1872. In Mcheidze (1997) author sic: 'C. L. Koch, 1872', lapsus.

14. *Theridium pictum* (Walckenaer, 1802)

Description: Female and male body length 3.5 mm. The carapace is light brown with broad darkened sides and a dark longitudinal band, which broadens in the anterior part and occupies the entire eye region. The sternum is

yellow with a dentate brown fringe. The legs are yellow and bear brown rings.

A broad dentate longitudinal brown or reddish band is situated on the abdomen, with a bright line coming from its angles, which is not cut off terminally by a dark lateral band (Fig. 402). The epigyne is dark and oval with a flat area and an elongated lower edge (Fig. 404).

The basis of the male palpus is armed with an apophysis, which has the form of a knee-like curved lamella (Fig. 403).

Habitat: This forest species lives on bushes and the lower branches of trees, mostly on forest edges or in gardens. Its retreat looks like an upside-down funnel.

Distribution: Europe, widely distributed in the former USSR, reaching the southern zones. **In Georgia:** Surami Pass, Tshiatura (Mcheidze 1960). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Theridion pictum* (Walckenaer, 1802).

15. *Theridium albipes* L. Koch, 1878

Description: ♀ The carapace is brownish yellow with a triangular blackish mark in the center. The sides are rounded and the anterior part is narrowed; its posterior part is somewhat inclined. The AE form a straight row, the ME are round and strongly bulged. The LE are elongated, rounded and of the same size as the PLE⁹⁶. Gnathocoxae, labium and sternum are blackish; the palpus and legs are yellowish white. The femur bears a black mark.

The main color of the dorsum is yellowish white; its sides are gray. The abdomen is bulged and somewhat longer than wide; its anterior and lateral parts are rounded. Its surface is covered with thick granules and setae (Fig. 405). The epigyne is elongated.

Habitat: In grass and on bushes.

Distribution: North Caucasus, Tuapse. **In Georgia:** Lagodekhi, Qvareli, Tshakvi (Mcheidze 1954). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Theridium albipes* L. Koch, 1878. In Mcheidze (1997) author sic: 'C. L. Koch, 1878', lapsus.

16. *Theridium cinereum* Thorell, 1875

Description: Female carapace length 1 mm. Male body length 2 mm; carapace almost 1 mm.

♀ The carapace is somewhat longer than wide; its sides are strongly broadened and rounded; its anterior part is narrowed. The carapace is brown shingle-colored with well-developed sizeable black marks. The eye region is small. The center of the sternum is bulged, shining black and lacking any marks (rarely with a blackish brown edge). The chelicerae are long and thin,

⁹⁶Sic Mcheidze 1997.

the gnathocoxae narrow and strongly curved, brown or black. The legs are thin and bear setae as well as numerous black rings.

The sides and top of the spherical abdomen bear gray whitish spots. Large whitish marks are longitudinally arranged in two rows on the abdomen and unite in its posterior part. The sides bear black spot-like marks. The black venter bears two strong whitish marks. The small epigyne has an ellipsoid opening; its basal part is divided by a septum.

♂ The coloration of the male is similar to the coloration of the female with the exception of the dark shingle-colored scutum on the venter and two white marks near the spinnerets. The bulbus bears a claw and a thick long basal spine as well as a black tooth near the tip.

Habitat: On grass and bushes.

Distribution: Moscow Region, Crimea, Voronezh Region, Khosta. **In Georgia:** Poti, Gudauta (Mcheidze 1946). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Theridion cinereum* Thorell, 1875. In Mcheidze (1997) author with brackets.

7.18.9 *Theridula* Emerton, 1882

1. *Theridula opulenta* (Walckenaer, 1841)

Description: Female body length 2.3–2.8 mm; male 2–2.3 mm.

♀ The carapace is whitish, shingle-colored, very broad and with a black median band, rarely entirely black. The sternum can be black or brown, with black reticulate markings. The legs are pale yellow.

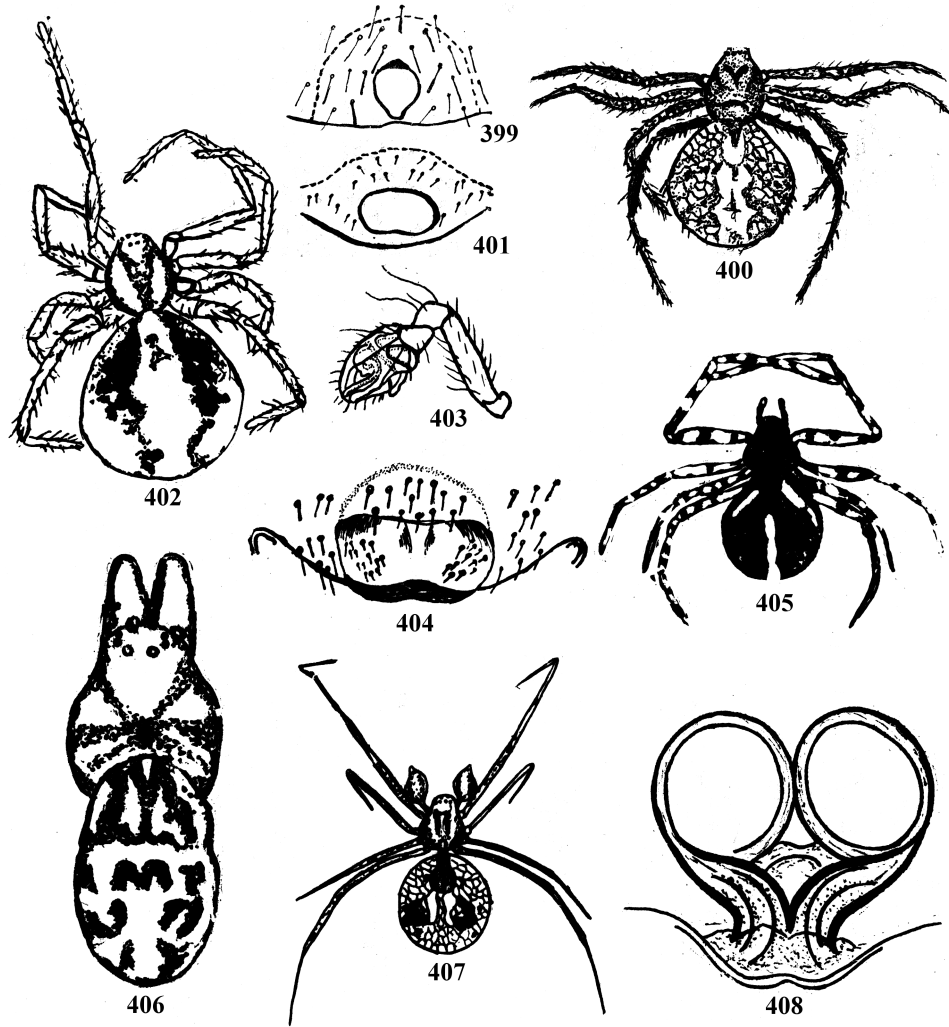
The sizeable abdomen is rhomboid with two blunt warts; sometimes it is black, rarely unicolored, more often with white marks. The epigyne bears two round openings, divided by a thin septum. The white females carry the rounded egg sac attached to their spinnerets.

♂ The abdomen is smaller than the abdomen of the female and entirely black; it is covered with long, white setae. The yellow palpus has a black tibia and bulbus. The tarsus is long, cylindrical and blunt. The bulbus is long.

Habitat: In grassy places.

Distribution: Black Sea Coast (Khosta). **In Georgia:** Sukhumi (Spasskyi 1937), Poti (Mcheidze 1965). Georgian endemic species.

Taxonomy: Platnick (2013): *Theridula opulenta* (Walckenaer, 1842). Mcheidze (1997) also cites the synonym *T. sphaerula* Hentz, 1850.



Figs. 399–408. Theridiidae, *Theridium* (in part.), *Robertus*. *T. denticulatum*: 399 – epigyne; 400 – habitus. *T. pinastris*: 401 – epigyne. *T. pictum*: 402 – dorsal habitus; 403 – male palpus; 404 – epigyne. *T. albipes*: 405 – dorsal habitus. *T. tinctum*: 406 – dorsal habitus. *T. tuberculatum*: 407 – dorsal habitus. *R. scoticus*: 408 – epigyne.

7.18.10 *Robertus* O. P.-Cambridge, 1879⁹⁷**1. *Robertus scoticus* Jackson, 1914**

Description: Body length 2 mm, carapace 0.84 mm. The integument is dark yellow-brown with radiating lines; the center of the carapace is darker. The eye region is strongly pigmented. The clypeus is dark yellowish-brown. The sternum is heart-shaped, yellowish-brown with a dark brown band. Labium, gnathocoxae and legs are yellowish-brown, palpus and the tarsus and metatarsus of the legs are dark.

The abdomen is yellowish-brown; its dorsum is covered with brown pigments. On the ventral side, this pigmentation is less regular. The spinnerets are pale yellowish-brown. The heart-shaped epigyne is very characteristic (Fig. 408) with a pigmented surface; its opening is situated near the posterior edge. The posterior part bears bulged spoon-like tongues.

Habitat: On the ground and in the field layer of forests (in mosses).

Distribution: Kaliningrad Region. **In Georgia:** Lagodekhi Reserve (Mcheidze 1950).

Taxonomy: Platnick (2013): *Robertus scoticus* Jackson, 1914.

7.18.11 *Euryopis* Menge, 1868**1. *Euryopis flavomaculata* (C. L. Koch, 1836)**

Description: Female body length 3.5 mm; male 3 mm. The dorsum is reddish-brown with yellow or light yellow marks, without black fringes.

Habitat: In forests, on the forest edge on low grass, rarely on bushes.

Distribution: Regions of Perm, Gorki, Orlovski, Belgorod; Belarus, Moldova, Chuvashia. **In Georgia:** Lagodekhi Reserve (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Euryopis flavomaculata* (C. L. Koch, 1836).

7.18.12 *Ulesanis* C. L. Koch, 1872⁹⁸**1. *Ulesanis minuta* Spasskyi, 1932**

Description: Female body length 1.3 mm. The abdomen is significantly longer than the carapace, its length and width 1.1 mm.

The cephalic region bears a round relief. The anterior part of the clypeus is bulged, the posterior part strongly indented. The labium is triangular and wider than long. The darkened sternum is as long as wide, with a broadly cut-off anterior part. The carapace is yellowish-brown with a black fringe. The legs are blackish; femora and tibiae bear darkened rings.

⁹⁷Mcheidze (1997) also cites the synonyms *Ctenium* Menge, 1871 and *Pedanostethus* Simon, 1884.

⁹⁸In Mcheidze (1997) sic '*Ulesania*', lapsus.

The abdomen bears one large blunt erect hump. Two small, blunt humps are directed antero-dorsad. The posterior slope of the dorsum bears two transversal folds, which extend towards the sides. The part of the abdomen bearing the spinnerets as well as the sides are bordered by rings, in the entire area arranged in three rows. The male is not known.

Distribution: Khosta (Spasskyi 1932). **In Georgia:** only in Kelasuri (Mcheidze 1968). It could be a Caucasian endemic species.

Taxonomy: Platnick (2013): *Phoroncidia minuta* (Spassky, 1932).

7.19 Oxyopidae

The carapace is elongated oval with a round posterior end; its anterior part is narrowed and curved upwards. The median furrow is long with shallow radiating furrows. The cephalic region is raised and almost triangular. All eyes are of the day type and arranged in three rows. The AE are smaller than the others. The clypeus is as high as the width of the eye region.

The chelicerae are long and vertical, the tip of their basal part is thickened and its base flat. The labium is longer than wide. The gnathocoxae are narrow and long. The sternum is wider than long, flat and with a cut-off front.

The male palpus is thin and long; its tip bears a thin short claw. The legs are long, similar in thickness and differ in length. Except for the tarsus, all segments are covered with long spines. The tarsus bears three terminal claws and no scopula.

The abdomen is oval or egg-shaped, elongated and acuminate. It is covered with thick dark spots. The basal part of the six spinnerets consists of one thick segment; the distal thin and long pair consists of two segments.

These vagrant spiders hunt during the day and make no webs, waiting for the appearance of their prey on flowers and plant leaves. The egg sac is disc-shaped, white and never suspended within a web. The males and females are of similar size, differing only in color. These xerophilous spiders are abundant in the steppe or similar open and dry habitats. In such places we find them on grass and bushes.

In total, 300 species are known, almost all of them are distributed in tropical or subtropical countries. Four species are recorded in the former USSR; three species of one genus in Georgia.

7.19.1 *Oxyopes* Latreille, 1804⁹⁹

Key to species

- 1(6) Males. **2**
 2(3) Palpus patella with an apophysis. Body length 6 mm (Fig. 410).
 1. *O. ramosus* (p. 249)
 3(2) Palpus patella without apophysis. **4**
 4(5) Palpus tibia twice as long as wide. Body length 5–6 mm.
 2. *O. heterophthalmus* (p. 249)
 5(4) Palpus tibia as long as wide. Body length 5–6 mm.
 3. *O. lineatus* (p. 250)
 6(1) Females. **7**
 7(8) Sternum yellow with a black median band and black marks near the
 edges. Body length 8–10 mm (Fig. 414). 3. *O. lineatus* (p. 250)
 8(7) Sternum dark brown (without black band or marks), its center
 somewhat bright. **9**
 9(10) Carapace shorter than combined lengths of tibia and patella IV.
 Body length 9–11 mm. 2. *O. heterophthalmus* (p. 249)
 10(9) Carapace longer than combined length of tibia and patella IV.
 Body length 10 mm. 1. *O. ramosus* (p. 249)

1. *Oxyopes ramosus* Martini & Goeze, 1778

Description: In comparison to the other species, the body is comparatively large: female body length 8.5–11 mm; male 7 mm. The abdomen bears two longitudinal white lines in its anterior half. The sternum is brown with a yellow central mark (Fig. 409).

The epigynal plate bears a narrow median apophysis (Fig. 410). The male palpus is broad and thick (Fig. 410).

Habitat: On grass and bushes on the forest edge.

Distribution: Rare in the North, more abundant in the central part of the Palearctic, in the former USSR in Siberia and the Baikal region. **In Georgia:** Kotshalo, Eldari, Lagodekhi, Betania (Mcheidze 1940–1954). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Oxyopes ramosus* (Martini & Goeze, in Lister, 1778).

2. *Oxyopes heterophthalmus* (Latreille, 1804)

Description: Female body length 7.5 mm; male 6 mm. The female carapace is brown with a broad brownish-yellow band or, in the male, with a V-shaped

⁹⁹Mcheidze (1997) also cites the synonym '*Sphasus* Walckenaer, 1805'.

mark. The sternum is brown with a longitudinal yellow line. The legs are yellow, thick, with yellow rings and long spines.

The black sides of the abdomen bear three diagonal lines (Fig. 411). The epigyne is broad and flat with a rounded apophysis near its tip (Fig. 413). The male palpus is thin; its second segment is armed with a long, when viewed from the outside, prominent appendage in form of a curved lamella (Fig. 412).

Habitat: In the forest and steppe zones on grass, bushes, in forests in leaf litter.

Distribution: In the Palearctic (except the extreme North), Uzbekistan, Kyrgyzstan, Almaty. **In Georgia:** Tbilisi (Kulczyński 1895), Kiketi, Manglisi, Lagodekhi, Batumi (Mcheidze 1943–1959).

Taxonomy: Platnick (2013): *Oxyopes heterophthalmus* (Latreille, 1804)¹⁰⁰.

3. *Oxyopes lineatus* Latreille, 1806

Description: Female carapace length 3 mm, width 2 mm; abdomen length 5.5 mm, width 4 mm. Male carapace length 2 mm, width 1.6 mm; abdomen length 3 mm, width 1.5 mm.

The carapace bears dark marks. The female has a brighter coloration (yellow) compared to the male (brown). The eyes are arranged in three rows. The two AE are the smallest, whereas the other eyes are of almost uniform size. The MER is directed forward.

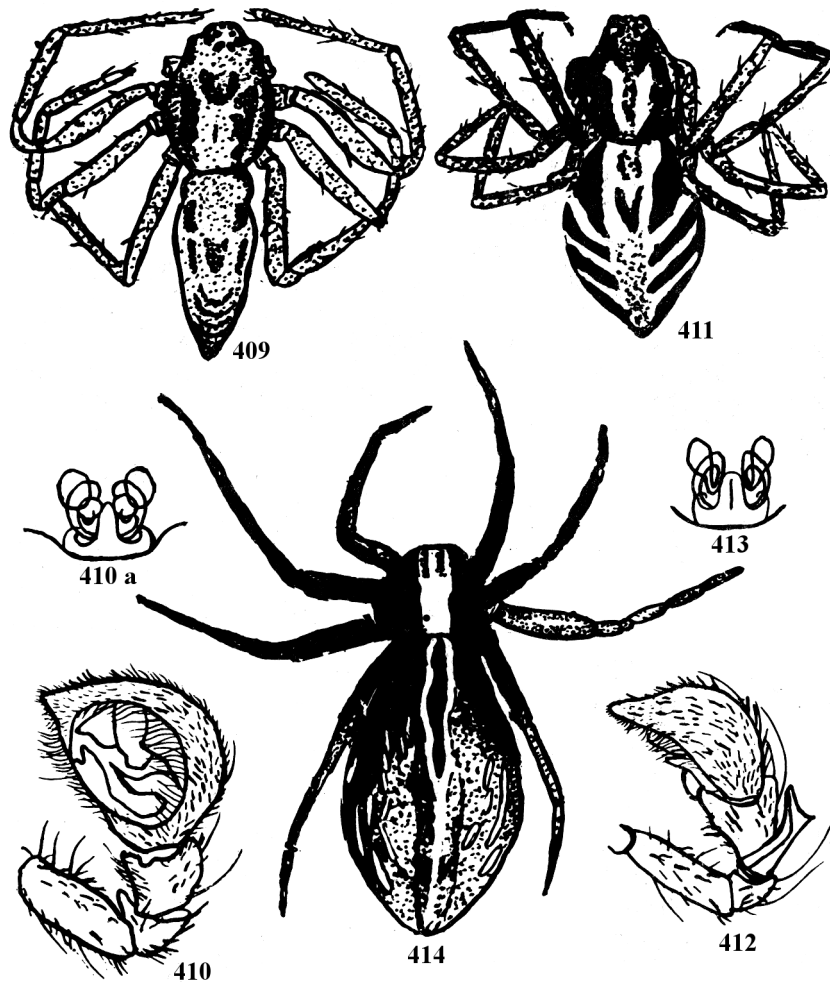
The posterior end of the oval abdomen is narrowed; its dominant color is yellow. A lancet-shaped dark band is situated in the anterior half of the abdomen. The sides of the abdomen bear dark spot-like bands (Fig. 414). The area between the epigyne and the spinnerets on the venter bears black spots, forming 6–7 pairs of black bands.

Habitat: This steppe species lives on grass, bushes and cultivated plants, feeding on aphids, true bugs and pierids.

Distribution: Southern Europe, Tunis, Syria, Palestine, Turkey, Mesopotamia. It does not reach the latitude of Paris, Australia, Czechoslovakia, not recorded from Germany, in the southern part of Hungary, in the former USSR in Saratov region, Crimea, Transcaucasus. **In Georgia:** Alazani steppe, Lagodekhi (Schmidt 1895), Gelati, Kutaisi, Tbilisi (Kulczyński 1895), Tsebelda (Simon 1899), Tbilisi, Kodzhori, Manglisi, Betania, Okroqana, Samgori, Gori, Aspindza, Sighnaghi, Eldari (Mcheidze 1939, 1940, 1963, 1970).

Taxonomy: Platnick (2013): *Oxyopes lineatus* Latreille, 1806.

¹⁰⁰In Mcheidze (1997) sic: 'Oxyopes heteroptalmus', lapsus.



Figs. 409–414. *Oxyopidae*, *Oxyopes*. *O. ramosus*: 409 – dorsal habitus; 410 – male palpus; 410 a – epigyne. *O. heterophthalmus*: 411 – dorsal habitus; 412 – male palpus; 413 – epigyne. *O. lineatus*: 414 – dorsal habitus.

7.20 Agelenidae

The majority of the species is of dark color: gray, dark brown, yellowish brown, rarely yellow. The females do not differ much from the males in color or size. All species have eight eyes (except in *Iberina* species, which have no eyes at all) of uniform size and are arranged in two rows.

The chelicerae have a broad base and descend vertically. The outer edge of the cheliceral furrow bears 2–5 teeth, the inner edge bears 2–8 teeth. The palpus of the female bears a terminal claw. The tibia of the male palpus bears one or several apophyses. Normally, the embolus is long. All extremities are armed with spines, especially legs III and IV, and always have a scopula.

The species live in grass, on bushes, on the forest edge, under rocks, under tree bark. One species, *Argyroneta aquatica*, lives in water. In caves we find the species *Tegenaria taurica* and *T. pontica*. Some *Tegenaria* species are synanthropic.

The spiders of this family are characterized by their typical funnel-shaped webs (Fig. 425¹⁰¹). The spider hides in the funnel but comes out in order to catch prey. After copulation they make a special retreat within the web. The webs of small forms have a simple structure. In contrast, the water spider makes a web of a special kind: an underwater bell. Their egg sac is lentiform and contains 50–60 eggs.

The prey is suspended in the web and is of the same size as the spider. The *Agelena* species, for example, feed on grasshoppers, butterflies as well as pest insects of tea and citrus plantations. *Cybaeus tetricus* feeds on pest insects of forests, bark beetles and larvae of the great capricorn beetle¹⁰². The water spider feeds on water insects, molluscs and fish larvae. Many species have a prolonged reproductive period (eurychronous species).

This family includes 500 species; 44 species are recorded from the USSR. In Georgia we find five genera with 13 species.

Key to genera

- 1(4) Posterior spinnerets with one hardly discernible segment. Anterior spinnerets touching or almost touching each other. (subfamily Cybaeinae). **2**
- 2(3) Tracheal stigma situated close to the epigyne on the venter (Fig. 415). Labium much longer than wide. . . 1. *Argyroneta* (p. 253)
- 3(2) Tracheal stigma normally situated in front of the spinnerets. Labium not longer than wide. 2. *Cybaeus* (p. 258)

¹⁰¹Mcheidze (1997) sic: 'Fig. 420', lapsus.

¹⁰²*Cerambyx cerdo* Linnaeus, 1758, Coleoptera.

- 4(1) Posterior spinnerets clearly consisting of two segments. Anterior spinnerets spaced at a considerable distance from each other (Fig. 18¹⁰³). **5**
- 5(6) Both eye rows strongly curved. AE of uniform size or only AME larger than ALE. Terminal segment of the posterior spinnerets very long; much longer than the basal segment (Fig. 18). **3. *Agelena*** (p. 254)
- 6(5) Both eye rows straight or only weakly curved. AE of uniform size or AME smaller than ALE. Terminal segment of the posterior spinnerets not longer or hardly longer than the basal segment. **7**
- 7(8) Chelicerae strongly swollen, when viewed from the outside. Inner edge of the cheliceral furrow with three teeth. Legs comparably short. **4. *Coelotes*** (p. 259)
- 8(7) Chelicerae somewhat swollen, when viewed from the outside. Inner edge of the cheliceral furrow with 4–6 teeth. Legs long. **5. *Tegenaria*** (p. 260)

7.20.1 *Argyroneta* Latreille, 1804

1. *Argyroneta aquatica* (Clerck, 1757)

Water Spider¹⁰⁴

Description: Female body length 11.5–15 mm; male 17 mm.

♀ The body is black or brown; the abdomen is covered with a pubescence of short densely standing setae. The extremities, especially legs IV, are covered with densely standing long fine setae. The spider utilizes these hind legs for swimming. The anterior and posterior spinnerets are arranged in form of a trapezoid. Therefore, the spinnerets between them are only partially visible.

The epigyne has the form of two small transversally arranged openings. The spermathecae are large and round (Fig. 415).

♂ In contrast to the other spider species, the male of the water spider is larger than the female. Furthermore, the male has a strongly elongated abdomen with a narrowed rear end (Fig. 417). The terminal segment of the male palpus is strongly elongated, narrowed and armed with coarse spines (Fig. 416).

Ecology: The water spider is the only spider species living in water. We find it in stagnant water: in ponds, lakes and slow-flowing canals with lots of water plants (e.g. *Lemna*, *Elodea* or *Ceratophyllum*). Among these plants the

¹⁰³Mcheidze (1997) sic: 'Fig. 17', lapsus.

¹⁰⁴In Mcheidze (1997) sic: 'ვერცხლურა (წყლის ობობა)', meaning 'The Silvery (Water Spider)'.

water spider constructs its bell-shaped web using thick silk threads, resulting in a bright web filled with atmospheric air.

The spider breathes by means of a layer of air covering its body. It collects the air by coming to the water surface from time to time. The silvery color of the spider originates from the water bubbles. Often we find the spider by this silvery shining near the shore among water plants (Fig. 417 a).

This poisonous spider feeds on midges, eggs of dragonflies, larvae and pupae as well as water beetles. Often it kills tadpoles but does not feed on them.

Distribution: Central and Northern Europe, Asia and England. Widely distributed in the former USSR. **In Georgia:** Poti (Simon 1895), Kobuleti, Lake Bebesiri, Bakuriani, Gardabani, Poti (Lake Paliastomi) (Mcheidze 1939–1942).

Taxonomy: Platnick (2013): *Argyroneta aquatica* (Clerck, 1757)¹⁰⁵.

7.20.2 *Agelena* Walckenaer, 1805

Key to species

- 1(2) Female dorsum brownish-gray with six pairs of diagonal, bright bands arranged like the branches of a spruce (Fig. 418). Male paler than the female, with the same markings as the female. Female body length 11.5–15 mm. Male 7–8 mm. 1. *A. labyrinthica* (p. 254)
- 2(1) Abdomen of both male and female grayish. Males, and sometimes also females, with longitudinal bands on the abdomen. Female body length 13.5–18.5 mm. Male 10 mm. 2. *A. taurica* (p. 256)

1. *Agelena labyrinthica* (Clerck, 1757)

Labyrinth Spider

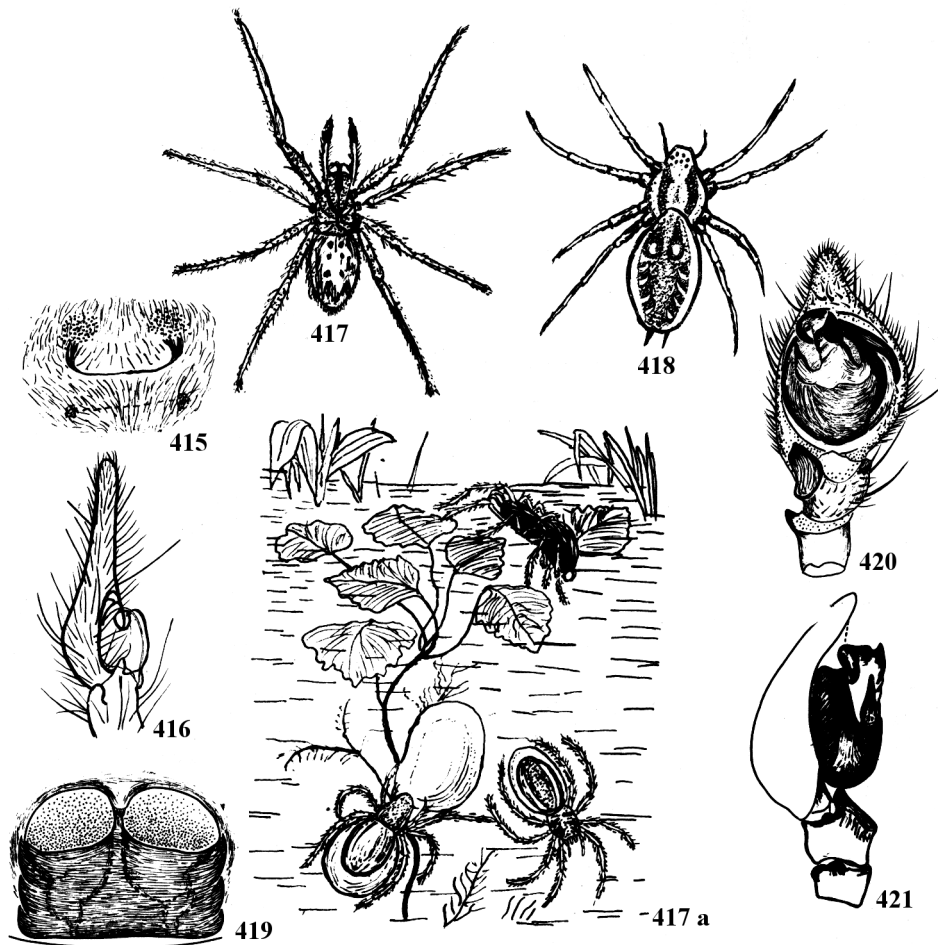
Description: Female body length 11–14 mm; male 8–10 mm.

♀ The carapace is dark brown with a broad brown or yellow median band and a broad lateral fringe. The sternum is brownish–yellow. The legs are brown. The abdomen is brownish-gray with six pairs of diagonal bright bands arranged like spruce branches.

The epigynal plate bears two large rounded openings, which almost touch each other in the middle (Fig. 419).

♂ The coloration of the male is brighter than the coloration of the female. Its carapace is yellow with a broad yellow lateral fringe; the legs are brownish-

¹⁰⁵In Mcheidze (1997) sic: 'Cl., 1957', lapsus.



Figs. 415–421. *Agelenidae*, *Argyroneta*, *Agelena* (in part.). *Argyroneta aquatica*: 415 – epigyne; 416 – male palpus; 417 – male habitus. *Agelena labyrinthica*: 418 – female habitus; 419 – epigyne; 420 – male palpus (ventral view); 421 – male palpus (lateral view).

yellow. The abdomen is brownish and of the same coloration as in the female. The palpus tibia and patella bear a conical apical apophysis (Figs. 420, 421).

Ecology: In grass, on bushes, in Western Georgia very abundant on bushes in tea and citrus plantations. The web is wide and shaped like a flat funnel. The web is made of thick lines and suspended among plant parts (Fig. 426¹⁰⁶). The wide part of the web leads to the funnel, where the spider usually sits waiting for prey. After subduing the prey the spider quickly carries it into the funnel. They feed on large insects: grasshoppers, beetles, butterflies, flies and others.

Gynandromorphism: Gynandromorphism is rare among spiders. Simon (1864), who described numerous new species, lists not one case of gynandromorphism. Based on collected material over 30 years, J. E. Hull (1918) noticed two instances, with gynandromorphism occurring most often in the Linyphiidae and in England. Bonn  (1918) gave an overview on the topic based on 17 cases of gynandromorphism. Spassky (1914) gave a detailed description of one case of gynandromorphism from the region of Novocherkassk.

A gynandromorph specimen of *Agelena labyrinthica* has been described from Georgia (Fig. 422). We collected this specimen from Manglisi in 1961 during a student excursion. A detailed analysis revealed this to be a case of bilateral gynandromorphism. The cephalic region shows the typical characteristics of a male as well as two normally developed male left and right palpi. In contrast, the abdomen bears the typical characteristic of a female – the epigyne, but of atypical form (compare Figs. 423 and 419) (Mcheidze 1967).

Distribution: Europe, Anatolia, Japan, Himalayas, China, widely distributed in the former USSR. **In Georgia:** Tbilisi (Simon 1899), Manglisi, Tusheti, Batumi, Keda, Khulo, Bakhmaro, Lantshkhuti (Mcheidze 1937–1978).

Taxonomy: Platnick (2013): *Agelena labyrinthica* (Clerck, 1757).

2. *Agelena taurica* Thorell, 1875

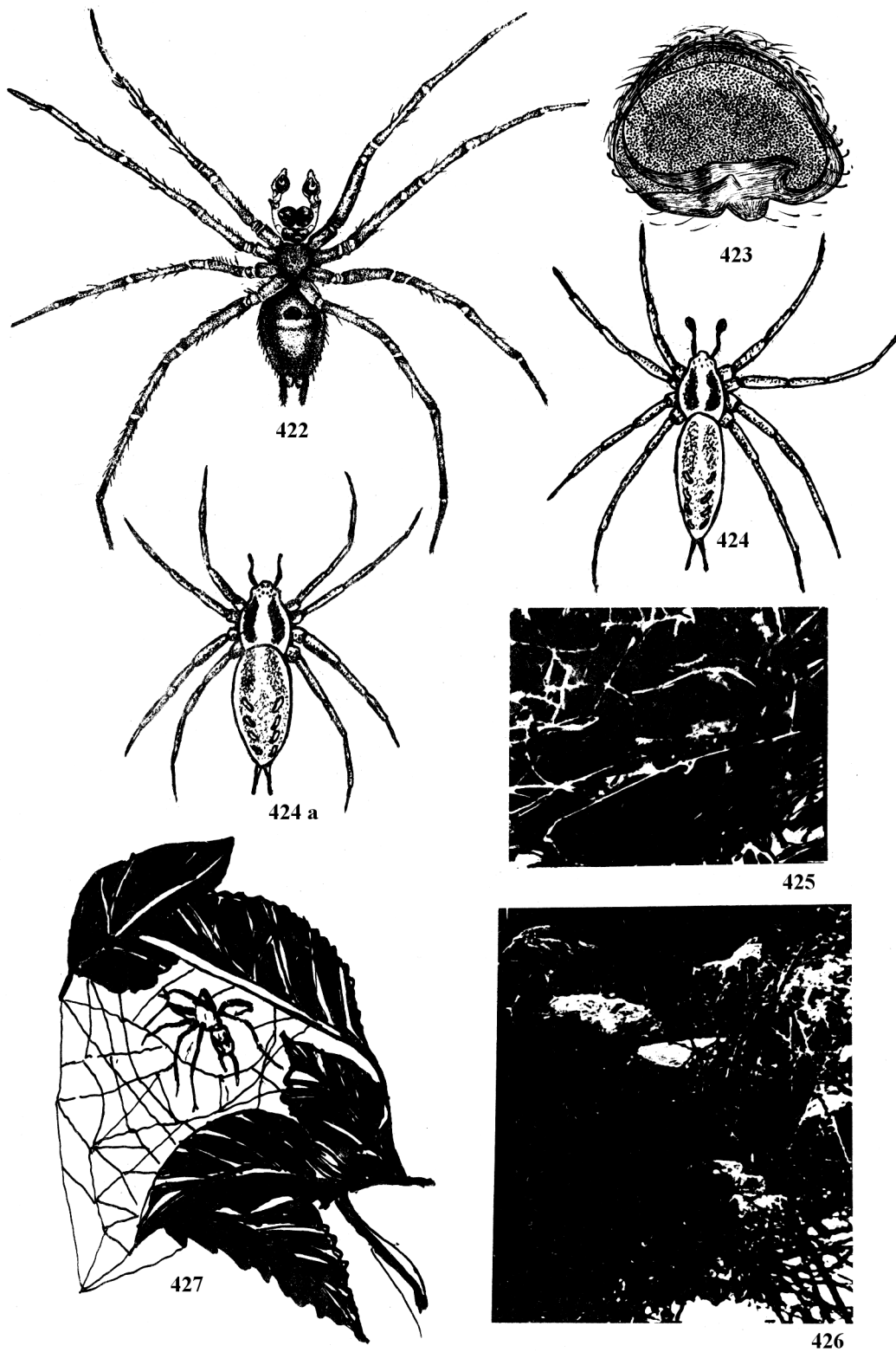
Description: Female carapace length 5.5–6 mm, width 4–4.5 mm; abdomen length 11–13 mm, width 6–8 mm. Male carapace length 6–6.5 mm, width 4–4.5 mm; abdomen length 7 mm, width 4 mm.

♀ The carapace is reddish brown and lined with a gray lateral band; its anterior part is narrowed. The eight eyes of the two eye rows are procurved. The abdomen is darker and bears 5–6 pairs of bright leaf-shaped marks. The posterior pair of the spinnerets is long and two-segmented.

♂ The male has a more delicate abdomen (Figs. 424, 424 a), long extremities and a palpus of complicated structure.

Ecology: In grasslands of both lower and higher altitudes, on bushes in

¹⁰⁶In Mcheidze (1997) sic: 'Fig. 422', lapsus.



Figs. 422-427. Agelenidae, *Agelena* (in part.). *A. labyrinthica*: 422 - ventral habitus of a hermaphrodite; 423 - epigyne. *A. taurica*: 424 - male habitus; 424 a - female habitus; 425 - web with retreat; 426 - webs on bushes; 427 - webs in tea and citrus plantation.

bright and sunny places. They are especially abundant on bushes in tea and citrus plantations in Western Georgia.

The funnel web stretches across a wide distance and its funnel is narrowed in the back and descends to the ground or to plant parts; its diameter is 1.5–2 cm. Its hind end continuously broadens along its length of 50 cm and terminates between grass or other plants (Figs. 425, 426).

The spider sits in the funnel motionless until an insect enters the web. Usually only one spider inhabits one single web; male and female share one web only for mating (in June and July) and the male, which does not leave the funnel fast enough thereafter, is in danger of being eaten by the female. The egg sac is suspended in the web and contains up to 60–70 eggs.

The palpus bears very long and motile trichobothria for hearing. The spiders react to noise at a distance of 1–1.5 m and quickly retreat into their funnel.

They feed on all kinds of insects, e.g. pest insects like grasshoppers, bush crickets¹⁰⁷ and true bugs. Due to their great abundance these spiders annihilate large numbers of pest insects in tea and citrus plantations in Western Georgia (Fig. 427)

Distribution: Crimea. **In Georgia:** In all places with bushes and grass at low and high altitudes from the sea level to the subalpine and alpine zones, in large numbers in the subtropical regions of Western Georgia. First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Agelena orientalis* C. L. Koch, 1837.

7.20.3 *Cybaeus* L. Koch, 1868¹⁰⁸

1. *Cybaeus abchasicus* Charitonov, 1947

Description: Length of the yellow female carapace 2.3 mm, width 1.5 mm. The cephalic region is somewhat dark, its sides bear a thin black band and its edge blackish-gray and rather fine cell-like markings, which unite in the posterior part with a broad black smoky V-shaped mark (Fig. 428). Two black-gray radial marks are well visible in the cephalic region. The fine median furrow is reddish-brown.

The chelicerae are yellow and their basal frontal part is bulged; the fangs are brown. The outer edge of the cheliceral furrow bears three teeth, of which the two distal teeth have especially thick bases. The inner edge bears eight teeth, of which the four proximal teeth are very fine.

The height of the palpus is nearly 1.5x longer than the diameter of the ALE. The eyes are situated on a black mark. The AER is weakly curved. The PER is straight; its eyes are of almost uniform size. The AME are smaller than the ALE; the ALE are oval.

¹⁰⁷Tettigonidae.

¹⁰⁸In Mcheidze (1997) sic: 'C. L. KOCH', probably lapsus..

The sternum is light yellow, heart-shaped and longer than wide. The palpus is yellow. The yellow legs bear two gray to black rings on all femora.

Habitat: In caves and grottos.

Distribution in Georgia: Tarkiladze Cave near Gudauta (Charitonov 1947). Georgian endemic species.

Taxonomy: Platnick (2013): *Cybaeus abchasicus* Charitonov, 1947.

7.20.4 *Coelotes* Blackwall, 1841

1. *Coelotes spasskyi* Charitonov, 1946

Description: ♂ Carapace length 6.2 mm, width 4.3 mm; abdomen length 7 mm, width 4.6 mm. The carapace is reddish yellow with gray-brown muscle marks. Its anterior part is dark; the sides are blackish-brown. The median furrow in the posterior half of the carapace is sharply contrasting. The chelicerae are brown, the outer edge of its furrow bears three teeth; the inner edge bears four teeth. The sternum is brown.

The abdomen is dark brown with white-yellow broken lines and markings. The dorsum bears two pairs of blackish-brown muscle marks, which are bordered by a whitish-yellow area. The anterior part of the venter is gray yellow; its sides bear white, yellow spots (Fig. 429).

Habitat: In forests under rocks, in dry hollows under roots of woody plants. The egg sac contains the eggs and newly-hatched juveniles. They are more abundant in forests of the high mountains.

Distribution: Lagodekhi Reserve, Kazbegi, Devdorak Glacier (2200 m a.s.l.), Borjomi, Bakuriani, Akhaltsikhe, Adigeni, Abastumani (Agopeli), Ambrolauri, Khotevi, Mt. Satsalike, Shovi, Tqibuli, Nakerala, Mtirala, Khulo, Tago, Bakhmaro, Mestia, Tusheti, Tbatana, Avadkhara (Mcheidze 1938–1973). Caucasian species, Georgian endemic species.

Taxonomy: Platnick (2013): *Pireneitega spasskyi* (Charitonov, 1946) .

7.20.5 *Tegenaria* Latreille, 1804

Key to species

Note: *Tegenaria longimana* is not keyed.

- 1(20) Males. **2**
- 2(3) Legs I and IV of the same length. Palpus tibia apophysis prominent and directed vertically or at a distinct angle. Body length 5–5.5 mm. 1. *T. campestris* (p. 261)
- 3(2) Legs I somewhat shorter than legs IV. Palpus tibia apophysis not prominent and firmly attached to the segment (Fig. 431). Body length exceeding 5–6 mm. **4**
- 4(7) Tibia I with 5–6 ventral spines, arranged in pairs (2.2.2 or 2.2.1). **5**
- 5(6) Inner edge of cheliceral furrow with four teeth (the second tooth from the base is the largest). Body length 10 mm. 2. *T. taurica* (p. 261)
- 6(5) Inner edge of cheliceral furrow with three teeth (the middle tooth is the largest). Body length 9–10 mm. 3. *T. agrestis* (p. 263)
- 7(4) Tibia I with two pairs of spines. **8**
- 8(11) Dorsum black-gray or brown. **9**
- 9(10) Distal part of cymbium as long as or shorter than its proximal part (Figs. 436, 437). Dorsum black-gray with gray-yellow markings (Fig. 435). Body length 8 mm. 4. *T. abchasica* (p. 264)
- 10(9) Distal part of cymbium twice as long as its proximal part. Dorsum brown with dense, small black marks; its center with a reddish dentate band (Fig. 438). Body length 13–17 mm. 5. *T. parietina* (p. 264)
- 11(8) Dorsum not black-gray or brown. **12**
- 12(13) Terminal palpus segment with thick spines. Metatarsus II with 3 apical spines. Dorsum light gray with dark angular marks (Fig. 439). Body length 6–8 mm. 6. *T. domestica* (p. 265)
- 13(12) Terminal palpus segment only with thin and soft setae. Metatarsus II with 4 apical spines. Coloration like in the former species. Body length 7–8 mm. 7. *T. pagana* (p. 265)
- 20(1) Females. **21**
- 21(28) Terminal segment of the posterior spinnerets shorter than its basal segment. **22**
- 22(23) Tibia I with only one pair of spines. AME apparently smaller than the ALE. Body length 6–7 mm. 1. *T. campestris* (p. 261)
- 23(22) Tibia I with two or three pairs of ventral spines. AME smaller than ALE. Dorsum sometimes reddish but usually grayish. . . **24**
- 24(25) Metatarsus IV longer than combined lengths of tibia and patella. Body length 11–12 mm. 5. *T. parietina* (p. 264)

- 25(24) Metatarsus IV as long as or shorter than combined lengths of tibia and patella. **26**
- 26(27) Metatarsus II with four spines. Body length 7.5 mm.
 6. *T. domestica* (p. 265)
- 27(26) Metatarsus II with 4 spines¹⁰⁹. Body length 7.5–9 mm.
 7. *T. pagana* (p. 265)
- 28(21) Terminal segment of posterior spinnerets longer or as long as its basal segment. **29**
- 29(30) Tibia I with three pairs of ventral spines. Body length 10–12 mm.
 3. *T. agrestis* (p. 263)
- 30(29) Tibia I with two pairs of ventral spines. Outer edge of cheliceral furrow with four teeth, its inner edge with 5–6 teeth.
 2. *T. taurica* (p. 261)

1. *Tegenaria campestris* (C. L. Koch, 1834)

Description: Body length 6–7 mm; width 5.5 mm. The cephalic region is somewhat narrowed and raised; its sides are dark. The sternum exhibits a bright impression, causing its broad shape. Its center bears three pairs of marks, which are connected to bright lateral marks. The legs are spottet. The outer edge of the cheliceral furrow of both females and males bears three teeth, the inner edge three or four teeth on the left and right side.

The abdomen is gray; a wedge-shaped mark is situated in both parts, formed by 5–6 pairs of dark marks. The venter is bright with dark markings. The basal part of the posterior spinnerets is long and dark. The lower edge of the epigynal opening is bulged. The spermathecae are curved¹¹⁰.

Ecology: In forests under rocks, between plant roots and in rock crevices. It is a characteristic species of mountainous places. Adult specimens appear in May to September; we found specimens with egg sacs in June. The egg sac is yellowish-whitish and is covered by two kinds of silk. It contains up to 60 eggs.

Distribution: Central Europe, Germany, Italy, Transcaucasus. **In Georgia:** Gelati (Kulczyński 1898), Tqibuli, Kutaisi (Mcheidze 1962).

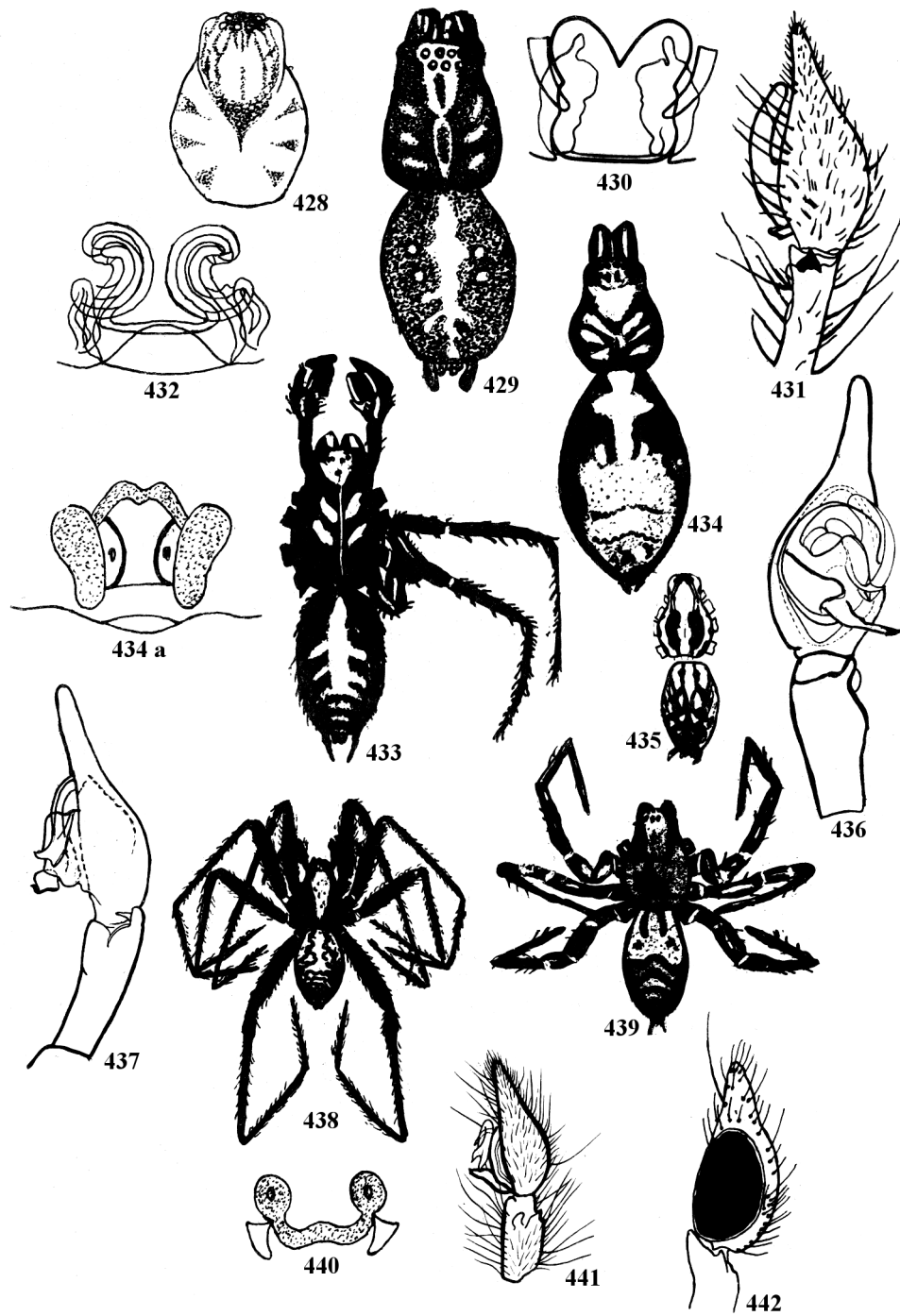
Taxonomy: Platnick (2013): *Malthonica campestris* (C. L. Koch, 1834).

2. *Tegenaria taurica* Charitonov, 1947

Description: The length of the carapace of several female specimens from caves varies between 4.8–7.2 mm. Male carapace length 4.9 mm; abdomen length 5.3 mm;

¹⁰⁹Sic Mcheidze (1997).

¹¹⁰Mcheidze refers to Fig. 431 for the male palpus but this figure depicts the palpus of *Tegenaria taurica*.



Figs. 428–442. Agelenidae, *Cybaeus*, *Coelotes*, *Tegenaria*. *Cybaeus abchasicus*: 428 – dorsal carapace. *Coelotes spasskyi*: 429 – female habitus; 430 – epigyne. *Tegenaria taurica*: 431 – male palpus; 432 – epigyne. *T. agrestis*: 433 – male habitus; 434 – female habitus; 434 a – epigyne. *T. abchasicus*: 435 – dorsal habitus; 436 – male palpus; 437 – male palpus (lateral view). *T. parietina*: 438 – female habitus. *T. domestica*: 439 – female habitus; 440 – epigyne; 441 – male palpus. *T. pagana*: 442 – male palpus.

♀ The coloration of the female is similar to the coloration of the male. The cheliceral teeth are developed as in the males. Epigyne like Fig. 432.

♂ The carapace is brownish yellow with whitish-yellow setae; the cephalic region is orange-yellow. Three pairs of gray-brown radial lines and one pair of reddish-brown marks between the cephalic and thoracic regions originate in the median furrow. The sternum is brownish-yellow; its center is brighter. The outer edge of the cheliceral furrow bears four teeth, of which the second from the base is largest. The inner edge bears 5–6 teeth, of which the basal tooth is the largest. The legs bear no rings. Palpus like Fig. 431.

The dorsum is light gray with dark yellow markings, which consist of longitudinally and transversally arranged and somewhat bright marks. The venter is dark yellow; the central part of its posterior part is gray. Its sides bear a gray venation. The anterior spinnerets are brown-yellow.

Habitat: In caves.

Distribution: Crimea (Lower Limen cave, small grotto). **In Georgia:** Akhali Atoni (Mcheidze 1960).

Taxonomy: Platnick (2013): *Tegenaria taurica* Charitonov, 1947.

3. *Tegenaria agrestis* (Walckenaer, 1802)

Description: Female carapace length 7 mm, width 4.8 mm; abdomen length 8.5 mm, width 5.6 mm. Male carapace length 6 mm, width 4.5 mm.

♀ The cephalic region is long and broad. The thoracic region is oval with broken black lines.

The brown abdomen is oval, somewhat raised and covered with silky setae. It bears a longitudinal reddish line, which is outlined with two black lines (Fig. 434). The venter bears two brown-blackish lines, which unite near the posterior spinnerets. The epigyne is of semicircular shape with a transversal opening (Fig. 434 a).

♂ The carapace is brown-green and bears a black fringe. Two broad brown bands run through the thoracic region and are bordered by transversal black lines (Fig. 433). The sternum is light brown in the middle and its fringe is blackish.

The yellowish-red chelicerae are very thick and long. The inner edge of the cheliceral furrow is armed with four uniform teeth and with two more small teeth in projection of the large teeth; the outer edge bears three teeth. The legs are thick and long; especially the femur is brown-green and covered with black spots. The palpus is thick and bears long setae.

The abdomen is developed as in the female.

Habitat: Under rocks, in dry plant leaves, in rock crevices.

Distribution: Central and Southern Europe, in the regions of Moscow, Rostov and the Carpathian Mountains. **In Georgia:** Lagodekhi, Adigeni (Mcheidze 1939, 1974). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tegenaria agrestis* (Walckenaer, 1802)¹¹¹.

4. *Tegenaria abchasica* Charitonov, 1941

Description: ♂ Carapace length 4 mm, width 3 mm; abdomen length 4 mm, width 2.5 mm. The carapace is orange-brown. The cephalic region is somewhat brighter; it bears single, small, elongated, black marks on its sides, which are situated near the anterior edge. The lateral fringe of the carapace bears a fine blackish-gray band. Two dark curved bands originate from the PE and reach the central part of the carapace.

The chelicerae are orange brown; their apical end is darker and its base shows a distinct relief. The outer edge of the cheliceral furrow bears three teeth; the inner edge bears six teeth. Palpus and legs are yellow, gray and are weakly patterned with incomplete rings. The median part of the sternum is light yellow; its sides are brownish with three brighter marks. The male palpus patella bears no apophysis. The tibia is three times longer than wide, its apical end bears a blunt curved tooth (Figs. 436, 437).

The dorsum is blackish-gray with gray-yellow markings; the median longitudinal band reaches the posterior half of the abdomen. Two rows of thick longitudinal or triangular marks unite in the posterior part in a pair-wise manner. The lateral abdomen is yellow (Fig. 435); its venter is gray-yellow. The second half bears longitudinal black marks and behind them two small round marks. The spinnerets are yellow.

Habitat: We find this troglophilic species in caves but not far from the entrance. Troglophilic species bear pale markings and exhibit a great variation in color.

Distribution: Kelasuri Cave, hiding in a warm tube (Charitonov 1940). Georgian endemic species.

Taxonomy: Platnick (2013): *Tegenaria abchasica* Charitonov, 1941.

5. *Tegenaria parietina* (Fourcroy, 1785)

Description: Female carapace length 7 mm; width 5 mm. Male carapace length 6.5 mm, width 5 mm; abdomen length 7.7 mm, width 5 mm.

♀ The epigyne is semicircular and brown-reddish.

♂ The body color is brown; the carapace is darker. The sternum is brown, unicolored or brighter in the center. The chelicerae bear four teeth on each edge of the cheliceral furrow. The extremities are very long and bear no rings or only weakly developed rings, especially in juveniles.

The palpus tibia is four times longer than wide; its tarsus is narrow and longer than the bulbus. The lower basal part of the bulbus is armed with a pointed apophysis, which terminates in a black spiniform thread.

¹¹¹In Mcheidze author sic: 'Walck., 1902', lapsus.

The abdomen bears a median longitudinal bright band and the remaining parts are covered with dark brown marks (Fig. 438). The venter bears a dark band and is covered with setae. The posterior spinnerets are well developed (with two segments).

Habitat: On walls and crevices of buildings, constructing their webs in dark places.

Distribution: Southern and Central Europe, Ukraine. **In Georgia:** Batumi (Spassky 1937), Sukhumi, Akhali Atoni, Kobuleti, Tshakvi, Batumi, Lantshkhuti, Baghdati (Mcheidze 1954–1967).

Taxonomy: Platnick (2013): *Tegenaria parietina* (Fourcroy, 1785)¹¹².

6. *Tegenaria domestica* (Clerck, 1757)

House Spider

Description: Female carapace length 9.5 mm. Male body length 8 mm.

♀ Carapace, sternum and extremities are reddish-yellow. The abdomen is light gray with brown markings, which are formed by a long row of irregular marks and diagonal spot-like bands (Fig. 439). The sides of the epigyne are tapering and directed backwards (Fig. 440).

♂ The males are darker than the females. The abdomen and extremities are covered with long black setae. The palpus tibia bears two short apophyses on the outer side in front of the apex. The appendage of the bulbus bears a recurved bifid fork (Fig. 441).

Habitat: This species lives in human housings in different kinds of buildings, constructing its broad funnel web in dark corners. It sits inside the funnel and waits for its prey. It feeds on house insects (e.g. flies, midges, bedbugs, cockroaches).

Distribution: Europe, North Africa, India, Japan, North America, widely distributed in the former USSR. **In Georgia:** Everywhere at low and high altitudes (Mcheidze 1937–1980). Synanthropic cosmopolitan species.

Taxonomy: Platnick (2013): *Tegenaria domestica* (Clerck, 1757). Mcheidze also lists the synonym *Tegenaria derhami* Scopoli, 1763.

7. *Tegenaria pagana* C. L. Koch, 1840

Description: Female carapace length 3.2 mm, width 2 mm; abdomen length 4 mm, width 2.6 mm. Male carapace length 3 mm, width 2 mm.

♀ The carapace is colored like the cephalic region of the male, somewhat broad and curved in its anterior part. The oval band is very fine.

The abdomen is oval and yellow; it bears eight broken transversal gray lines, which form triangular marks in the middle. The spinnerets are orange

¹¹²Mcheidze also lists the synonym *Tegenaria guyoni* Guérin, 1837 (with year '1838', lapsus).

with black basal segments. The venter bears three parallel gray lines, of which the middle line is broken. The epigyne is small and longer than wide.

♂ The carapace is brown-red; its anterior part is darker, with fine black marginal lines and two dorsal brown bands. The thoracic region is markedly broad and oval.

The chelicerae are brown-red, thick and covered with brown setae. The inner edge of the cheliceral furrow bears four small teeth, of which the third is developed only rudimentarily. The outer edge bears four teeth as well, of which the third is well developed. The sternum is almost square with a black median band and three lateral brown marks. The legs are long and not thick. The palpus is brown-red (Fig. 442).

The abdomen is developed like in the female.

Ecology: They spin their webs in rock crevices, sometimes on the sides of large rocks. The egg sac is oval, elongated and made of soft, dry, white tissue. It is camouflaged with various materials and is suspended in the web on a thin peduncle.

Distribution: Southern Europe, Switzerland, England, Algiers, Tunis, in the former USSR in the Crimea. **In Georgia:** Tbilisi, Aspindza (Mcheidze 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Malthonica pagana* (C. L. Koch, 1840) In Mcheidze with year '1841', lapsus.

8. *Tegenaria longimana* Simon, 1898

Description: ♂ Carapace length 12 mm. The carapace is dark brown; its anterior part is auburn. Two bands run along the carapace; they weakly unite in the cephalic region and are curved and dentate in the thoracic region. The marginal band is olive-brown.

The line of the AE is somewhat curved, the AME are comparatively small, the PE are markedly large and spaced at similar distances. The chelicerae are long, brown; the outer edge of the cheliceral furrow is armed with five teeth. The gnathocoxae are dark auburn and very long and narrow. The sternum is dark green. The thread-like legs are very long; the dark femora and tibiae bear dark rings.

The palpus is very thick; the femur and tibia are well-developed, the tarsus is oval and terminates in a thick needle-shaped apophysis, which exceeds the complicated bulbus.

The abdomen is elongated: the dorsal band is broad and dentate with reddish brown marks.

Habitat: In dark cellars, pantries, buildings, under dark guardrails.

Distribution: Simon (1897) described this Caucasian species from Batumi. Besides, it was recorded from Zestaponi, Kutaisi and Senaki (Mcheidze). Georgian endemic species.

Taxonomy: Platnick (2013): *Tegenaria longimana* Simon, 1898¹¹³.

7.21 Lycosidae

The carapace is oval, somewhat narrowed and markedly longer than wide. In comparison to the thoracic region, the cephalic region is distinctly raised near legs II. The median furrow is elongated and narrow. The radial lines are more or less pronounced and broad. The eight day eyes are arranged in three rows; the AER has four eyes, the MER and PER each have two eyes. The eyes of the MER are markedly larger than the other eyes.

The chelicerae are thick and arranged vertically. In both males and females, the inner edge of the cheliceral furrow bears 2–4 teeth, rarely only one or none. The sternum is almost triangular and longer than wide. The gnathocoxae are elongated and longer than the labium. The palpi are long and often armed with short spines; in the male they are developed as complex copulation organs bearing a short embolus. The legs are comparatively long (legs IV the longest), thick and armed with numerous setae and spines, especially on the femora. The tarsus and parts of the metatarsus bear a scopula; the tarsus bears three terminal claws (two main claws and one additional claw). The main claws bear less than ten claws, usually 7–8.

The abdomen is egg-shaped or round, usually flattened and armed with numerous setae. It is smaller in comparison to the abdomen of the female. The epigyne is flat, often with a median plate covering the epigynal opening. The six spinnerets are dark and short.

The lycosids (wolf spiders) do not construct a web for catching prey and many species do not make retreats. Based on their mode of prey catching they can be divided into two groups: the wandering lycosids and the burrowing lycosids. The wandering lycosids hunt during the day using their acute vision. Species of the genera *Pardosa* and *Trochosa* belong to this group as well as some *Alopecosa* species.

The burrowing lycosids mostly live in burrows and come out for hunting during the night. Some species wait for prey near the edge of their burrow. Burrowing lycosids are, for example, large species like *Lycosa singoriensis*, *L. vultuosa* and *L. narbonensis*. Species of the genus *Arctosa* make shallow hollows under rocks, e. g. *A. cinerea*, persistent hollows in wet places, near edges of water bodies or clay (*A. leopardus*). Some *Alopecosa* species prepare the entrance to their hollow in a way that it is not discernable from the surrounding ground, thus protecting itself from enemies.

Many wandering lycosids are annual species, mating early in spring. Only *Trochosa ruricola* and *T. terricola* have two mating seasons in one year, in April and in September, with juveniles, subadults and adults hibernating during the winter. The reproductive cycle of the burrowing lycosids extends

¹¹³In Mcheidze sic: 'Simon, 1897', lapsus.

over two years, with the males not surviving to the second year. They die after copulation in September of the first year.

The lycosids live in various habitats, in the desert as well as in tropical forests and on bare rocks on beaches. In Georgia we also find lycosids on the edges of haline lakes, e. g. on the beach of haline parts of lake Tbilisi and clay of beaches on the Black Sea (Kobuleti).

Lycosids do not live on bushes, grass or trees. Near lakes and stagnant water bodies, we find *Pirata knorri*, *Pardosa wagleri*, *P. monticola*, *P. amen-tata* and other species. Closely related species inhabit agricultural habitats and the forests, consuming large numbers of pest insects. Even the high mountains between 2000 and 3000 m a.s.l. are inhabited by lycosids, e. g. *Pardosa agrestis*, *P. nigra* and certain *Acantholycosa* species.

There are nearly 1200 described lycosid species, 158 of them occurring in the former USSR. Seven genera with 46 species are recorded from Georgia.

Key to genera

- 1(8) Tarsus I with one dorsal spine, which is thicker than the length of the setae beneath the claws. **2**
- 2(3) Inner edge of the cheliceral furrow with two teeth.
 1. *Alopecosa* (p. 269)
- 3(2) Inner edge of the cheliceral furrow with three teeth. **4**
- 4(5) Tibiae III and IV with only one dorsal spine. 2. *Arctosa* (p. 276)
- 5(4) Tibiae III and IV with two dorsal spines. **6**
- 6(7) Metatarsus I with 3–4 spines. Tibiae III and IV with a proximal dorsal spine, which is not thin, long and pointed. Large and very large spiders. 3. *Lycosa* (p. 280)
- 7(6) Metatarsus I with five spines (in the male 4–5). Tibiae III and IV with a thin, long and pointed spine in dorsal and proximal position. Comparatively small spiders not exceeding 12 mm body length. 4. *Pardosa* (p. 285)
- 8(1) Tarsus I with one short or without a proximal dorsal spine, which is not thicker than the length of the setae beneath the claws. . . **9**
- 9(10) Anterior dorsal spine of legs III and IV blunt or sharp but not long, thin and pointed. AER curved, AME larger than ALE. Carapace with a bright median band bearing a dark elongated mark in its central part. 5. *Trochosa* (p. 300)
- 10(9) Anterior dorsal spine of legs III and IV elongated, thin and pointed. AER straight or curved, then all AE of similar size. Carapace without bright median band or, if existing, containing no dark elongated mark. **11**
- 11(12) Inner edge of cheliceral furrow with two teeth. Metatarsus I with 5 terminal spines. 6. *Xerolycosa* (p. 305)

- 12(11) Inner edge of cheliceral furrow with three teeth. metatarsus I with 2–5 terminal spines. Coloration of femur I similar to the femora of the other legs. AER straight, AME larger than ALE.
 7. *Pirata* (p. 306)

7.21.1 *Alopecosa* Sundevall, 1833

Key to species

- 1(12) Males. **2**
 2(5) Venter grayish-black or dark brown. **3**
 3(4) Venter black or grayish-black, with two broken bands. Sternum brown-black. Tibia I with two pairs of ventral spines besides the apical spines. Carapace with a bright median band. Coxa brown-yellow, its main part of dark color. Body length 7-8 mm.
 1. *A. albofasciata* (p. 270)
 4(3) Venter dark brown, its anterior part with two white, round or oval marks, its posterior part with numerous white spots, which are arranged in longitudinal median and lateral rows. Lateral rows contain more white spots than median rows. Size of the white spots variable (Figs. 445, 445 a). Sternum dark brown. Tibia I with apical spines and one additional ventral spine. Carapace with a bright median band. Coxae dark brown. 17.5–18 mm.
 2. *A. charitonovi* (p. 271)
 5(2) Venter mostly of bright color or partly black, then tibia I with apical spines and two additional ventral spines or with a stellate mark instead of the median band. **6**
 6(7) Lamella-like bulbus apophysis without appendage or sometimes with a blunt broadened appendage (Fig. 448). Body length 6–8 mm. 3. *A. pulverulenta* (p. 272)
 7(6) Lamella-like bulbus apophysis with a long, hook-like or straight appendage. **8**
 8(9) Lamella-like bulbus apophysis with a hook-like appendage, which is directed downwards towards the base of the last palpal segment (Fig. 450). 4. *A. accentuata* (p. 272)
 9(8) Lamella-like bulbus apophysis not curved like a hook, its tip often broadened (Fig. 453). **10**
 10(11) Tibia I very thick, its middle part with a bald bright mark lacking setae. Body length 6–8 mm. 5. *A. cuneata* (p. 272)
 11(10) Tibia I not thickened. Tip of the lamella-like bulbus apophysis somewhat broadened (Fig. 456). Body length 6-8 mm.
 6. *A. cursor* (p. 274)
 12(1) Females. **13**

- 13(18) Venter black, dark brown or grayish-white. **14**
- 14(15) Venter mostly black or grayish-black. Tibia I with apical spines and two pairs of ventral spines. Carapace with a longitudinal bright median band. Body length 10–13 mm.
 1. *A. albofasciata* (p. 270)
- 15(14) Venter grayish-white or light brown. **16**
- 16(17) Venter unicolor, white or gray and with fine short setae. Anterior part of abdomen with longer setae. Tibia I with apical spines and two pairs of ventral spines. Carapace dark brown and its dorsal side with a bright median longitudinal band. Body length 8 mm. 7. *A. taeniopus* (p. 274)
- 17(16) Venter dark brown, its anterior part with two white, round or oval marks, its posterior part with numerous white spots, which are arranged in longitudinal median and lateral rows; lateral rows with more white spots than the median rows. Size of the white spots variable (Figs. 445, 445 a). Tibia I with five spines and apical spines. Carapace black with a light-blueish median band, originating in the eye region and continuing to the end of the carapace. 2. *A. charitonovi* (p. 271)
- 18(13) Abdomen mostly bright or partly black, then tibia I with apical spines and only two ventral spines or median bright band of the carapace with a stellate mark. **19**
- 19(22) Epigynal plate simple, without a median structure covering the opening partly or completely. **20**
- 20(21) Epigynal plate like Fig. 451. Body length 10–12 mm.
 4. *A. accentuata* (p. 272)
- 21(20) Epigynal plate like Fig. 457. Body length 8–10 mm.
 6. *A. cursor* (p. 274)
- 22(19) Median plate of the epigyne with a longitudinal structure partly covering the opening (Fig. 454). –
- 23(24) Lateral longitudinal bands of the carapace well developed and not of dark color. Body length 9–10 mm. 5. *A. cuneata* (p. 272)
- 24(23) Lateral longitudinal bands not well developed and dark compared to the bright median band. Anterior part of epigynal plate broadened. Epigynal opening three times broader in its posterior part compared to its front width (Fig. 449). Carapace as long as tibia and patella I combined. Body length 10 mm.
 3. *A. pulverulenta* (p. 272)

1. *Alopecosa albofasciata* (Brullé, 1832)

Description: Female carapace length 5 mm, width 3.5 mm; abdomen length 6 mm, width 3.8 mm. Male carapace length 4.4 mm, width 3.3 mm.

♂ The carapace is black with whitish to yellow setae forming a very broad longitudinal band as well as a fine marginal line. The AE form a strongly curved line. The chelicerae are black. The sternum is black, shining and almost bare of setae. The legs are bright brown-red.

The abdomen is gray to brown. Its anterior part is brown, bears a lanceolate band and two small white marks; its posterior part bears four pairs of transversal rows of brown setae arranged in lines. Sometimes the abdomen bears a yellowish dorsal band.

The epigastric region is black. Besides, the venter is pale and decorated with two strong median white lines originating at the epigastric furrow. Sometimes these lines are fused forming a broad band; sometimes these lines are broken and therefore visible as small marks. The epigyne bears a brown round epigynal plate (Fig. 444).

♂ The carapace bears a well-contrasting white band. The chelicerae are black. The legs are bright brown-red. The palpus bears black setae (Fig. 443).

The abdomen is black and decorated with a shining white band, which is broader in the anterior part and narrowed towards the posterior part.

Habitat: In humid forest habitats, under rocks.

Distribution: Southern Europe, Tunis, Syria, Palestine, in the former USSR in Turkmenistan and the Transcaucasus. **In Georgia:** Lagodekhi, Tusheti (Schmidt 1895), Telavi, Alvani, Sagaredzho (Mcheidze 1957).

Taxonomy: Platnick (2013): *Alopecosa albofasciata* (Brullé, 1832)¹¹⁴.

2. *Alopecosa charitonovi* Mcheidze, 1997

Description Female: Carapace length 7.5 mm, width 6 mm; abdomen length 11 mm. The carapace is black and bears a light blue band extending from the eye region to the posterior end. The sternum is black. Tibia I bears apical spines and five additional spines. The coxae are dark brown.

The shoulders of the abdomen are light blue and bear a lateral dark brown fringe. The anterior part of the abdomen bears four depressed spots arranged in two lines (Fig. 446). The venter is velvety black. The anterior part of the epigastric region bears two large, round, sometimes oval, marks; its posterior part bears many white marks, extending medially and laterally. The number of the white marks is laterally significantly larger than medially. Furthermore, its body size is extraordinary (Figs. 445, 445 a).

This species is similar to *Al. albofasciata*, but larger in size. The size of the lateral marks on the venter, leg armament and the structure of the sexual apparatus are different. Epigyne like Fig. 447.

Habitat: On leaves and needles in the forest, under rocks, in low grass.

Material: Tusheti (Omalo) 1939, 1959, 1960, VII, VIII, Keda 1939, VIII, Lagodekhi Reserve 1940, Avadkhara 1971 VII, Tshargali 1982 VII.

¹¹⁴In Mcheidze (1997) misspelled '*Alopecosa albofasciata*', lapsus.

Taxonomy: Platnick (2013): *Geolycosa charitonovi* (Mcheidze, 1997)¹¹⁵.

3. *Alopecosa pulverulenta* (Clerck, 1757)

Description: Female body length 8–9.8 mm; male 7.5 mm. The carapace is dark brown, the eye region is somewhat darker, the central part bears a broad hazy and laterally brighter brown band. The sternum is dark brown and lighter in its center; sometimes it bears well-discernable oval marks. The legs are brown; their femora bear black marks and darkened patellae.

The abdomen is brown or grayish-yellow and bears a longitudinal band, forming two bands in the anterior part. The sides bear dark lanceolate marks. Poorly visible broad bands extend from the median band to the sides. The epigynal opening is elongated and bears a thickened anterior edge. The yellowish egg sac is round (Fig. 449). The bulbous bears a black chitinized and lamelliform appendage with a straight tip (Fig. 448).

Habitat: We find this species in sunny places in forests and places with sparse herb cover. In Georgia it is a characteristic species of the high mountains at 2500 m a.s.l.

Distribution: Europe, in large parts of the former USSR except the extreme North. **In Georgia:** Telavi, Tusheti, Lagodekhi (Mt. Ninigori at 2200 m a.s.l.), Kazbegi (Devdorak at 2400 m a.s.l.), Borjomi, Bakuriani, Nine-Springs Pass, Bakhmaro (2000 m a.s.l.), Mestia, Latali, Betsho, Shikhra (Mcheidze 1939, 1940, 1958). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Alopecosa pulverulenta* (Clerck, 1757).

4. *Alopecosa accentuata* (Latreille, 1817)

Description: Female body length 10–12 mm; male 7–9 mm. The anterior part of the abdomen bears an elongated gray band or a dark brown band, which is finely painted with black marks. The sides are pale white (Fig. 452). The epigynal plate is longer than wide and broadened in its posterior part; its anterior part is of simple structure and bulged (Fig. 451).

Habitat: In grass, under rocks, in the field layer of forests.

Distribution: Palearctic, except in the extreme North. **In Georgia:** Tbilisi, Gori (Khveti), Tusheti, Ambrolauri (Khotevi) (Mcheidze 1940–41). First record in the Transcaucasus.

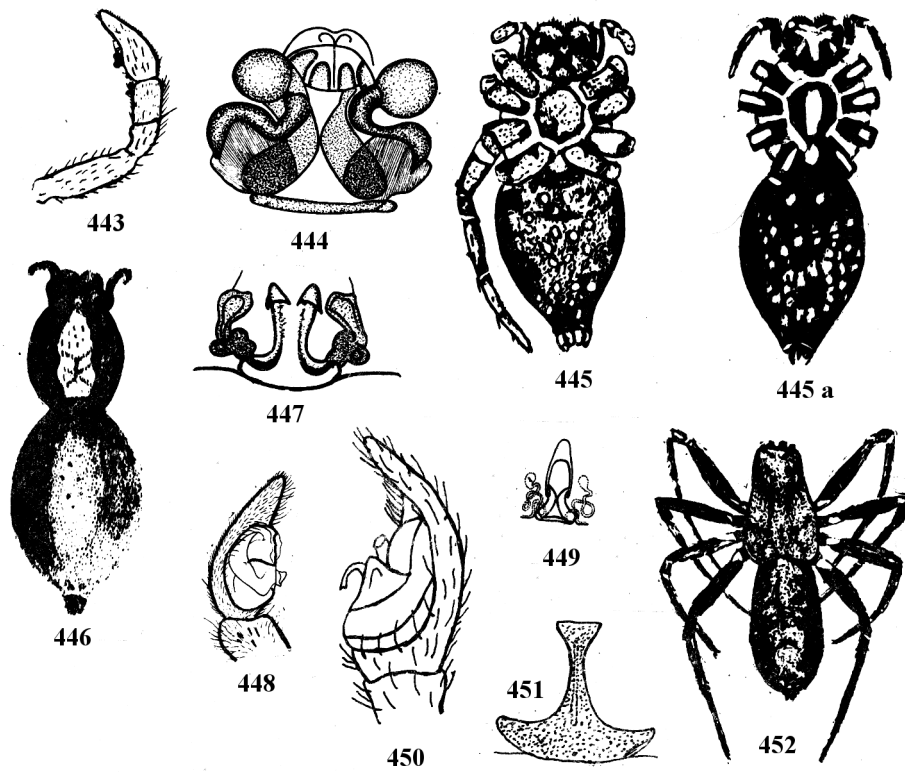
Taxonomy: Platnick (2013): *Alopecosa accentuata* (Latreille, 1817).

5. *Alopecosa cuneata* (Clerck, 1757)

Description: Female body length 8.5–10.6 mm; male 7.5 mm.

♂ The carapace is brown with shining yellow markings, which in the middle are bordered by longitudinal bands and lateral broad bands on the

¹¹⁵In Mcheidze (1997) sic: '*Alopecsa charitonovi*', lapsus.



Figs. 443–452. Lycosidae, *Alopecosa* (in part.). *A. albofasciata*: 443 – male palps; 444 – epigyne. *A. charitonovi* n. sp.: 445, 445 a – venter; 446 – dorsal habitus, 447 – epigyne. *A. pulverulenta*: 448 – male palpus; 449 – epigyne. *A. accentuata*: 450 – male palpus; 451 – epigyne; 452 – dorsal habitus.

sides; near the edges it bears separate black lines. The sternum is brown and bears longitudinal yellow bands.

The abdomen is brown with a shining yellow longitudinal band and a lanceolate dark mark (Fig. 455). The epigyne has the form of an elongated opening with a thickened anterior edge and two dark chitinized cylinders, which are directed longitudinally (Fig. 454).

♂ The body coloration is darker but bears the same markings compared to the female. Tibia I is egg-like bulged. Male palpus like Fig. 453.

Habitat: In bright, dry places, sometimes on large meadows in forests, under rocks.

Distribution: Palearctic (except Japan and China), Almaty, Siberia, Caucasus. **In Georgia:** Lagodekhi Reserve, Qvareli (Mcheidze 1939, 1940).

Taxonomy: Platnick (2013): *Alopecosa cuneata* (Clerck, 1757).

6. *Alopecosa cursor* (Hahn, 1831)

Description: Female body length 8–9.5 mm; male 6–6.5 mm.

♀ The carapace is brownish black with a broad longitudinal brown band and a hazy lateral band, which is covered with short gray setae. The sternum is brown. The legs are brown with dark marks.

The abdomen is blackish gray, often with gray setae. A broad median brown band with carved-out edges runs along the abdomen; this band is sometimes broken (Fig. 458). The epigynal plate is round to triangular with a small cut in its front (Fig. 457). The ball-shaped egg sac is silver-white and shining.

♂ The coloration of the male is somewhat darker than the female. The bulbus appendage looks like a large beak of a bird (Fig. 456).

Habitat: Steppe species, in meadows, especially on feather grass (*Stipa sp.*).

Distribution: Europe, Central Asia, in the southern regions of the European part of the former USSR, western Siberia. **In Georgia:** Tbilisi (Ortatshala), Kodzhori, Borjomi, Bakuriani, Akhaltsikhe, Adigeni, Sairme, Baghdati, Khulo, Mestia (Mcheidze 1946, 1950, 1972). First record in the Transcaucasus.

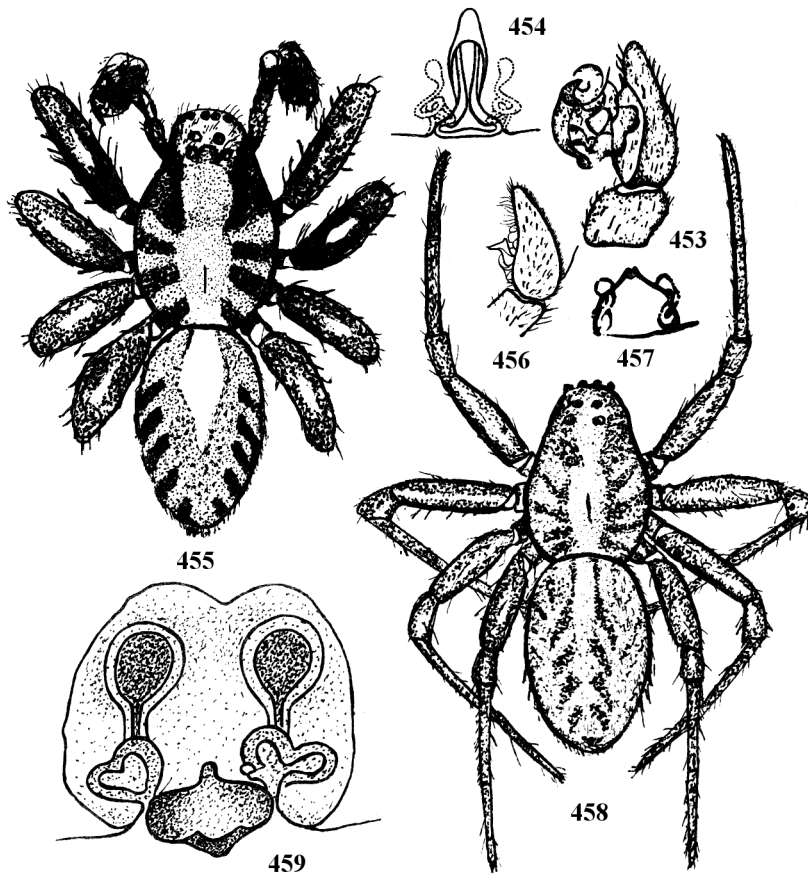
Taxonomy: Platnick (2013): *Alopecosa cursor* (Hahn, 1831).

7. *Alopecosa taeniopus* (Kulczyński, 1895)

Description: Female body length 5 mm, width 3 mm; abdomen length 7 mm, width 4.5 mm.

The spider is mainly yellow; the cephalic region bears two diagonal broad black bands, which extend to the posterior end of the carapace. The sternum is dark yellow.

Two broad black marks originate on the anterior edge of the abdomen and stretch longitudinally along the abdomen. A few pairs of small black-



Figs. 453–459. **Lycosidae, *Alopecosa* (in part.).** *A. cuneata*: 453 – male palpus; 454 – epigyne; 455 – male habitus. *A. cursor*: 456 – male palpus; 457 – epigyne; 458 – female habitus. *A. taeniopus*: 459 – epigyne.

ish marks are situated behind these two marks at the posterior end of the abdomen. The venter is light yellow. Epigyne like Fig. 459.

Habitat: In humid places with short herb vegetation.

Distribution: Belgorod region, Crimea, Kazakhstan, Transcaucasus. **In Georgia:** Zestaponi, Lagodekhi (Kulczyński 1895), Adigeni, Borjomi (Mcheidze 1970).

Taxonomy: Platnick (2013): *Alopecosa taeniopus* (Kulczyński, 1895).

7.21.2 *Arctosa* C. L. Koch, 1847

Key to species

- 1(6) Males. **2**
- 2(3) Body length 5.5 mm. Distal cymbium part smaller than the bulbus (Fig. 460). Abdomen with yellow dorsal markings in form of a broad spoon-shaped longitudinal band with black marks on yellow background (Fig. 462). Thoracic region yellow. Chelicerae and palpi brown. 1. *A. tbilisiensis* (p. 276)
- 3(2) Body length larger than 5 mm. **4**
- 4(5) Body length 10–12 mm. Tarsi I and II with numerous spine-shaped setae. Distal cymbium part longer than bulbus (Fig. 463). Abdomen with reddish-yellow dorsal markings, its anterior part with a wedge-shaped mark, two hooks and four longitudinal rows of irregularly arranged and partly fused marks in its posterior part. Cephalic region brown (Fig. 464). 2. *A. cinerea* (p. 277)
- 5(4) Body length 6–8 mm. Tarsi I and II with numerous and very long spine-shaped setae. Dorsum light gray and with a hardly discernible lanceolate mark; its sides with two dark yellow and whitish longitudinal bands. 3. *A. leopardus* (p. 277)
- 6(1) Females. **7**
- 7(10) Tibia I with three pairs of spines. **8**
- 8(9) Epigyne like Fig. 461. Body length 5–4 mm.
. 1. *A. tbilisiensis* (p. 276)
- 9(8) Epigyne like Fig. 465. Body length 10 mm.
. 4. *A. lagodechiensis* (p. 278)
- 10(7) Tibia I with less than three pairs of spines. Epigyne not like this. **11**
- 11(12) Tibia I with only one pair of spines. Epigyne triangular and with with a median plate. Body length 8–10 mm.
. 3. *A. leopardus* (p. 277)
- 12(11) Tibia I with two pairs of ventral spines. Epigyne like Fig. 463 a.
. 2. *A. cinerea* (p. 277)

1. *Arctosa tbilisiensis* Mcheidze, 1946

Description: Female carapace length 2.9 mm, width 1.9 mm; abdomen length 2.5 mm, width 1.5 mm. Male carapace length 2.5 mm, width 2 mm; abdomen length 2 mm, width 1.5 mm.

♂ The carapace is brown; the cephalic region is bulged and well separated from the thoracic part. The AER is curved backwards; the AME are larger than the ALE. The eyes of the MER and PER are larger than the eyes in the AER. Clypeus and sternum are yellow with a smooth surface. The brown

chelicerae bear teeth. The legs are yellow.

The dark brown abdomen bears complex yellow markings (Fig. 462). The spinnerets are yellow. Epigyne like Fig. 461.

♂ The sternum is dark yellow; the chelicerae and pedipalpi are brown. The palpi bear two characteristic spoon-shaped appendages (Fig. 460). The abdomen bears yellow markings with black marks (Fig. 462).

Habitat: In humid places in grass, under rocks.

Distribution: Tbilisi, Gardabani, Lantshkhuti, Poti (Mcheidze 1946, 1950). Georgian endemic species.

Taxonomy: Platnick (2013): *Arctosa tbilisiensis* Mcheidze, 1946.

2. *Arctosa cinerea* (Fabricius, 1777)

Description: ♀ Body length 17 mm, width 12 mm. The carapace is as long as the abdomen. The carapace is brown with a somewhat darker eye region. The sternum is brown, the legs are yellow with a gray annulation and bear numerous setae.

The abdomen is brownish black with reddish yellow markings with a narrow wedge-shaped mark in its anterior part; its posterior half bears four irregular and partly fused longitudinal marks. The sides of the abdomen bear two pairs of curved marks (Fig. 464). The venter is yellow; the epigyne bears a triangular plate with a broad base and thick, oval, lateral openings (Fig. 463 a).

♂ Male palpus like Fig. 463; its terminal half bears thick setae. The bulbus bears a chitinized lamella.

Habitat: On the edges of water bodies, on clay and in sand.

Distribution: Holarctic. **In Georgia:** Lagodekhi (Schmidt 1895), Batumi (Simon 1899), Kobuleti, Poti, Dmanisi (Mcheidze 1940, 1958).

Taxonomy: Platnick (2013): *Arctosa cinerea* (Fabricius, 1777).

3. *Arctosa leopardus* (Sundevall, 1833)

Description: ♀ Body length 8–10 mm, width 6–8 mm. The black carapace bears a median band. The cephalic region bears a long broad, brown to dark green band, which forms a broken mark in its anterior part and is narrow in the thoracic region and star-shaped. Its sides are plain. The AE are of similar size in both males and females; the ALE are somewhat larger than the AME. The legs are brown to green with black rings.

♂ Tarsi I and II are very long and bear spiniform setae.

Habitat: On the edges of water bodies in the sand.

Distribution: Palearctic (except Africa, China and Japan), in the former USSR in Uzbekistan, Kyrgyzstan, Tian Shan. **In Georgia:** Batumi (Spassky 1937), Gardabani, Ambrolauri, Khotevi, Poti, Sukhumi (Mcheidze 1956, 1973).

Taxonomy: Platnick (2013): *Arctosa leopardus* (Sundevall, 1833).

4. *Arctosa lagodechiensis* Mcheidze, 1997

Description Female: Body length 10 mm, carapace length 4.5 mm; abdomen length 5.2 mm, chelicere length 5 mm. The carapace is reddish to yellowish brown with yellow-brown markings. The yellow part of these markings is covered with numerous black setae, reaching the eye region. More dense shining setae are situated in bright places. The dark markings are comprised of two irregular longitudinal bands and lateral marks, which are partly fused with the longitudinal bands. A blackish gray pointed mark is visible at the longitudinal band behind the eye region.

The black chelicerae bear three uniform reddish brown teeth. The labium is yellow to reddish brown. The sternum is yellow, its sides are somewhat darker and bear more or less densely standing black setae. The palpi bear marks. The ventral side of the legs is yellow; their tips are darkened. The metatarsi and tarsi are reddish brown. All femora bear dark dorsal marks. The patella, tibia and metatarsi I–IV each bear three gray marks.

Leg armament: Femur I and II 1.1d, 1ad, femur III 1.1.2d or 1.1.3d, femur IV 1.1d, 1pd. Patella I and II without spines, patella III 1ac, 1pc. Tibia I 2v (apical), 1avc; tibia II 1a in the distal half, 1vc, 1 or 2 apical; tibia III 1d, 1.1a, 1.1p, 2.2.2v. Metatarsus I 2.2.1v, 1a (apical); metatarsus II 2.2.1v, 1 or 1.1a; metatarsus III 2.2.1v, 2.2.2d; metatarsus IV 1.1.2v, 1.1.1a, 1.1.1p.

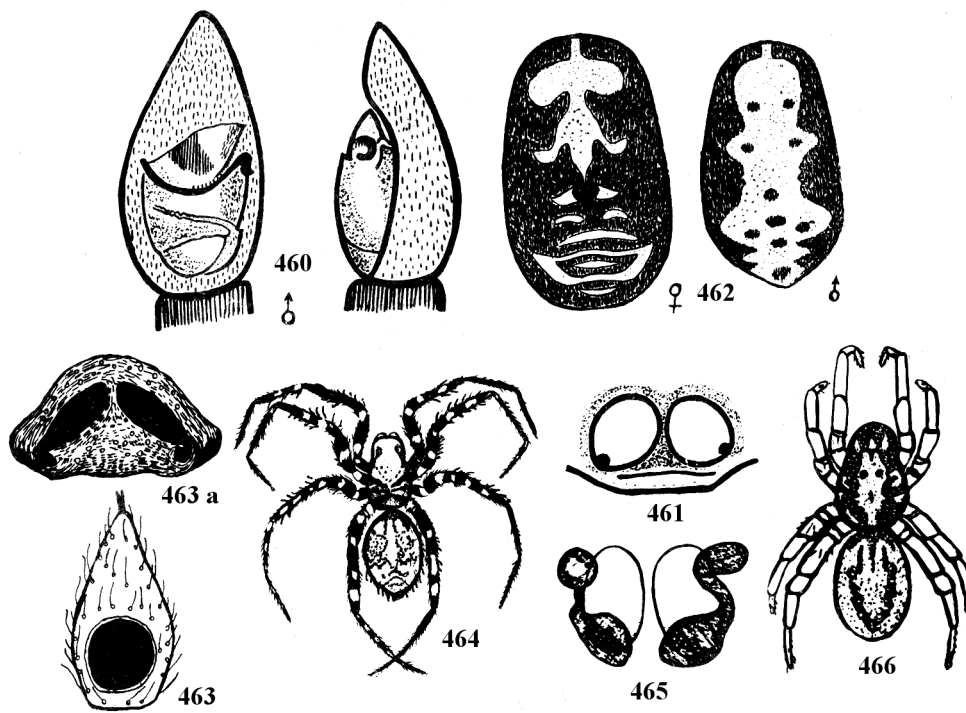
Leg Lengths: Coxa I: 1.5 mm; II: 1.3 mm; III 1.25 mm; IV: 1.5 mm. Femur I: 3.05 mm; II: 2.75 mm; III: 2.5 mm; 2.1 mm. Patella and tibia I: 3.6 mm; II: 3.8 mm; III: 3.3 mm; IV: 2.75 mm. Metatarsus I: 3 mm; II: 2.8 mm; III: 3.1 mm; IV: 4.35 mm. Trochanter I–IV: 0.3 mm.

A longitudinal brown-yellow band is visible on the abdomen; two curved yellow bands are situated laterally from this band. The longitudinal band unites with a transversal band near the anterior edge. The shining band extends towards the posterior end of the abdomen; its sides and lateral parts of the venter bear irregular rows and small irregularly scattered blackish gray marks (Fig. 466). The venter is gray yellow with transversal black-brown and yellowish setae.

Epigyne like Fig. 465. The male is not known.

Distribution: Lagodekhi (Aguri valley), 2 ♀, 1939.

Taxonomy: Platnick (2013): *Arctosa lagodechiensis* Mcheidze, 1997.



Figs. 460–466. Lycosidae, *Arctosa*. *A. tbilisiensis*: 460 – male palpus; 461 – epigyne; 462 – male and female abdomen. *A. cinerea*: 463 – male palpus; 463 a – epigyne; 464 – habitus. *A. lagodechiensis* sp. n.: 465 – epigyne; 466 – habitus.

7.21.3 *Lycosa* Latreille, 1804

Key to species

- 1(4) Venter black, its sides, in front of the epigastric furrow and around the spinnerets orange. **5**
- 2(3) Tibiae I–IV with a ventral, proximal and distal, thick, black band. **1. *L. narbonensis*** (p. 280)
- 3(2) Tibia with two ventral black marks, their distance from each other more or less similar to the width of the white area. **2. *L. piochardi*** (p. 281)
- 4(1) Venter, its sides, in front of the epigastric furrow and around the spinnerets lacking distinct orange markings. **5**
- 5(6) Ventral part of patellae I–IV intensely black. **3. *L. singoriensis*** (p. 281)
- 6(5) Ventral part of patellae I–IV of light color. **7**
- 7(10) Proximal and distal parts of tibiae I–IV black. **8**
- 8(9) AER strongly curved and distinctly shorter than PER. **4. *L. nordmanni*** (p. 283)
- 9(8) AER weakly curved and not distinctly shorter than PER. **5. *L. vultuosa*** (p. 283)
- 10(7) Ventral tibiae I–IV of light color. **6. *L. radiata*** (p. 284)

1. *Lycosa narbonensis* Latreille, 1806

Description: Beautiful and bulky spiders, carapace length 8–10 mm. The coloration of the body is mostly bright and it does not bear as long setae as *L. singoriensis* (Fig. 467). Tibiae I–IV bear a broad, ventral black band in their proximal and distal parts. The venter bears shining orange marks in front of the epigastric furrow and the spinnerets.

Habitat: These spiders construct vertical tubes in the ground, preferring rocky places with sparse vegetation cover. The winding tube reaches lengths of 20–25 cm at a width of 1–2 cm; it is lined with silk. The spider can close and camouflage the tube, making its discovery impossible.

Distribution: Southern Europe, Algiers, Turkmenistan, in the former USSR in southern Siberia, Crimea, Transcaucasus, Don and Kherson regions. **In Georgia:** Tbilisi (Schmidt 1895), Baghdati, Rikoti, Kutaisi, Tbilisi (around Lake Kus) (Mcheidze 1956, 1960).

Taxonomy: Platnick (2013): *Lycosa narbonensis* Walckenaer, in Latreille, 1806.

2. *Lycosa piochardi* Simon, 1876

Description: Female carapace length 11.2 mm, width 8 mm.

♀ The carapace is covered with gray-white setae; the thoracic region is reddish with two elongated brown bands. The clypeus is distinctly narrow. The legs are covered with short thick setae. The lower half of the chelicerae is covered with yellow setae.

The dorsum is covered with light brown-red setae; often it also bears stained brown spots. Its anterior third bears two triangular marks, which extend towards the anterior lines.

The epigastric region is black; its posterior part bears a transversal red band. The sides of the abdomen and its posterior part are orange-red. The epigyne is situated on a black plate and stained with spots; it is oval and somewhat longer than wide.

♂ The carapace is brown-red or black; it bears a broad dentate margin. The thoracic region is covered with white setae; the cephalic region is elongated. The AE are of uniform size and form a curved row. The chelicerae are covered with white yellowish setae. The legs are brown and bear thick red or white setae.

The dorsum is covered with brown setae. The venter is black, its posterior part and the region around the spinnerets is brown-red or orange. The palpus is brown-red.

Habitat: Under rocks, in leaf litter.

Distribution: Syria, Palestine, Anatolia, Mesopotamia, Transcaucasus.

In Georgia: Atsquri (Koch 1878), Lagodekhi (Tshiauri Forest) (Mcheidze 1939).

Taxonomy: Platnick (2013): *Lycosa piochardi* Simon, 1876.

3. *Lycosa singoriensis* (Laxmann, 1770)

Description: Female body length 33-35 mm, male 25 mm. This species is the largest of all spiders species in Georgia; its body is very large with long and thick legs. The carapace is blackish brown with a light brown fringe and median band of the same color in its posterior part. The sternum is black; the legs are brown with broad black rings.

The venter is black. The entire integument and the legs are densely covered with gray and white setae (Fig. 468). The males are more brightly colored compared to the females; their venter and sternum bear pubescent black setae. The epigyne bears two shining tubercles with an anchor-shaped plate in between (Fig. 469). Male palpus like Fig. 470.

Ecology: This steppe species lives in 12 cm long tubes in the ground. During the day they hide in this tube, coming out at night to hunt prey (Figs. 471, 471 a). Above a distance of half a meter from the tube they cannot find their way back to it and construct a new tube elsewhere.

In Georgia they often prefer saline places, like the shores of former salt lakes (e.g. Lake Tbilisi), where they can be found at distances of 5–10 meters from the shore in well-camouflaged tubes. Such places are characterized by a halophytic vegetation with glassworts (*Salicornia*) and willows as well as large numbers of midges and grasshoppers (Kalandadze, Mcheidze 1955).

The northern distribution limits of this species are marked by the northern limits of the forest steppe, but it can reach even further northwards along the rivers Dnieper, Yenisei, Volga, Kama and Tunguska. A large population can be found on the shores of Lake Onega. In Marikovskii's (1956) opinion, they represent a relict area of the former much larger distribution area of this species.

The tubes of this species are situated near the water because it prefers the lowlands of rivers, lakes and mires. Marikovskii (1956) describes these tubes as "the best indicators of the high-water mark" of rivers in very dry deserts. Some plant and animal species indicate the presence of this spider species quite reliably: glassworts (*Salicornia*) and mole crickets (*Gryllotalpa*).

There are three races of this species: a large eastern race, which is distributed only in Central Asia and Kazakhstan; an intermediate northern race and a small southern race with the northern boundary in the steppe zone.

In our environments this large lycosid mates in fall with the male perishing soon afterwards and the female overwintering (females live 2–3 years). At temperatures of 8–9° C in spring the females appear and start feeding. Egg-laying starts with a first egg sac of 13–14 mm in diameter containing up to 500 eggs. After one moult within the egg sac, the spiderlings leave the egg sac 20–21 days later in order to stay on their mothers abdomen for 3–4 more moults.

Its poison of this species is not lethal to humans, only to small animals (Kalandadze, Mcheidze 1953).

Distribution: Mongolia, China, Romania, Austria, Czechoslovakia, Hungary, Greece, Turkey, Egypt. It is widely distributed in the former USSR, from southern Moldova, the southern Ukraine, the lowlands of Don and Volga, the Caucasus (except the highlands), along the River Ural, in Central Asia (except very dry deserts), reaching Lake Baikal in the east.

It appears that this species can live under various unusual climatic conditions and different landscape zones.

In Georgia: Tbilisi (Simon 1899), on the shores of haline lakes in Tbilisi, around the haline lakes of Mukhrovani and Azamburi, Kobuleti (Mcheidze 1955–1960).

Taxonomy: Platnick (2013): *Lycosa singoriensis* (Laxmann, 1770).

4. *Lycosa nordmanni* (Thorell, 1875)

Description: Male carapace length 9.6 mm.

♂ The carapace is as long as the combined lengths of patella and tibia IV. The chelicerae are shorter than tibia III. The red epigyne is almost as broad as long (Fig. 473).

♂ The cephalic region of the reddish-brown carapace is strongly narrowed in its anterior part. The sides of the carapace bear four pairs of gray-black radial lines. It is also covered by a thick layer of white or yellowish white and black setae, appearing as a broad white band on the carapace. The AER is strongly curved. The structure of the bulbus is characterized by two well-developed apophyses (Fig. 472).

The abdomen bears gray-black marks in its anterior half and three apophyses in its posterior half; its sides are grayish white. Three transversal blackish gray epigastral marks are situated on the venter on an orange-yellow surface.

Habitat: In grass and under rocks.

Distribution: Southern Ukraine, Transcaucasus. **In Georgia:** Tbilisi (Schmidt 1895), Lagodekhi (Mcheidze 1940).

Taxonomy: Platnick (2013): *Lycosa praegrandis* C. L. Koch, 1836.

5. *Lycosa vultuosa* C. L. Koch 1838

Description: Female body length 19–21.5 mm; carapace length 9–11.5 mm, width 6–8.5 mm. Male body length 18–20 mm.

The dark brown carapace bears bright marks. The bright eye region contrasts with the dark background of the carapace. The thoracic region bears three pairs of transversal bright bands, which unite with the bright fringe of the carapace.

The eight eyes are arranged in three rows; the AE are small and form a weakly curved row; the eyes of the MER and PER are large (especially in the PER). The chelicerae are thick and black. All bases of the extremities are black; the remaining parts are brown. Dark rings are discernible on all articulations

The anterior fringe of the abdomen bears a bright broad arched mark. 5–6 pairs of longitudinal round elongated marks almost reach the central part. A black band extends on the venter from the epigyne to the spinnerets. The epigynal plate is elongated and narrow (Fig. 475). The entire body is densely covered with dark setae.

Ecology: This species prefers places covered with herbaceous vegetation with *Euphorbia*, *Medicago*, *Onobrychis*, *Salvia*, *Dactylis glomerata* and others as well as animals like grasshoppers, beetles, *Gryllus campestris* and butterflies. Such places are also the habitat of this species' main predators: pompilid wasps, scorpions, chilopods and small mites feeding on the eggs inside the egg sacs.

L. vultuosa hibernates inside its tube. In fall, when temperatures approach 2–3° C, it closes its tube in such a way that the entrance is difficult to discern from the surrounding soil surface. When temperatures rise to 8–9° C in spring, the spiders awake and open their tubes. Soon the female carries its egg sac around, attached to the spinnerets. One egg sac may contain up to 300 eggs. The juveniles mature during one year, reaching the adult stage after approx. 12–14 months (Mcheidze 1964).

Their poison is lethal to small animals. In humans their bite causes inflammation of the bite area.

Distribution: Hungary, Anatolia, Syria (Damascus), in the former USSR in the regions of Saratov and Astrakhan, Crimea and Transcaucasus. **In Georgia:** Tbilisi, Alazani lowlands, Lagodekhi (Schmidt 1895), Tbilisi (Samgori), Sagaredzho, Gori, Mtskheta (Armazi Valley), Manglisi, Algeti, Kodzhori, Tsqneti, Dusheti, Meskhet-Javakheti (Aspindza), Rustavi, Telavi, Qvareli, Eldari, Shiraki, Kasri River, Tshiatura, Satshkhere, Zestaponi, Kutaisi, Zekari, Sairme, Tqibuli, Ambrolauri, Shovi, Tskhinvali (Znauri), Batumi, Kobuleti, Sukhumi, Lantshkhuti, Tshokhatauri, Ozurgeti, Bakhmaro, Keda, Khulo, Baghdati (Mcheidze 1938–1979).

Taxonomy: Platnick (2013): *Geolycosa vultuosa* (C. L. Koch, 1838)¹¹⁶.

6. *Lycosa radiata* Latreille, 1817

Description: Female body length 20–25 mm; male 15–18 mm. This species is the largest of the Mediterranean wolf spiders. The coloration of the males and females does not vary a great deal; it is almost unicolored yellowish brown with a broad bright band along the edges of the carapace.

The chelicerae of the female bear teeth. The outer edge of the cheliceral furrow bears two teeth, the inner edge three teeth. In males one tooth on the outer edge is small. The eyes are arranged in three rows; the AE are smaller than the eyes in the MER and PER. The extremities are covered with thick spines.

A shining median band extends from the anterior edge of the abdomen to its posterior end, forming 3–4 pairs of bright marks in its rear half (Fig. 476). Male palpus like Fig. 477.

Ecology: On forest edges and grassy environments under rocks. They hide during the day and come out for hunting during the night.

Distribution: In Mediterranean countries (Sudan, Abyssinia), in the former USSR in southern Russia, Caucasus, Central Asia, Lake Aral. **In Georgia:** Batumi, Sukhumi, Gagra (Spassky 1937), Tbilisi (Shavnabada), Avtshala, Telavi, Signaghi, Lagodekhi, Tusheti, Vani, Zestaponi, Sukhumi, Batumi, Keda, Khulo, Bakhmaro, abundant along the Black-Sea Coast (Mcheidze 1939–1972).

¹¹⁶In Mcheidze (1997) sic: 'C. L. Koch, 1839', lapsus.

L. radiata var. *liguriensis*: Schmidt (1895) collected specimens in Tbilisi, which differ substantially in leg armament and coloration.

Taxonomy: Platnick (2013): *Hogna radiata* (Latreille, 1817)

7.21.4 *Pardosa* C. L. Koch, 1847¹¹⁷

Key to species

Pardosa vittata is not keyed.

- | | | |
|--------|---|----------------------------------|
| 1(34) | Males. | 2 |
| 2(7) | Bulbus with a long and upwards-curved appendage, almost reaching the apical bulbus tip (Fig. 479). | 3 |
| 3(4) | Distance between bulbus tip and the cymbium tip on the last palpus segment as long as the bulbus diameter. Carapace with a very broad median band and hardly visible or without thin lateral bands. Abdomen with an antero-dorsal lanceolate mark, which vanishes towards the rear and with a number of pairs of whitish marks behind it (Fig. 478). Body length 5–5.5 mm. | 1. <i>P. lugubris</i> (p. 289) |
| 4(3) | Distance between bulbus tip and cymbium tip much smaller than bulbus diameter. | 5 |
| 5(6) | Whitish carapace with a dark median band. Lateral bands weakly developed. Abdomen with a yellowish lanceolate dorsal mark. Palpus like Fig. 481. Body length 6–7 mm. 2. <i>P. amentata</i> (p. 289) | |
| 6(5) | Coloration of carapace, abdomen and palpus structure not like this. | 7 |
| 7(2) | Bulbus without a long upwards-curved appendage, instead with a short appendage not reaching the end of the bulbus. | 8 |
| 8(15) | Bulbus with a short upwards-curved hook-like appendage (Fig. 483). | 9 |
| 9(10) | Terminal palpus segment twice as long as wide (Fig. 483). Cymbium broader than palpus patella and lacking white setae. | 3. <i>P. wagleri</i> (p. 291) |
| 10(9) | Terminal palpus segment as long as wide. Coloration of cymbium and patella not like this. | 11 |
| 11(12) | Bulbus appendage short, curved and not reaching the median line of the bulbus. With a small tubercle left of the bulbus appendage. Legs long and thin (especially leg IV) and bearing dark rings. Ventral sides of metatarsus and tarsus III and IV covered with numerous short spines. Carapace very brown. Dorsum dark brown with yellow markings (Fig. 485). Venter yellow. | 4. <i>P. orientalis</i> (p. 291) |

¹¹⁷Mcheidze (1997) sic 'C. L. Koch., 1848', lapsus.

- 12(11) Bulbus and leg structure as well as carapace and abdomen coloration not like this. **13**
- 13(14) Bulbus appendage blunt and rounded, curved upwards and not reaching apical bulbus end; appendage basally connected with a small apophysis (Fig. 487). Tibia, metatarsus and tarsus densely covered with very long lateral setae. Sternum black and with a fringe of white setae. Carapace mainly brown with a yellow fringe; its center with a longitudinal band reaching the rear end. Dark brown abdomen with diagonal black marks. Venter dark brown with a row of black sprinkles towards the spinnerets. 5. *P. plumipes* (p. 292)
- 14(13) Bulbus, sternum and abdomen not like this. **15**
- 15(8) Bulbus without such appendage. **16**
- 16(27) Basal bulbus apophysis with two branches: one directed forward and upwards, the second branch directed forward and downwards; the lower branch as long as or shorter than the upper branch. **17**
- 17(18) Legs black (except tarsi). Abdomen blackish brown, with two longitudinal anterior dark marks and a number of whitish black pairs of small posterior marks. 6. *P. blanda* (p. 292)
- 18(17) Leg coloration not like this. **19**
- 19(20) Femur, tibia, metatarsus and parts of patella I annulated and very dark, almost black. Remaining legs dark and annulated. 7. *P. torrentum* (p. 292)
- 20(19) All leg segments yellow or brown, usually with dark marks and rings. **21**
- 21(24) Basal bulbus apophysis long and branched, the lower branch tapering (Fig. 492). **22**
- 22(23) Dorsal side of basal apophysis without a projecting fine tapering apophysis (Fig. 492). Body length 4–4.5 mm. 8. *P. calida* (p. 293)
- 23(22) Basal apophysis not like this. **24**
- 24(21) Basal bulbus apophysis short, weakly or not projecting. Lower apophysis branch often tapering, sometimes blunt. **25**
- 25(26) All palpus segments without white setae. Dorsal part of basal bulbus apophysis weakly concave (Fig. 496). 9. *P. hortensis* (p. 293)
- 26(25) Palpus and basal apophysis not like this. **27**
- 27(16) Basal palpus apophysis with one branch directed forward and upwards; its lower branch, if existing, very short and often shorter than upper branch. **28**
- 28(29) Proximal part of tarsus I dark. Dorsum and anterior part of abdomen reddish yellow, with a median band and a number of pairs of small shining marks behind it (Fig. 498). Venter with white setae. Body length 5.5 mm. 10. *P. agricola* (p. 295)

- 29(28) Proximal part of tarsus I of light color. **30**
- 30(31) Distal part of tarsus I darker than its proximal part. Carapace with three pairs of longitudinal yellow bands. Dorsum and anterior part of the blackish brown abdomen with a reddish yellow median band and a number of small shining marks behind it (Fig. 500). Venter with white setae. Body length 5.5–6 mm.
 11. *P. agrestis* (p. 295)
- 31(30) Distal part of tarsus I not darker than its proximal part. . . . **32**
- 32(33) Thin bright fringe of the black sternum reaching its central part. Sternum covered with long white setae.
 12. *P. arenicola* (p. 296)
- 33(32) Sternum blackish, sometimes its anterior part with a faint trace of a bright line. Sternum not covered with long white setae.
 13. *P. monticola* (p. 296)
- 34(1) Females. **35**
- 35(38) Epigyne with a longitudinal opening and a narrow septum above it. **36**
- 36(37) Epigynal septum long, almost reaching the posterior edge of the epigynal opening. Epigynal opening with postero-lateral apophyses (Fig. 493). 8. *P. calida* (p. 293)
- 37(36) Epigynal septum and epigyne not like this, sometimes without any septum. **38**
- 38(35) Epigyne without a narrow septum. **39**
- 39(46) Epigynal opening completely covered with a shining, posteriorly raised and strongly broadened median plate. **40**
- 40(43) Median epigynal plate not rectangular in its anterior part. . . **41**
- 41(42) Bright median band of the carapace distinctly broadened behind the eyes. Body length 6–8 mm. 11. *P. agrestis* (p. 295)
- 42(43) Bright median band of the carapace very narrow. Body length 6–8 mm. 13. *P. monticola* (p. 296)
- 43(42) Anterior part of the epigyne almost rectangular (Fig. 499). Body length 6–7.5 mm. 10. *P. agricola* (p. 295)
- 44(45) Body coloration dark black. **45**
- 45(44) Body coloration black-brown, the anterior part of its yellow-brown median band tapering. Epigyne like Fig. 491.
 7. *P. torrentum* (p. 292)
- 46(38) Epigynal opening partly or completely bright. Median epigynal plate of different structure. **47**
- 47(58) Median epigynal plate longitudinal, its posterior part broad and merging with a very thin septum. **48**
- 48(51) Septum of median epigynal plate excentrically united with the anterior part of the epigynal opening. **49**
- 49(50) Epigyne like Fig. 484. Body length 7.5 mm.
 3. *P. wagleri* (p. 291)

- 50(49) Epigyne not like this. **51**
- 51(48) Median septum not united with the anterior part of the epigynal opening (Fig. 490). **52**
- 52(53) Epigynal opening separated from its central part (Fig. 490). Body length 7 mm. 6. *P. blanda* (p. 292)
- 53(52) Epigynal opening excentrically separated from its posterior margin. **54**
- 54(57) Basis of the epigynal opening covered with a distinctly broadened outgrowth, resembling the broadened part of the epigynal median plate. **55**
- 55(56) Broadened outgrowth of the epigynal median plate rounded (Fig. 497). Body length 6 mm. 9. *P. hortensis* (p. 293)
- 56(55) Broadened outgrowth of the epigynal median plate not rounded. **57**
- 57(54) Basis of the epigynal opening not covered with a broadened outgrowth. **58**
- 58(47) Epigynal median plate not like this. **59**
- 59(60) Epigynal median plate anchor-shaped or \perp -shaped (Fig. 480). Body length 7–8 mm. 1. *P. lugubris* (p. 289)
- 60(59) Epigynal median plate not anchor-shaped. **61**
- 61(60) Epigyne developed as a transverse chitinized plate with its basis and lateral sides forming a sharp angle (Fig. 488).
. 5. *P. plumipes* (p. 292)
- 62(61) Epigyne not like this. **63**
- 63(64) Epigynal median plate transverse and cut, the broadened part of its basis laterally indented (Fig. 501). 12. *P. arenicola* (p. 296)
- 64(63) Epigyne different (Fig. 486). **65**
- 65(66) Main carapace color brown, along the edges brown but intertwined with posterior yellow fringes. Central part with a brown furrow and 3–4 pairs of yellow bands extending from it. Dorsum dark brown with yellow markings, venter yellow (Fig. 485). 4. *P. orientalis* (p. 291)
- 66(65) Main carapace color and abdomen not like this. **67**
- 67(70) Dorsum black. **68**
- 68(69) Sternum light brown. Epigyne like Fig. 506.
. 14. *P. ninigoriensis* (p. 296)
- 69(68) Sternum black, its anterior part with a longitudinal reddish yellow mark. Epigyne like Fig. 508. 15. *P. colchica* (p. 298)
- 70(67) Dorsum not black. **71**
- 71(72) Dorsum yellow-brown with a longitudinal band, its remaining parts yellow and covered with black setae. Epigyne like Fig. 510.
. 16. *P. alasaniensis* (p. 298)
- 72(71) Dorsum not yellow brown. **73**

- 73(74) Abdomen with a pink-brown rhomboid mark (Fig. 511). Epigyne like Fig. 512. 17. *P. caraiensis* (p. 299)
 74(73) Posterior part of the epigynal median plate broadened. Epigyne with only one opening (Fig. 482). 2. *P. amentata* (p. 289)

1. *Pardosa lugubris* (Walckenaer, 1802)

Description: Female body length 5.5–6.5 mm; male 4.5–5 mm.

♀ The brown carapace bears broad, hazy, reddish yellow, longitudinal, lateral bands. The eye region is black. The brown sternum and legs bear brown marks. The femora of the female are darkened.

The dark brown abdomen bears a lanceolate reddish yellow mark in its anterior third and four longitudinal rows of hazy reddish marks, which can be merged (Fig. 478). The epigyne is ⊥-shaped (Fig. 480).

♂ The black palpus is covered with long coarse setae, forming dense bristles near the tip. The bulbus appendage is thin and long, its tip is curved outwards (Fig. 479).

Ecology: This forest species also lives on the forest edge. The lentiform egg sac is of dirty yellow color.

Distribution: Western Europe, Asia, in the European part of the former USSR (except Crimea and North Caucasus). **In Georgia:** Lagodekhi (Mt. Ninigori), Telavi (Dzhvarpatiosani), Tsivi, Gurdzhaani, Bakuriani (Nine-Springs Pass), Baniskhevi, Tbilisi (Mcheidze 1940, 1957). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa lugubris* (Walckenaer, 1802).

2. *Pardosa amentata* (Clerck, 1757)

Description: Female body length 7–8 mm; male 6–7 mm. The carapace is blackish brown and bears a broad, shining and oval, and sometimes hardly discernable median band. The eye region and the part behind it are darker blackish. The bright lateral bands are broken and lack well-visible dark marks. The black sternum is covered with brown-yellow setae.

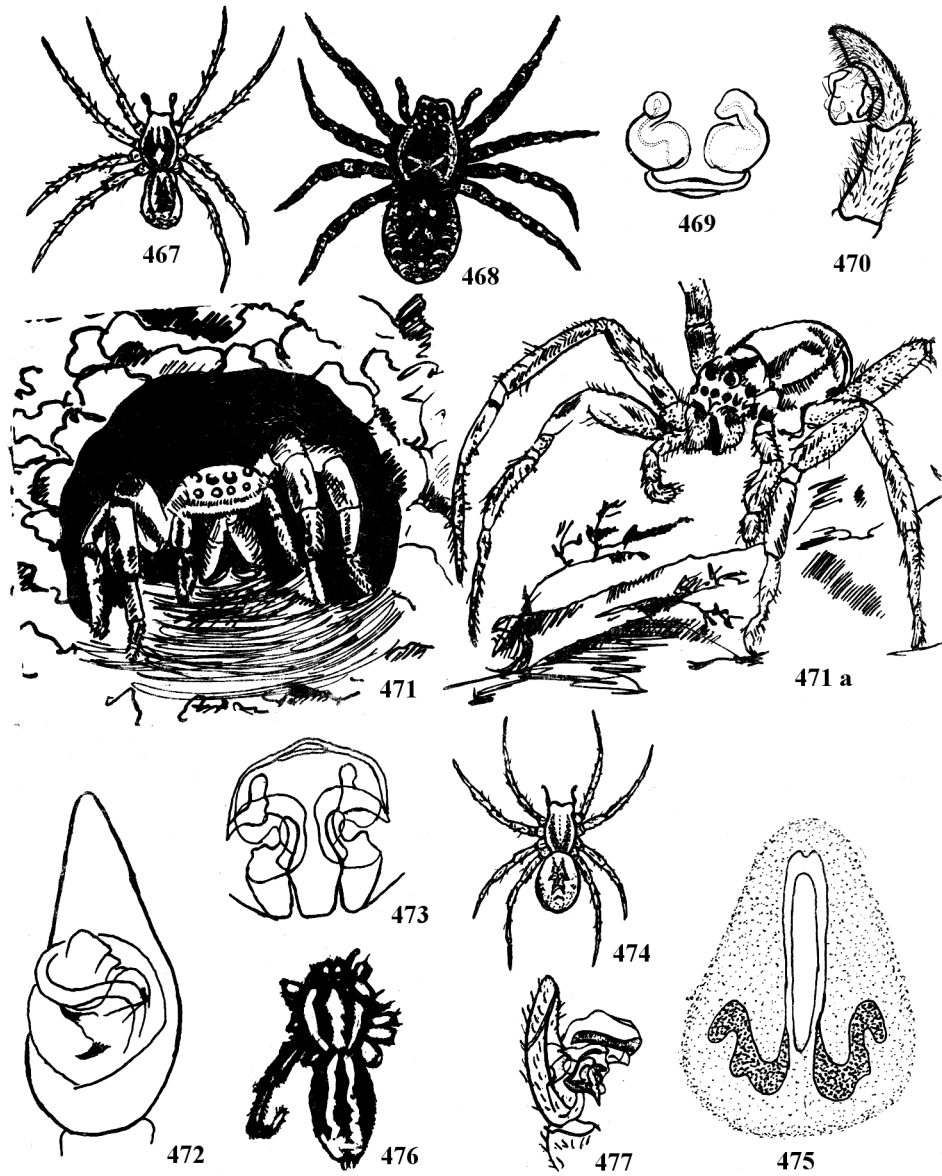
The anterior part of the abdomen bears a lanceolate yellow mark. The brown legs bear black rings (especially femur, tibia and metatarsus). The epigyne has one opening (Fig. 482). Male palpus like Fig. 481.

Ecology: In moist habitats, on the shores of creeks and rivers as well as in forests. The egg sac is cinereous to yellow or brown. Often, a second batch of eggs is produced in August.

Distribution: In the European part of the former USSR. **In Georgia:** Gori, Ateni, Telavi, Dzhvarpatiosani, Tsivi, Borjomi, Adigeni, Bakhmaro (2000 m a.s.l.), Mamisoni Pass (3000 m a.s.l.). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa amentata* (Clerck, 1757)¹¹⁸.

¹¹⁸Mcheidze also lists the synonym *Pardosa saecata* (L., 1758), sic: '*P. saecata*', lapsus.



Figs. 467–477. *Lycosidae, Lycosa*. *L. narbonensis*: 467 – habitus. *L. singoriensis*: 468 – habitus; 469 – epigyne; 470 – palpus; 471, 471 a – prey-catching behavior. *L. nordmanni*: 472 – male palpus; 473 – epigyne. *L. vultuosa*: 474 – habitus; 475 – epigyne. *L. radiata*: 476 – habitus; 477 – male palpus.

3. *Pardosa wagleri* (Hahn, 1822)

Description: Female body length 6.5 mm; male 5–6 mm. The carapace is dark brown, the abdomen is bright. The eight eyes are arranged in three rows; the AE are smaller than the eyes of the MER and PER. The extremities are yellow and covered with spines. Metatarsus and tarsus are covered with fine pubescent black setae. Legs IV are the longest.

Epigyne like Fig. 484. Male palpus like Fig. 483.

Habitat: In grassy habitats, the forest edge, abundant in mountainous habitats.

Distribution: Western Europe, in the former USSR in the regions of Moscow and St. Petersburg. **In Georgia:** Lagodekhi (Mt. Ninigori), Telavi (Dzhvarpatiosani), Tsivi (Mcheidze, 1939, 1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa wagleri* (Hahn, 1822).

4. *Pardosa orientalis* (Kroneberg, 1875)

Description: Female body length 12 mm.

♀ The short carapace bears a beam-like mark, marginal lines and three reddish dentate marks in the center as well as whitish gray setae on the rear part. The PER is almost straight, the ME are somewhat larger. The gnathocoxae are red, the chelicerae brighter. The labium and the sternum are dark. The thin legs bear dark rings. The palpi are of the same color as the legs.

The abdomen is covered with gray setae; its markings are somewhat variable with the dorsal part being darker and the ventral dark shingle-colored part with the usual markings. The sides bear bright spots (Fig. 485). Epigyne like Fig. 486.

♂ The males are somewhat smaller but coloration and markings are similar to the female (leg rings are less pronounced in males). The coloration of the carapace is somewhat different: the lateral band, which is broken by a darker band, is beam-like broadened. The cephalic region is not raised above the thoracic part and its anterior part is broad. The bulbus is red, dark and lacks an apophysis (except for a small lamella). Its center is armed with a broad tooth.

Habitat: In moist places of forest and meadows.

Distribution: In the southern European parts of the former USSR, Central Asia, Siberia, Turkmenistan, Uzbekistan, Transcaucasus. **In Georgia:** Ambrolauri, Dzhapana (Lantshkhuti), Kobuleti, Sukhumi, Gulripshi, Keda, Zendidi, Borjomi, Bakuriani (Mcheidze 1941, 1974). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa nebulosa orientalis* (Kroneberg, 1875).

5. *Pardosa plumipes* (Thorell, 1875)

Description: Female body length 5.7–8.7 mm; male 5–7 mm. The carapace is blackish brown and bears a thin longitudinal and a broad yellow band, which is directed laterally. The sternum is brown with a brighter center. The brownish yellow legs bear basal longitudinal bright marks and black marks in other parts. In males the tibia, metatarsus and tarsus of leg I are covered with very long setae.

The abdomen is black-brown with reddish-yellow markings forming a lanceolate mark in its anterior third, a broken lateral band and five pairs of marks, which are arranged like spruce branches. In dark specimens these markings are poorly visible.

The epigynal plate is extended laterally (Fig. 488). The terminal half of the male palpus is black, its bulbus apophysis is thick, black and weakly curved (Fig. 487). When viewed from a side, it appears shoe-shaped.

Habitat: Mostly in forest habitats, on forest edges, in grass, often near the shores of water bodies as well as in mires.

Distribution: Italy, in the forest zone of the former USSR and in Central and Northern Europe. **In Georgia:** Lagodekhi, Tusheti (Mcheidze, 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa plumipes* (Thorell, 1875).

6. *Pardosa blanda* (C. L. Koch, 1833)

Description: Female body length 7 mm; male 5–6 mm (Fig. 489). The median line of the carapace is extended forward; the submarginal line is very thin. The palpus patella is densely covered with white setae. The legs are blackish, except the tarsi.

The blackish brown abdomen bears brown setae; two dark longitudinal marks are situated in its anterior part and a number of pairs of small whitish black marks in its posterior part. The epigynal opening is situated in the center (Fig. 490).

Ecology: In low grass in forests. These vagrant hunting spiders do not construct webs; they carry their egg sacs attached to the spinnerets.

Distribution: Greece, Switzerland, Germany, Czechoslovakia, Carpathian Mountains. **In Georgia:** Tusheti (Tshigho), Signaghi (Mcheidze, 1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa blanda* (C. L. Koch, 1833).

7. *Pardosa torrentum* Simon, 1876

Description: Female carapace length 2.6 mm, width 2.2 mm; abdomen length 3.5 mm, width 2.4 mm. Male carapace length 2.3 mm, width 1.9 mm.

♂ The blackish carapace bears a broad brown median band.

♂ The black carapace is covered with whitish brown setae and does not have a lateral band. The AE form a strongly curved line. Palpus, femur and patella are dark brown and bear white setae; tibia and tarsus are black. The other legs¹¹⁹ are brown. The chelicerae are brown or brownish red. The black sternum sometimes has a bright center.

The blackish abdomen is covered with numerous white spots and carries a broad reddish brown band in its anterior third, merging into a round mark near the center. The posterior half bears numerous transversal marks. Epigyne like Fig. 491.

Habitat: In forest habitats near river shores in short grass.

Distribution: Sotshi, Khosta (Spassky 1937). **In Georgia:** Kazbegi (Gergeti), left banks of River Terek (2000 m a.s.l.), Telavi (Dzhvarpatiosani), Tsivi, Borjomi, Bakuriani (Mcheidze 1939–1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa torrentum* Simon, 1876.

8. *Pardosa calida* (Blackwall, 1852)

Description: Female body length 5.2 mm; male 4.5 mm. The dark brown carapace bears a broad longitudinal yellow band, which begins behind the PE. The yellow sternum bears a number of black marks, which can be fused with each other. The dorsal sides of the brownish yellow legs are darker.

The brownish yellow abdomen bears a lanceolate mark in its anterior part. Its second half bears two merging lateral bands on each side (Fig. 494). The longitudinal opening of the epigyne is broadened in its anterior part (Fig. 493). The male palpus is strongly elongated (Fig. 492).

Habitat: This steppe species is characteristic for badlands; we also find it in dry, sunlit forest habitats with short grass as well as in meadows of the alpine zone.

Distribution: In the central part of the European part of the former USSR, Siberia, Ukraine, Moldova, Perm. **In Georgia:** Tusheti, Lagodekhi, Kobuleti, Bakuriani (Nine-Springs Pass), Kazbegi, Mestia, Bakhmaro (Mcheidze 1940–1949). First record in the Transcaucasus.

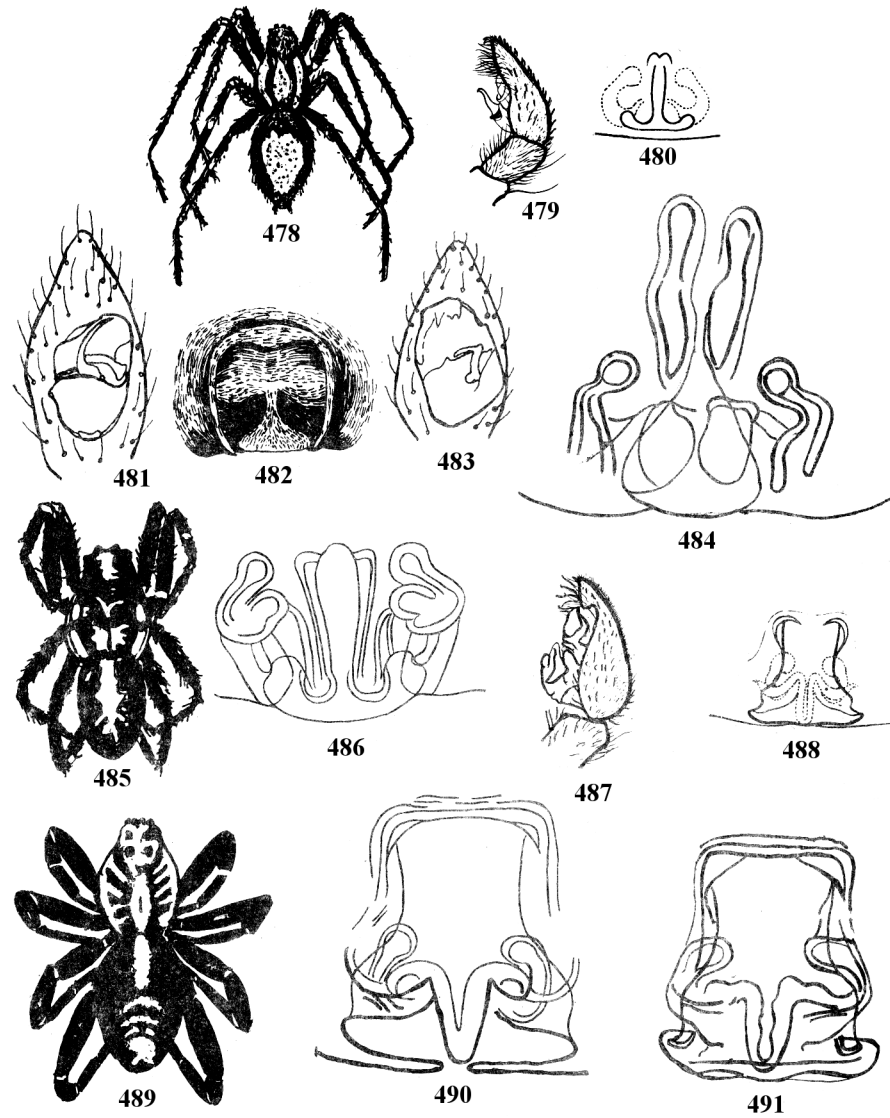
Taxonomy: Platnick (2013): *Pardosa schenkeli* Lessert, 1904.

9. *Pardosa hortensis* (Thorell, 1872)

Description: Female body length 5–5.5 mm; male 4–5 mm. The carapace and abdomen are dark brown. The extremities are brown with yellow marks or rings (Fig. 495). Palpus like Fig. 496; epigyne like Fig. 497.

Ecology: This hunting spider lives in forests and gardens, especially in bright moist habitats of both lowlands and highlands (3000 m a.s.l.). The egg sac is gray yellow or green and contains up to 60 eggs. A second batch

¹¹⁹Sic Mcheidze (1997).



Figs. 478–491. Lycosidae, *Pardosa* (in part.). *P. lugubris*: 478 – habitus; 479 – male palpus; 480 – epigyne. *P. amentata*: 481 – male palpus; 482 – epigyne. *P. wagleri*: 483 – male palpus; 484 – epigyne. *P. orientalis*: 485 – habitus; 486 – epigyne. *P. plumipes*: 487 – male palpus; 488 – epigyne. *P. blanda*: 489 – habitus; 490 – epigyne. *P. torrentum*: 491 – epigyne.

of eggs can be produced in August, which is carried around attached to the spinnerets.

Distribution: England, Central and Northern Europe, Upper Italy, in the former USSR in Siberia. **In Georgia:** Tbilisi, Lagodekhi (Mt. Ninigori), Borjomi, Bakuriani, Akhaltsikhe, Poti (Mcheidze 1939, 1940, 1948, 1971). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa hortensis* (Thorell, 1872). Mcheidze also lists the synonym *P. annulata* Thorell, 1872.

10. *Pardosa agricola* (Thorell, 1856)

Description: Female body length 6–7.5 mm; male 5 mm.

♀ The anterior part of the light median band of the carapace is broadened; the lateral bands are broken, thus appearing as a line of marks. The thoracic region is blackish brown with numerous yellow median marks in its anterior part (Fig. 498). The blackish brown legs bear rings, which are also visible on the tarsi. Epigyne like Fig. 499.

♂ The anterior part of the abdomen bears a reddish yellow median band; and behind this band are a number of pairs of small bright marks. The venter bears white setae.

Habitat: On the shores of creeks and rivers.

Distribution: In the European part of the former USSR. **In Georgia:** Lagodekhi, Zekari (Mcheidze 1944). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa agricola* (Thorell, 1856). Mcheidze also lists the synonym *P. fluviatilis* Blackwall, 1861 (author with brackets). Compare *P. arenicola* (p. 296).

11. *Pardosa agrestis* (Westring, 1861)

Description: Female body length 6.5–7 mm, males 5–6 mm. The carapace bears three well-developed, longitudinal yellow bands; of these the lateral bands are thin compared to the broad median band, which narrows towards the front. The sternum is brown or yellow. The legs bear brown to yellow marks. In males all tarsus tips are black.

The brown abdomen bears a lanceolate bright band in its anterior part and five pairs of bright marks behind it (Fig. 500). The epigyne is large; its anterior part bears a broadened plate.

Habitat: On the ground and in short grass in forests, more abundant in moist places, characteristic for high mountain habitats.

Distribution: Central and Northern Europe, Southern Russia, Kazan, Siberia, Tian Shan. **In Georgia:** Kazbegi (Sioni), Bakuriani (Nine-Springs Pass), Mestia, Surami Pass, Tqibuli (Nakerala), Shovi (Mamisoni Pass) (Mcheidze 1939, 1950, 1961). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa agrestis* (Westring, 1861).

12. *Pardosa arenicola* (O. P.-Cambridge, 1875)

Description: Female carapace length 3.5 mm, width 2.3 mm; abdomen length 4.5 mm, width 2.9 mm. Male carapace length 3.2 mm, width 2.5 mm.

♀ The blackish carapace bears a brown median band, which is tapering towards the front and does not reach the PE. The yellow lateral bands are broader. The AE are of uniform size and form a curved line. The chelicerae are brownish olive; their tips are black. The black sternum bears white setae. The brownish olive extremities are very dark, especially the tibiae.

The black abdomen bears a bright longitudinal band originating in the front (Fig. 502). The epigyne bears a large red plate (Fig. 501).

♂ The chelicerae are dark brown or olive. The palpus is black. The dark brown carapace bears 2–3 transversally broken black lateral lines. The legs are dark brown; femur and tibia, especially in legs IV, are even darker.

Ecology: In forests in short grass as well as in moist and swampy habitats. The female carries its egg sac around and later the hatched juveniles.

Distribution: England, Turkey, in the former USSR in the Transcaucasus. **In Georgia:** Tusheti, Lagodekhi (Mt. Ninigori), Manglisi, Dusheti (Lake Bazaleti) (Mcheidze 1960–1964).

Taxonomy: Platnick (2013): *Pardosa agricola* (Thorell, 1856). Compare *P. agricola* (p. 295).

13. *Pardosa monticola* (Clerck, 1757)

Description: Female body length 6–8 mm; male 4.5–5.5 mm. The anterior part of the median carapace band is narrowed; the lateral band is not broken and stretches along the whole side. The yellow or testaceous legs bear band-like marks on the femora; their frontal sides bear a short, longitudinal yellowish white line and 4–5 small spots arranged in two lines, which are connected to each other by a thin transversal band. All spots bear white setae (Fig. 503).

The epigynal plate is dark red near the protuberances in the corners (Fig. 504).

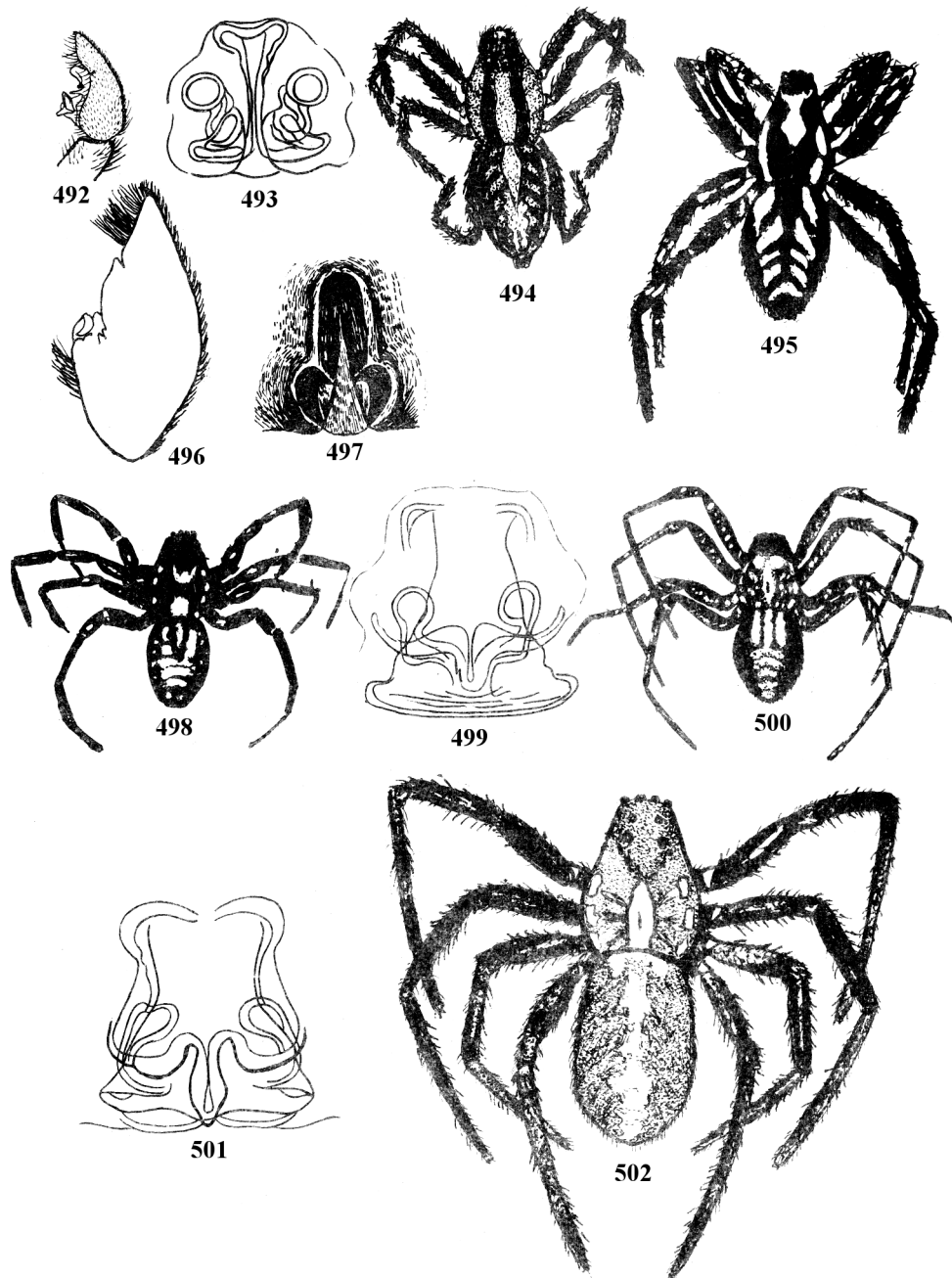
Ecology: In forests and on meadows on the ground and in short grass. This hunting spider does not construct webs for catching prey.

Distribution: Palearctic (except Northern Africa), in the former USSR in East Siberia. **In Georgia:** Tbilisi (Shavnabada), Gori (Ateni), Gardabani, Kazbegi (Sioni), Telavi, Dzhvarpatiosani, Tsivi, Sukhumi (Lake Ritsa) (Mcheidze 1949–1958). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pardosa monticola* (Clerck, 1757).

14. *Pardosa ninigoriensis* Mcheidze, 1997

Description Female: Carapace length 2.7 mm, width 2.02 mm; abdomen length 4 mm, width 2.5 mm. The dark carapace bears a black venation. A



Figs. 492–502. Lycosidae, *Pardosa* (in part.). *P. calida*: 492 – male palpus; 493 – epigyne; 494 – habitus. *P. hortensis*: 495 – habitus; 496 – male palpus; 497 – epigyne. *P. agricola*: 498 – habitus; 499 – epigyne. *P. agrestis*: 500 – habitus. *P. arenicola*: 501 – epigyne; 502 – habitus.

yellow and black band is situated in the eye region. The frontal and lateral parts of the median band are broadened and darkened. The pointed median band ends somewhat near the PE and the posterior edge. Two elongated brown marks are situated antero-laterally from the median band's point and bear a black line in their center. The lateral bands are bright yellow. A row of broken black marks is situated near the fringe. The cephalic region bears fine black lines; the bright band is covered with white setae.

The yellow chelicerae bear a grayish claw and a diagonal gray band as well as prominent long black setae. Besides, the clypeus bears four long black setae. The sternum, labium and palpus are unicolor bright yellow. The ventral sides of the legs are bright yellow; gray semi-circles are visible on the ventral femora as well as a number of short longitudinal bands.

The venter and the lateral sides of the abdomen are yellow; scattered black marks are situated on the sides of the abdomen. The black dorsum bears small yellow spots and markings, which consist of an anterior part of bright pink to brown longitudinal marks and a posterior part of round, transversal yellow rings (Fig. 505). Epigyne like Fig. 506.

Leg Armament: Femur I: 1.1a and p apical; II–III: 1.1.1a, 1p apical, 1.1.1d central; IV: 1.1a dorsal, 1.1.1 central. Patella I–III: 1.1a, 1.1p, 1 central. Tibia I–III: 1.1a; 1.1p, 1.1.1d, 2.2.2v

Habitat: Near the timberline in short grass.

Holotype: Lagodekhi in the alpine zone of Mt. Ninigori at 2400 m a.s.l. 28. VII. 1938. Male unknown.

Taxonomy: Platnick (2013): *Pardosa ninigoriensis* Mcheidze, 1997.

15. *Pardosa colchica* Mcheidze, 1946

Description: Female carapace length 2.5 mm, width 2 mm; abdomen length 4 mm, width 2.5 mm. The reddish brown carapace bears brown and yellow median and lateral bands; the median band is broadened. The yellow sternum bears gray-brown radial bands. The chelicerae are yellowish brown; both edges of the cheliceral furrow bear three teeth.

The dark brown abdomen bears peculiar markings (Fig. 507); the venter is gray-yellow. Epigyne like Fig. 508.

Habitat: In moist habitats in grass and under rocks.

Distribution: Dzhapana (Lantshkhuti Region), Kharagauli (Mcheidze 1938, 1946). Georgian endemic species.

Taxonomy: Platnick (2013): *Pardosa colchica* Mcheidze, 1946.

16. *Pardosa alasaniensis* Mcheidze, 1997

Description: ♀ Carapace length 2.6 mm, abdomen 2.8 mm. The blackish brown carapace bears brown-yellow marks. The median band originates behind the PE and is broadened in its anterior and middle parts, whereas

its posterior part is narrowed; it does not reach the rear end of the carapace. The lateral bands are spaced at some distance from each other. The fringe of the carapace bears a broad yellow band. In total, the carapace bears five longitudinal bands.

The clypeus behind the PER is yellow. The yellow to reddish chelicerae bear elongated marks in their median part. The blackish brown to reddish sternum bears an elongated \perp -shaped band in its anterior part. The ventral parts of the coxae are reddish brown; their sides are dark red. The other leg segments are of yellowish brown to reddish color and bear blackish to reddish brown rings. In all legs the tibia is darkened (black to brown), but it bears three dorsal rings.

The anterior yellowish brown part of the abdomen bears a fine longitudinal band, which originates as a bright round mark near the anterior edge; the remaining parts of the abdomen are more or less unicolor dark. Very pale lineate, rhombiform, gray markings are visible above these patterns. The abdomen is covered with black setae (Fig. 509). The pink to dark brown venter bears a dark band and a row of bright round spots on its sides. The posterior spinnerets are blackish brown. Epigyne like Fig. 510.

Habitat: In grass and leaf litter.

Holotype: Zestaponi, 20. VII. 1939. The male is unknown.

Taxonomy: Platnick (2013): *Pardosa alasaniensis* Mcheidze, 1997.

17. *Pardosa caraiensis* Mcheidze, 1946

Description: ♀ Carapace length 2.4 mm, width 1.8 mm; abdomen length 2 mm, width 1.4 mm. The brown carapace bears orange-yellow median and lateral longitudinal bands. The central part of the broad median band is broadened. The eye region is black. The clypeus and chelicerae are yellow; the edge of the cheliceral furrow bears three teeth. The yellow sternum bears bright V-shaped markings and longitudinal gray marks near the coxae.

The abdomen bears a pink-brown antero-dorsal mark, a blunt rhomboid mark, black spots and small marks on the sides; whereas its posterior part bears a longitudinal band with four pairs of lateral lobes (Fig. 511). The epigyne bears a brown-red plate (Fig. 512).

Habitat: In moist habitats in grass and leaf litter.

Distribution: Gardabani, Telavi (Mcheidze 1946). Georgian endemic species.

Taxonomy: Platnick (2013): *Pardosa pontica* (Thorell, 1875).

18. *Pardosa vittata* (Keyserling, 1863)

Description: Female carapace length 3.3 mm, width 2.6 mm; abdomen length 4.5 mm, width 3 mm. Male carapace length 2.8 mm, width 2 mm.

♀ The brown or black carapace bears a yellow median band and a bright yellow lateral band next to a black marginal band covered with bright setae.

The eye region is covered with yellow setae; the AER is straight. The sternum is brown to shingle-colored. The chelicerae are yellow. The bright yellow legs bear a dentate longitudinal bright median band (Fig. 513).

The abdomen bears two black dorsal bands situated close to each other and with dentate outer edges; these bands merge in the posterior part. Epigyne like Fig. 514.

♂ The black carapace bears very dark and sometimes poorly visible longitudinal bands. The black, brownish or olive chelicerae bear silky black setae. The abdomen bears black bands. The extremities are bright yellow; the palpi are black.

Ecology: In moist forest habitats in grass, sometimes carrying their egg sacs.

Distribution: Greece, Damascus, Italy, Switzerland, Hungary, in the former USSR in the Transcaucasus (Kusari) and the North Caucasus. **In Georgia:** Telavi (near Tsminda Giorgi Monastery), Gurdzhaani (Akhtala), Bakuriani, Akhaltsikhe, Zekari, Dusheti (Mcheidze 1943–1950). First record in Georgia.

Taxonomy: Platnick (2013): *Pardosa vittata* (Keyserling, 1863).

7.21.5 *Trochosa* C. L. Koch, 1847¹²⁰

Key to species

Note: *Trochosa spinipalpis* is not keyed.

- | | | |
|------|--|------------------------------------|
| 1(2) | Sternum, coxa and venter in front of the epigastric furrow black. Female body length 13–14 mm, male 10 mm. | 1. <i>T. dimidiata</i> (p. 301) |
| 2(1) | Sternum, coxa and venter in front of the epigastric furrow brown, yellowish or of dark color. | 3 |
| 3(8) | Males. | 4 |
| 4(5) | Central-outward parts of the chelicere near the claw toothed or with a mound (Fig. 515). Body length 7–8 mm. | 2. <i>T. ruricola</i> (p. 301) |
| 5(4) | Chelicere without teeth or mound near the claw. | 6 |
| 6(7) | Teeth of the inner edge of cheliceral furrow of similar length. Carapace in lateral view high and concave. | 3. <i>T. terricola</i> (p. 303) |
| 7(6) | Teeth of the inner edge of cheliceral furrow not of equal length. Carapace in lateral view flat and with a straight edge. | 4. <i>T. cachetiensis</i> (p. 303) |
| 8(3) | Females. | 9 |

¹²⁰Mcheidze (1997) sic '1848', lapsus.

- 9(10) Longitudinal gray mark of the median carapace band reduced to three pairs of small-sized marks and spots, sometimes only two pairs remaining. Lateral edges of the epigyne not connected to each other in the anterior part and their longitudinal line forming an angle (Fig. 521). Epigynal plate sharply curved.
 4. *T. cachetiensis* (p. 303)
- 10(9) Markings of the carapace and epigynal structure not like this. 11
- 11(12) Lateral edges of the epigyne somewhat approximated and in the distal part \perp -like as well with two protuberances between the median plate and the sides (Fig. 518). ... 3. *T. terricola* (p. 303)
- 12(11) Not with protuberances between the \perp -like median plate and the sides. (Fig. 516). Body length 13–15 mm.
 2. *T. ruricola* (p. 301)

1. *Trochosa dimidiata* Thorell, 1875

Description: Female body length 12.5–14 mm; male 9–10 mm. Sternum and venter (including the part in front of the epigastric furrow) are black.

Habitat: In forests and on forest edges in grass.

Distribution: Middle and lower River Volga, Orenburg region, Central Asia, Transcaucasus (Kusari). **In Georgia:** Lagodekhi (Mcheidze 1954). First record in Georgia.

Taxonomy: Platnick (2013): *Mustelicosa dimidiata* (Thorell, 1875).

2. *Trochosa ruricola* (De Geer, 1778)

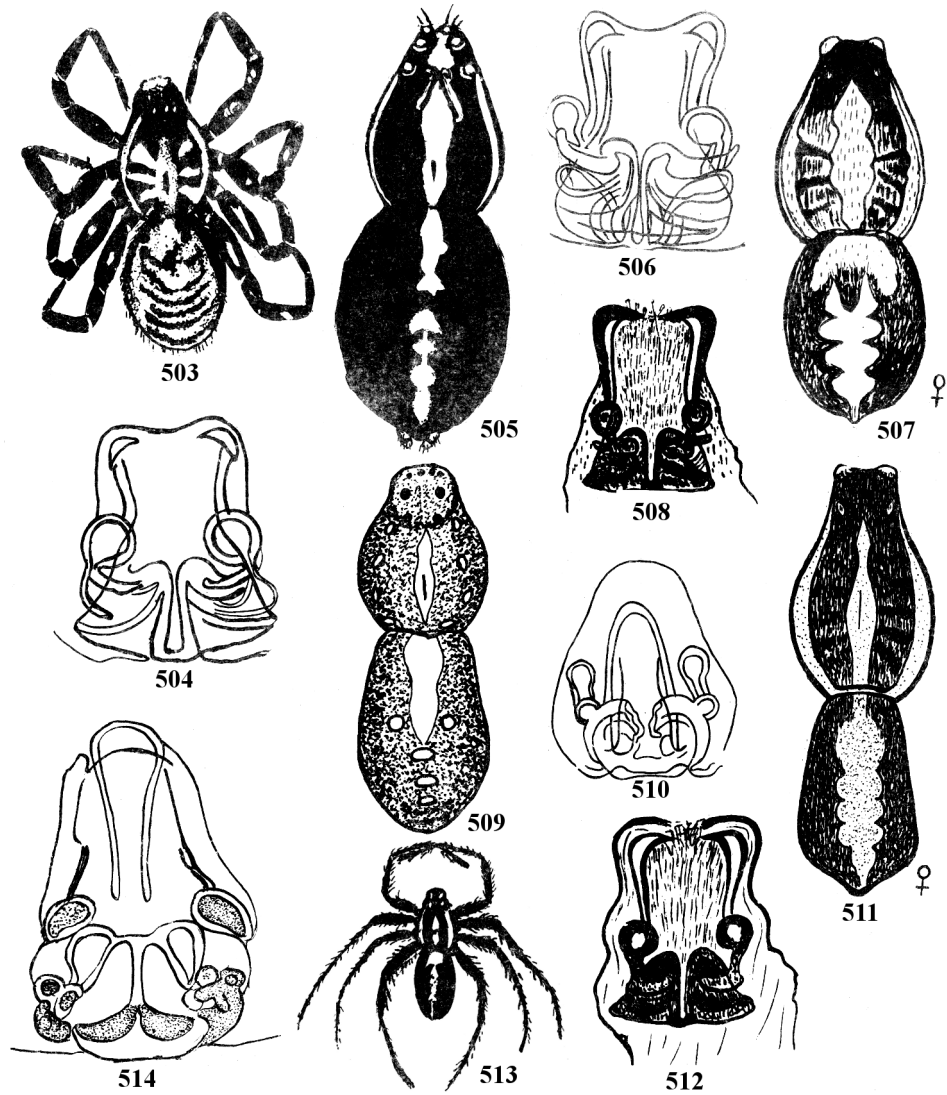
Description: Female body length 13–15 mm; male 7–8 mm. The median carapace band is narrowed in front of the cephalic region and again broadened in its anterior part. Two parallel dark bands are situated near the broadened part of the median band. The bases of the cheliceral claws are armed with small blunt protuberances (Fig. 515). The legs bear poorly visible or no rings.

The light brown abdomen bears bright and dark, small and fine marks and is covered with gray, red and, on the venter yellowish white, setae. Besides, its sides bear two longitudinal rows of dark spots (Fig. 517). The area in front of the epigastric furrow is brown.

Habitat: Often on the shores of water bodies under rocks and in mosses.

Distribution: Palearctic (except the extreme North), in the former USSR in Kazakhstan (Almaty), Siberia and Ussuri Region. **In Georgia:** Sukhumi (Schmidt 1895), Tbilisi, Batumi, Zugdidi, Tsebelda (Simon 1899), Tbilisi (Ortatshala, Didube), Gori, Ateni Valley, Lagodekhi (Mt. Ninigori), Batumi (Botanical Garden), Khulo, Shovi, Zestaponi, Tqibuli (Mcheidze 1943–1961).

Taxonomy: Platnick (2013): *Trochosa ruricola* (De Geer, 1778).



Figs. 503–514. Lycosidae, *Pardosa* (in part.). *P. monticola*: 503 – habitus; 504 – epigyne. *P. ninigoriensis* sp. n.: 505 – habitus; 506 – epigyne. *P. colchica*: 507 – habitus; 508 – epigyne. *P. alasaniensis*: 509 – habitus; 510 – epigyne. *P. caraiensis*: 511 – habitus; 512 – epigyne. *P. vittata*: 513 – habitus; 514 – epigyne.

3. *Trochosa terricola* Thorell, 1856

Description: Female body length 10–12 mm; male 8–10 mm. The brown carapace of these median-sized spiders bears a bright median band and a thin black fringe along the edges. The bases of the eyes are pigmented black. Sternum and legs are yellow; the femur bears gray rings.

The brown abdomen bears yellow markings and a lanceolate mark in its anterior part. The posterior part of the abdomen bears a wave-like band and five pairs of small marks, which are arranged like branches on a spruce tree (Fig. 519). The venter is gray-yellow. The epigyne bears a \perp -shaped plate (Fig. 518). The male palpus bears a branched chitinized appendage.

Habitat: In forests on the ground in dry, shady places (under rocks, in mosses, meadows, between bushes), sometimes between the roots of large trees.

Distribution: Palearctic (except North Africa, China, Japan), in the former USSR in the northern tundra and forest tundra, Kyrgyzstan, Siberia, Lake Baikal and North Caucasus. **In Georgia:** Lagodekhi (Schmidt, 1895), Lagodekhi (Shromi Valley), Tshiauri Forest, Adigeni, Varkhani (Mcheidze 1971).

Taxonomy: Platnick (2013): *Trochosa terricola* Thorell, 1856.

4. *Trochosa cachetiensis* Mcheidze, 1997

Description: Female carapace length 4.9 mm, width 3.1 mm; abdomen length 4.4 mm, width 4.8 mm.

The carapace and abdomen are both of light brown color, sometimes gray. The carapace of the male bears two pairs of yellow spots on the bright longitudinal band, whereas the female has three pairs instead. Furthermore, a dark transverse mark is situated in the cephalic region next to the bright band.

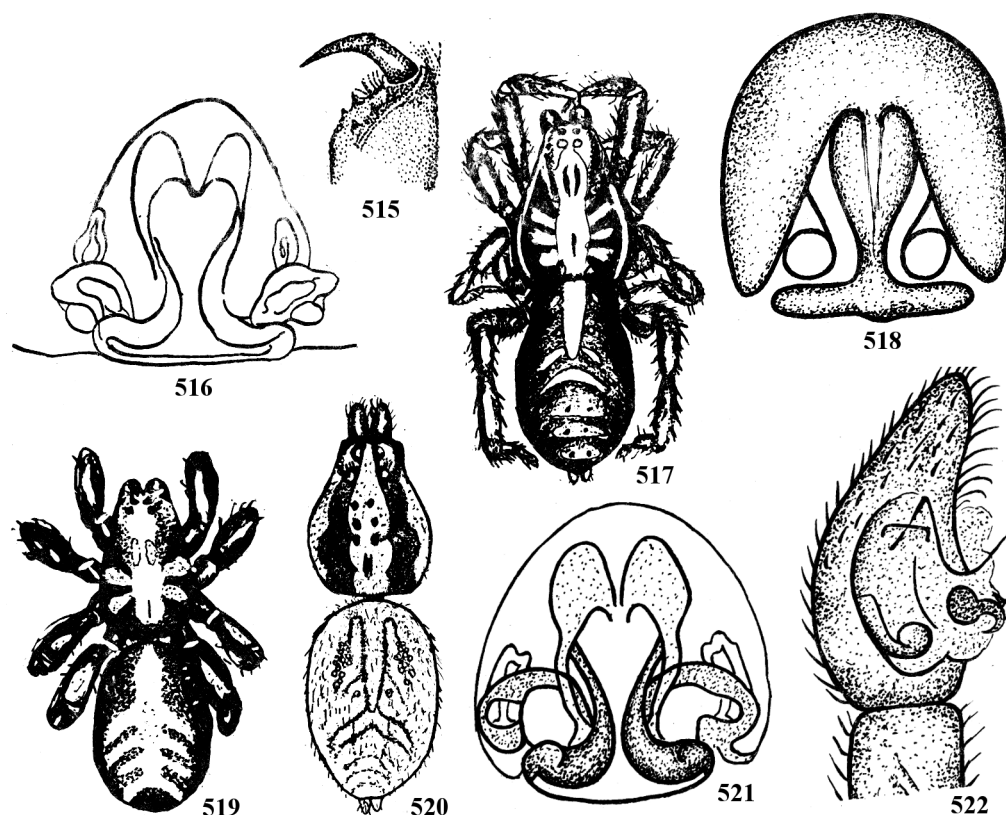
The height of the chelicerae exceeds the height of the carapace. The inner edge of the cheliceral furrow bears three uniformly spaced teeth, of which the middle tooth is the largest and the apical tooth is the smallest. The sternum is bright yellow. The legs are annulated, especially the femur.

The anterior half of the dorsum bears a bright longitudinal wedge-like band, which is characteristic for all species in this genus; the posterior half bears lateral spot-like marks. Carapace and abdomen like Fig. 520. Epigyne like Fig. 521. Male copulation apparatus like Fig. 522.

Habitat: In forests under rocks.

Material: Lagodekhi Reserve, VIII 1938, 1 ♀, 1 ♂. Keda (Agara, Zendidi) VIII 1939, 2 ♀.

Taxonomy: Platnick (2013): *Trochosa cachetiensis* Mcheidze, 1997.



Figs. 515–522. *Lycosidae, Trochosa*. *T. ruricola*: 515 – chelicere; 516 – epigyne; 517 – habitus. *T. terricola*: 518 – epigyne; 519 – habitus. *T. cachetiensis*: 520 – habitus; 521 – epigyne; 522 – male palpus.

5. *Trochosa spinipalpis* (F. O. P.-Cambridge, 1895)

Description: Female body length 9–11 mm; male 8–9 mm. The metatarsus bears four apical spines. The palpus tibia bears numerous densely standing spines. In males the inner edge of the cheliceral furrow bears three teeth. The metatarsus and tarsus of the bright legs are darkened.

Habitat: In moist places in mosses, meadows, mires and near irrigation canals.

Distribution: Estonia, Smolensk, Voronezh Region, Volga River mouth. In Georgia: Adigeni (Mcheidze 1971). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Trochosa spinipalpis* (F. O. P.-Cambridge, 1895¹²¹).

¹²¹Frederick Octavius Pickard-Cambridge (1860-1905), the nephew of Octavius Pickard-Cambridge (1828-1917), cf. Savory (1961).

7.21.6 *Xerolycosa* Dahl, 1908

Key to species

- 1(2) ♀ Body length 9–11 mm (Fig. 523). Epigynal openings wider than long and situated to the sides of the epigynal plate. Carapace with a median pale reddish gray band; with black sides or blackish with white sprinkles.
 ♂ Body length 5–7 mm. Bulbus with lamelliform apophysis bearing 2–3 small but well-developed appendages, resembling teeth or humps. 1. *X. nemoralis* (p. 305)
- 2(1) ♀ Body length 6–8 mm. Epigynal openings triangular and situated to the sides of the epigynal plate; almost as long as wide (Fig. 525). Carapace with a few small pale marks next to the median band.
 ♂ Body length 3.5–5.5 mm. Lamelliform bulbus apophysis appendage not well developed, sometimes not visible at all (Fig. 524). 2. *X. miniata* (p. 305)

1. *Xerolycosa nemoralis* (Westring, 1861)

Description: Female body length 9–10 mm; male 5–6 mm.

♀ The carapace bears a pale reddish gray band; its sides are blackish or black and with white sprinkles. The black carapace slope bears a marginal zigzag band with white setae. The broad median band is whitish pink. The sternum is black.

The dorsum is gray-white or yellow with a broad pale median band, which often merges with a horseshoe-shaped mark in its anterior part. A row of black or white spots is situated behind this region (Fig. 523). The epigynal plate consists of two oval plates.

♂ The femora of the brown or reddish legs are very dark (especially in femur I).

Habitat: In forest habitats on the ground and under rocks.

Distribution: Palearctic (except North Africa), in the former USSR in Turkmenistan, Siberia, Lake Baikal Region and Kamchatka. **In Georgia:** Kazbegi, Tusheti, Borjomi, Bakuriani, Bakhmaro, Mtirala, Keda, Mtsvane Kontskhi (1939–1965). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Xerolycosa nemoralis* (Westring, 1861).

2. *Xerolycosa miniata* (C. L. Koch, 1834)

Description: Female body length 6.5–7 mm; male 5–5.5 mm.

♀ The brownish black carapace bears a shining broad longitudinal band. The sternum is shining black. The brown legs have blackish femora and dark rings on the tibiae.

The black dorsum bears brown markings, including a lanceolate mark in its anterior third. Two rows of lateral marks originate behind this mark and merge in the posterior part (Fig. 526). The venter is grayish yellow. The dark brown epigyne bears two round white openings (Fig. 525).

♂ The male palpus is thin, its bulbus bears a black hook-like appendage in the bulged part (Fig. 524).

Habitat: This steppe species lives in grass and in small hollows.

Distribution: Western Europe, in the Central and Southern European parts of the former USSR, Crimea, Transcaucasus, Kazakhstan. **In Georgia:** Pasaunari, Akhaltsikhe, Tatanisi (Mcheidze 1941). First record in Georgia.

Taxonomy: Platnick (2013): *Xerolycosa miniata* (C. L. Koch, 1834).

7.21.7 *Pirata* Sundevall, 1833

Key to species

- 1(2) ♀ Epigyne like Fig. 527. Carapace length not exceeding 2 mm.
 ♂ Tip of metatarsus I with 3–4 spines. Body length 3–4 mm. 1. *P. piccolo* (p. 306)
- 2(1) Epigyne not like this. Carapace longer. Male metatarsus with less than three spines. 3
- 3(4) ♀ Epigyne like Fig. 529. Carapace length 2.5–3 mm.
 ♂ Tip of metatarsus I with 1–2 spines. Body length 5.3 mm, carapace length 2.6–2.9 mm. 2. *P. hurkai* (p. 307)
- 4(3) ♀ Anterior part of epigynal opening partly covered with a plate (Fig. 531). Carapace length 3.3 mm.
 ♂ Tip of metatarsus I with two spines. . . 3. *P. knorri* (p. 307)

1. *Pirata piccolo* Dahl, 1908

Description: Male body length 3–4 mm. Carapace length in the female does not exceed 2 mm. The sternum bears a round lateral mark and a thin bright line (Fig. 528). The dorsal mark on the abdomen is brighter than the markings on the carapace.

Ecology: This smallest of the lycosid species lives in tree-less habitats: in the grass of open mires.

Distribution: Estonia, Gorki Region. **In Georgia:** Kelasuri, Poti, Kobuleti (Mcheidze 1959). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Piratula insularis* (Emerton, 1885). In Mcheidze (1997) author with brackets, lapsus.

2. *Piratula hurkai* Buchar, 1966

Description: Female carapace length 2.5–3 mm; male 2.6–2.9 mm.

♀ The brownish yellow carapace bears dark brown lateral bands. The eye region is black. The chelicerae are dark brown. The center of the brownish sternum bears a yellowish band. The legs are yellowish.

The blackish dorsum bears a yellowish brown wedge-shaped mark. The venter is gray-yellow; the spinnerets are yellowish brown. The epigyne has a brown area; the spermathecae and ducts are reddish brown (Fig. 529).

♂ The coloration of the males is similar to the coloration of the females, but the abdomen of the males is darker. Two rows of group-wise arranged setae on the inner bands of the wedge-shaped mark form a contrast on the dorsum. Palpus like Fig. 530.

Location: Found by Hurkai on 25 June, 1960 in grass on the shores of Lake Ritsa at 925 m a.s.l. This species was described as a new species by J. Buchar (1966). Georgian endemic species.

Taxonomy: Platnick (2013): *Piratula hurkai* (Buchar, 1966).

3. *Pirata knorri* (Scopoli, 1763)

Description: Female carapace length 3.3 mm, width 2.4 mm; abdomen length 4 mm, width 2.5 mm. Male carapace length 3.4 mm, width 2.5 mm.

♀ The brown, dark olive or often black carapace bears a well-visible broad marginal brown band, which is weakly broken. The brown median band is darker and narrowed in the cephalic region. A brown band as wide as the width of the eye region originates in the anterior part of the carapace and ends in the rear part with a sharp point. Besides, this band consists of very fine white setae.

The AE are of uniform size and form a weakly curved line. The sternum is unicolor blackish or lined with a bright longitudinal line. The chelicerae are dark. The legs are brown-olive.

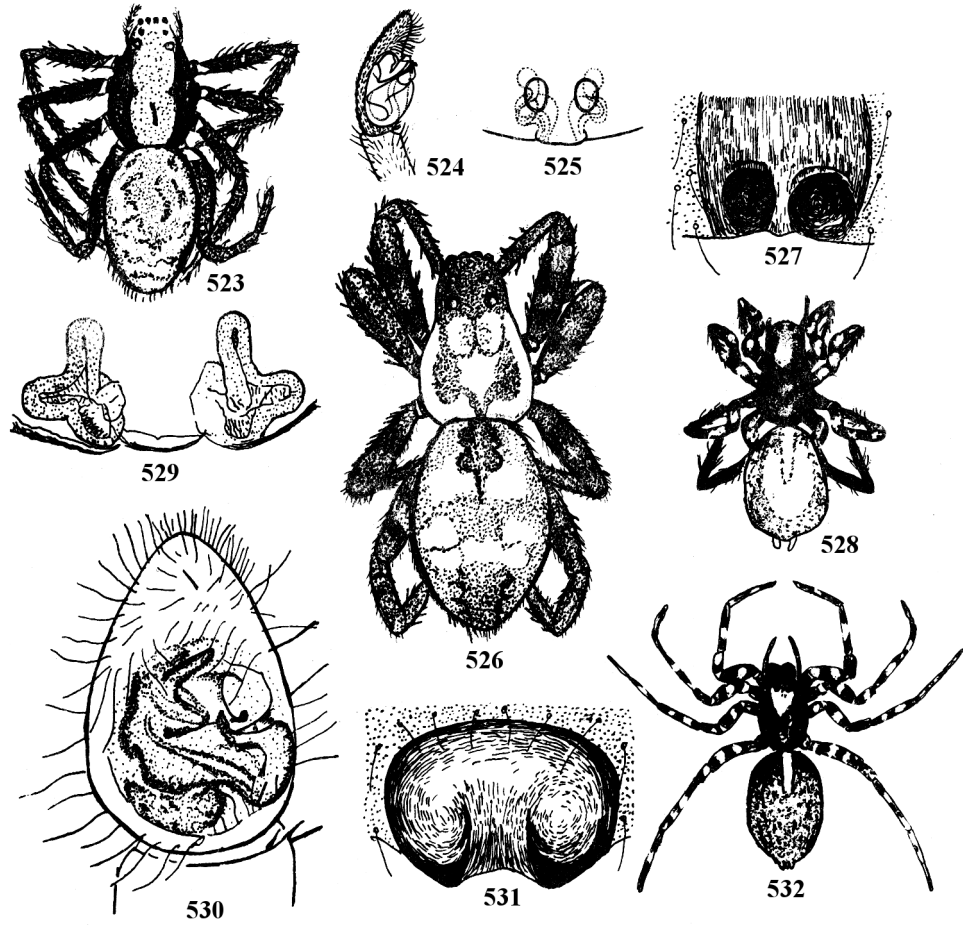
The blackish abdomen bears white setae on the sides and a lanceolate elongated band in its anterior half, which has a brown or black fringe (Fig. 532). The round epigyne has two openings (Fig. 531) with a shingle-colored fringe.

♂ The AER is weakly curved. The legs are dark red.

Habitat: On the shores of water bodies under rocks and in sand.

Distribution: St. Petersburg Region, Ukraine. **In Georgia:** Lagodekhi (Matsimi Valley), Kazbegi (Mcheidze 1953). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Piratula knorri* (Scopoli, 1763).



Figs. 523–532. Lycosidae, *Xerolycosa*, *Pirata*. *X. nemoralis*: 523 – habitus. *X. miniata*: 524 – male palpus; 525 – epigyne; 526 – habitus. *P. piccolo*: 527 – epigyne; 528 – habitus. *P. hurkai*: 529 – epigyne; 530 – male palpus. *P. knorri*: 531 – epigyne; 532 – habitus.

7.22 Pisauridae

The carapace is wider than long. The median band of the carapace is long and thin; the radial furrows are bright. The day eyes are arranged in two rows. The AER is straight, the PER is somewhat curved and has smaller eyes (*Pisaura*) or eyes larger than the ALE (*Dolomedes*). The clypeus is as wide as the width of the eye region. The sternum is as long as wide.

The chelicerae are arranged parallel and the edges of the cheliceral furrow are armed with small teeth. The long legs have thick femora and patellae; tibia and metatarsus bear thick spines. The tips of metatarsus and tarsus bear scopulae. The body and legs of the raft spider (*Dolomedes*) are covered with feathery setae. During submersion in water these setae keep the water away from the spider's body. The tarsus tips bear three claws.

The abdomen is oval. The epigyne is somewhat complex in structure and strongly sclerotized. The male copulation apparatus consists of a bulbus and a short embolus.

Four weeks after copulation in spring the females lay the eggs. In *Dolomedes* the egg sac is yellowish brown and contains 500–600 eggs. In *Pisaura* the egg sac is light gray or yellow and contains 100–300 eggs. The female carries the egg sac with its chelicerae or attached to the spinnerets.

We find these spiders near water bodies on the ground, on water plants or even within the water, making them amphibionts. On the contrary, *Pisaura mirabilis* lives in open steppe habitats. There are many species of this family in tropical countries; in total 350 species are described. In the former USSR we know five species, in Georgia three.

Key to genera

- 1(2) Inner edge of the cheliceral furrow with three teeth. ME rectangle longer than wide. PLE smaller than ALE. 1. *Pisaura* (p. 310)
- 2(1) Inner edge of the cheliceral furrow with four teeth. ME rectangle as long as wide. PLE significantly larger than ALE.
 2. *Pisaura* (p. 311)

7.22.1 *Pisaura* Simon, 1885

Key to species

- 1(2) Yellowish brown carapace with a bright yellow longitudinal median band and short white setae. Dark brown abdomen with a longitudinal band covered with white setae. Next to the longitudinal band with broad bright yellow lateral bands. Brown sternum with a longitudinal yellow band covered with white setae (Fig. 533). Epigynal plate of complex structure (Fig. 534). Male palpus like Fig. 535. Female body length 12–14 mm, male 11 mm. 1. *P. mirabilis* (p. 310)
- 2(1) Brownish yellow carapace with bright yellow longitudinal band bearing yellowish white setae. Brown abdomen with a bright longitudinal band covered with brownish yellow setae. Next to the longitudinal band with broad, white longitudinal bands. Dark brown sternum covered with white setae. Epigyne not like this (Fig. 536). Female body length 13.5 mm, male 10.5 mm. 2. *P. novicia* (p. 311)

1. *Pisaura mirabilis* (Clerck, 1757)

Description: Female body length 12–14 mm; male 11 mm. The brown carapace bears bright yellow longitudinal lines and is covered with short white setae, which stand especially dense next to the eye region. The brown sternum bears a yellow longitudinal band. The very long legs are covered with numerous spines.

The abdomen is narrowed towards its posterior end; its dorsal side is dark brown. In specimens with new skin after molting the abdomen bears two rows of yellow marks, which can be partly or entirely fused with the bright median band. The yellow lateral parts of the abdomen are densely covered with setae (Fig. 533). The epigynal plate is of complex structure (Fig. 534). Male palpus like Fig. 535.

Ecology: This species lives in sunny habitats with dense grass cover; on the forest edge, in forest meadows or between bushes. They construct silken retreats among the tips of grasses and carry the egg sac around with their chelicerae. One egg sac can include 177 eggs.

Distribution: In Mediterranean countries, China. In the European part of the former USSR, northwards up to Kaluga and in the regions of Moscow and Nizhny Novgorod (Gorki). **In Georgia:** Tbilisi (Simon 1899), Kodzhori, Manglisi, Betania, Borjomi, Tsaghveri, Abastumani, Adigeni, Aspindza, Khulo (Tago), Nakerala, Batumi (Botanical Garden), Mestia, Ambrolauri, Oni, Lagodekhi, Tshargali (Mcheidze 1941–1981).

Taxonomy: Platnick (2013): *Pisaura mirabilis* (Clerck, 1757). Mcheidze also lists the synonym *P. listeri* Scopoli, 1763.

2. *Pisaura novicia* (L. Koch, 1878)

Description: Female carapace length 5.5 mm; abdomen length 8 mm.

♀ The main color of the carapace is yellow and it is covered with yellowish white setae. The anterior part of the carapace is broad; its sides are strongly curved. Very long forward-directed spines are situated between the eyes. The cephalic and thoracic regions of the carapace are well separated from each other. The dark brown sternum is covered with white setae forming a flat heart shape.

The anterior part of the abdomen is round, its posterior part is narrowed, giving the abdomen a pointy outline. Its surface is densely covered with feathery setae and both parts are fringed with broad bands made of white setae. The venter is bright; its sides are darkened. Epigyne like Fig. 536.

♂ The red or brown carapace is covered with white setae; a reddish yellow band is visible between the eye region and the posterior end of the carapace. The border between the cephalic and thoracic regions is only weakly visible. The black sternum bears gray setae.

The dorsum is black; its anterior part is broad and dentate, its posterior part is of comparatively uniform width. The black band on the dorsum is narrower than on the carapace. The anterior part of the abdomen is round; its posterior part is narrowed. The tarsus is densely covered with short setae.

Habitat: In sunny environments with high grass and bushes, on forest meadows.

Distribution: Caucasus, Turkmenistan. **In Georgia:** Borjomi (Koch 1878), Gagra, Batumi, Zugdidi (Simon 1899), Manglisi, Poti (Mcheidze 1969)

Taxonomy: Platnick (2013): *Pisaura novicia* (L. Koch, 1878).

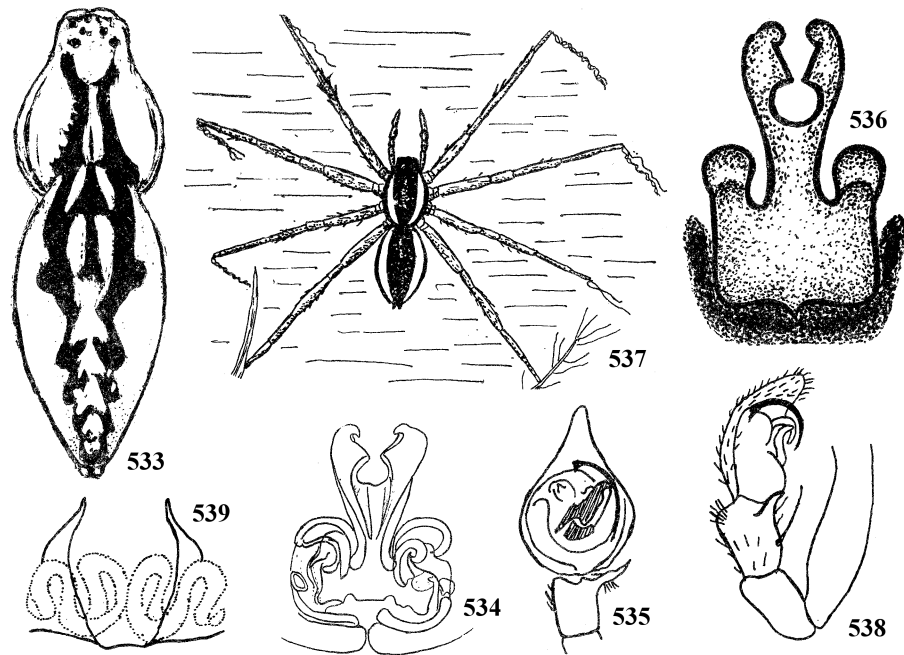
7.22.2 *Dolomedes* Latreille, 1804

1. *Dolomedes fimbriatus* (Clerck, 1757)

Description: Female body length 15–20 mm; male 10–12 mm. The sides of the brown carapace bear broad yellow bands. The brown sternum bears a long yellow line. The yellow legs bear black spines. The central part of the ventral side of the femur bears yellow marks.

The brown abdomen bears broad yellow lateral bands and sometimes two rows of small yellow dorsal marks (Fig. 537). Epigyne like Fig. 539. The male palpus tibia bears a chitinized tapering appendage (Fig. 538).

Ecology: We have to look for this species in mires and near water bodies, where reed, *Carex* and *Molinia* are abundant. This hunting spider rapidly moves on the water surface and is capable of diving into the water in times of danger. The female attaches the egg sac onto different plant stems and



Figs. 533–539. **Pisauridae, Pisaura, Dolomedes.** *P. mirabilis*: 533 – habitus; 534 – epigyne; 535 – male palpus. *P. novicia*: 536 – epigyne. *D. fimbriatus*: 537 – habitus; 538 – male palpus; 539 – epigyne.

guards it until hatching. The juveniles leave the water and live in nearby forests for one year before returning to the water after their final molt. They feed on different kinds of insects, including midges and dragon-fly larvae. Often they also feed on fish larvae.

Distribution: Palearctic (except Japan), in the European part of the former USSR, Kazakhstan, Uzbekistan, Siberia. **In Georgia:** Poti (Schmidt 1895), Kobuleti (sphagnum mire), Poti (Lake Paliastomi), Lake Bebesiri, Bakuriani (swamps and lake shores) (Mcheidze 1940–1965).

Taxonomy: Platnick (2013): *Dolomedes fimbriatus* (Clerck, 1757).

7.23 Araneidae

The broad and raised carapace bears a well-separated cephalic region and a deep median depression; radial furrows are weakly developed. The eyes are of almost uniform size and arranged in two rows; ALE and PLE stand close to one another; the ME form a trapezoid. The clypeus is narrow; the sternum is narrowed in the posterior part.

The vertical chelicerae bear thick dark claws and short thick teeth. The gnathocoxae are short and broad (only *Meta* has strongly elongated gnatho-

coxae). The male palpi are developed as copulation organs of very complex structure. The thick legs bear numerous thick spines; their tarsi bear three claws and a row of dentate spines for weaving in front of them. These are especially well developed on leg IV.

The abdomen is oval or egg-shaped, rarely elongated or united with the carapace via the petiolus (not visible from above). Tropical forms bear peculiar apophyses on the abdomen. *Cyclosa* and some *Araneus* species have 2–3 humps on their abdomen. The broad epigastric furrow bears the lung openings and an odd number of tracheal stigmata. The colulus is situated in front of the three pairs of spinnerets.

The abdomen of the female is always larger than the carapace; the dorsal markings of the abdomen can vary substantially. The abdomen of *Argiope bruennichi* bears transversal black bands on a bright yellow background. *Hypsosinga pygmaea* bears a broad longitudinal red or brown band. *Araneus diadematus* and other species bear cross-shaped marks on a dark brown background. Rarely the abdomen is unicolored.

All araneid spiders construct an orb web for catching prey; it consists of a large number of frame and radial threads coming from the hub. Their number varies according to species and can reach up to 100 threads. The hub consists of silken threads; sometimes it is entirely white.

Sexual dimorphism is weakly developed in the European araneids. Females of the tropical *Nephila* spiders are 1000–1500¹²² times larger and 50–60 times heavier than the males. Adult males do not construct webs for prey catching but search for the webs of females for mating, where they perform a mating dance. The females usually prepare 5–6 egg sacs and protect it for some days, dying thereafter.

Egg sacs come in different shapes: ball-shaped (*Araneus*), fusiform (*Cyrtarachne*), pear-shaped (*Argiope*) or lentiform (*Singa*). The color of the egg sacs varies a great deal: from golden or white in *Araneus*, *Nephila* and *Cyrtarachne* to violet in *Singa* and as dark green bands on yellow background in *Argiope bruennichi*. They hibernate as eggs or in early juvenile stages.

We find araneids in various environments: some species near the shores of water bodies, where they construct their retreats in vegetation; others prefer *Sphagnum* mires or they live on trees in forests and gardens. Species of *Meta* can be found in caves; *Zygiella x-notata* lives on the walls of buildings.

87 araneid species are recorded in the former USSR, 11 genera and 49 species in Georgia.

¹²²Sic Mcheidze (1997), probably lapsus.

Key to genera

Note: Some species are not keyed¹²³.

- 1(2) Gnathocoxae 1.5–2x longer than wide (Fig. 21 a) 1. *Meta* (p. 315)
- 2(1) Gnathocoxae not longer than wide. 3
- 3(4) Metatarsus and tarsus I longer than combined lengths of patella and tibia. PME situated behind PLE. 2. *Argiope* (p. 316)
- 4(3) Metatarsus and tarsus I not longer than patella and tibia. PME and PLE arranged in one row or PME somewhat in front of the PLA. 5
- 5(6) Cephalic region separated from the thoracic region by a deep *U*-shaped furrow. PME situated in front of the PLE. 3. *Cyclosa* (p. 318)
- 6(5) Cephalic region not separated from thoracic region by a *U*-shaped furrow. PER straight or only weakly curved. 7
- 7(8) Tibia III with two transversal rows of long weakly pubescent spines (Fig. 561). 4. *Mangora* (p. 321)
- 8(7) Leg III without such spines. 8
- 9(10) Distance between PME as long as or almost as long as the distance between PME and PLE. Labium as long as wide. 5. *Zygiella* (p. 323)
- 10(9) Distance between PME shorter than between PME and PLE. Labium shorter than wide. 11
- 11(14) Abdomen shining, legs comparatively short. Body length not exceeding 5–6 mm. 12
- 12(13) Tibia I with three pairs of ventral spines (including apical spines). Male palpus patella with two long spines. 6. *Hypsosinga* (p. 324)
- 13(12) Tibia I with four pairs of spines (including apical spines). Male palpus patella with one long spine. 7. *Singa* (p. 325)
- 14(11) Abdomen dull, legs comparatively long. Body length often exceeding 5–6 mm. 15
- 15(16) Distance between PME and ALE almost as long as PME diameter. Male palpus patella with only one long spine. . . 8. *Zilla* (p. 327)
- 16(15) Distance between PME and ALE twice as long or longer than PME diameter. Male palpus patella with 2–3 long spines. 9. *Araneus* (p. 327)

¹²³ *Singa hamata* (p. 327), *Araneus diadematus stellatus* (p. 339), *Cyrtarachne ixodoides* (p. 353) and *Larinia bonneti* (p. 353).

7.23.1 *Meta* C. L. Koch, 1836

Key to species

- 1(2) Inner edge of cheliceral furrow with two teeth. Metatarsus I with not more than 3–4 basal spines. 1. *M. segmentata* (p. 315)
- 2(1) Inner edge of cheliceral furrow with four teeth. Metatarsus I with 3–4 basal spines and 1–2 spines in the middle of the metatarsus. **3**
- 3(4) Dark brown carapace with a longitudinal black median band, which is triangular in the cephalic region. Legs brown or reddish brown, with dark rings and marks (Fig. 542). Metatarsus I with two spines in the middle. Female body length 5.5–8.5 mm, males 4.5–7.5 mm. 2. *M. merianae* (p. 315)
- 4(3) Carapace unicolor yellowish or reddish brown, without a median band. Legs unicolor reddish brown, without dark rings nor marks. Body length 10–13 mm. 3. *M. bourneti* (p. 316)

1. *Meta segmentata* (Clerck, 1757)

Description: Female body length 6.5 mm; male 4–4.5 mm. The carapace bears a black fringe and black median markings. The venter of the female has a soft integument (Fig. 540). The markings of the male abdomen are darker than in the female. The gnathocoxae are yellow or gray, with diagonal basal marks. Patella and tibia IV are distinctly shorter than in leg I.

The lateral lobes are strongly chitinized and directed backwards. Palpus like Fig. 541.

Habitat: In short grass and under rocks.

Distribution: In southern European countries, in South and North America, Japan, in the European part of the former USSR, Transcaucasus, the Far East. **In Georgia:** Tbilisi, Lagodekhi (Zawadsky 1902), Gori, Ateni Valley, Telavi, Dzhvarpatiosani, Tsivi, Lagodekhi (Mt. Ninigori), Khulo, Keda, Bakuriani, Shovi, Sukhumi (Mcheidze 1939–1974).

Taxonomy: Platnick (2013): *Metellina segmentata* (Clerck, 1757).

2. *Meta merianae* (Scopoli, 1763)

Description: Female body length 5.5–8.5 mm; male 4.5–7 mm (Fig. 542). The dark carapace bears a black median band, which is sometimes broadened in the cephalic region and triangular.

Ecology: This troglophilic species can often be found outside of caves in cellars, artesian wells, underground walkways, rock crevices, mines, tunnels. It does not proceed very deep into caves (similar to hygrophilic species); instead it settles near the cave entrance.

Distribution: In many caves in Europe: Germany, Poland, Switzerland, France, the Balkans, Turkey, Algiers, Yugoslavia, in the former USSR in Gorki Region, Crimea, Krasnodar. **In Georgia:** Adzaba, Kelasuri, Tsqaltubo, Tarkiladze Cave (Charitonov 1947), Tqibuli (Dzevrula Cave), Kortskhali (based on material collected by R. Dzhanashvili) (Mcheidze 1970).

Taxonomy: Platnick (2013): *Metellina merianae* (Scopoli, 1763).

3. *Meta bourneti* Simon, 1922

Description: Carapace length 4–5.7 mm, abdomen length 7.5 mm. Carapace and legs are orange-brown. The abdomen is unicolor gray; its posterior part is darker. The bright outlines of a curved band are hardly visible because they are covered by reddish-brown setae.

The inner edge of the cheliceral furrow bears four teeth; the basal tooth is somewhat larger than the others. The outer edge bears three teeth. The legs are long.

A dark lancet-shaped mark is visible in the central part of the abdomen and a small number of white scales is distributed on the dorsum.

Habitat: Only in caves (eutrogllobiotic).

Distribution: Yugoslavia, in the former USSR in the Crimea (Zedakizilkoba). **In Georgia:** Adzaba, Kelasuri (Charitonov 1947).

Taxonomy: Platnick (2013): *Meta bourneti* Simon, 1922.

7.23.2 *Argiope* Audouin, 1826

Key to species

- 1(2) ♂ Dentate bulbus apophysis armed with a spiniform appendage not touching the upper apophysis (Fig. 543). Body length almost 4 mm.
 ♀ Light-yellow abdomen with transversal sharp black bands (Fig. 544). Body length 11–14 mm. 1. *A. bruennichi* (p. 316)
- 2(1) Structure of the lower bulbus apophysis of the male and female abdomen not like this.
 ♂ Lower bulbus apophysis armed with a long curved appendage touching the upper apophysis. Body length almost 4 mm.
 ♀ Abdomen egg-color-white, lacking transversal black bands; its sides deeply cut. 2. *A. lobata* (p. 317)

1. *Argiope bruennichi* (Scopoli, 1772)

Description: Female body length 19 mm, male 5.5 mm. The broad and flat carapace is yellowish with a darkened cephalic region and a broad dark band along the sides. The carapace is densely covered with shining white setae,

causing a silvery white coloration in the living spider. The black sternum bears white spots. The brownish or reddish yellow legs bear black rings or marks.

The large elongated abdomen has a narrowed posterior end. The dorsum is shining yellow with transversal black bands, giving it an appearance similar to vespid wasps (Fig. 544). The epigyne bears a triangular plate, which is narrow in its central part (Fig. 545). The male palpus bears a strongly dentate lamelliform appendage (Fig. 543).

Ecology: This sedentary and slow-moving spider species constructs an orb web for catching prey, mostly in bright sunny places in high grass, on bushes and in tea and citrus plantations. The web is very large and bears well-visible stabilimenti (Fig. 546, 547). If the web is damaged during prey catching, the spider destroys the web and weaves a new one during the following night. This behavior is especially developed in females.

The males are considerably smaller than the females. At the end of July we do not find males in large numbers anymore but the female starts preparing its egg sac. This sac is earth-colored and is suspended from plant stems and leaves. It is difficult to find this egg sac because it is well-camouflaged above the substrate. One female can prepare 3–4 egg sacs.

These spiders feed on large insects: butterflies, grasshoppers, beetles, true bugs and others, waiting for them in the web or a retreat. Pompilid and vespid wasps are the most important enemies of this *Argiope* species.

Distribution: In the central and especially the southern part of the Palearctic, Indonesia, Central Africa, Mediterranean and eastwards through Central Asia to Japan. Northwards reaching Kiev, Voronezh, Southern Urals. In Azerbaijan in Kakhi and Zakataly. **In Georgia:** Lagodekhi (Zawadsky 1902), Sukhumi (Spasski 1937), Western as well as Eastern Georgia, Telavi, Gurdzhaani, Signaghi, Lagodekhi, Shiraki (Kasri River), Aspindza, Akhaltsikhe.

Taxonomy: Platnick (2013): *Argiope bruennichi* (Scopoli, 1772). Mcheidze also lists the synonym *A. fasciata* (Fabricius, 1775).

2. *Argiope lobata* (Pallas, 1772)

Description: Female carapace length 8.5 mm, width 7 mm; abdomen length 17.5 mm, width 14 mm. Male carapace length 2.9 mm, width 2.5 mm; abdomen length 3.7 mm, width 1.6 mm.

♂ Habitus like Fig. 548. The light brown-yellow carapace is covered with fine white setae. The cephalic part is strongly narrowed and separated from the thoracic part by two sharp brown furrows. The thoracic part bears broad longitudinal depressions, from which three pairs of yellow lines radiate towards the sides. The sternum is light yellow. The brownish yellow or yellowish black legs bear reddish brown rings.

The flat and broad abdomen is pale white or buckskin yellow; its anterior

part is blunt. The sides of the abdomen are indented, forming three blunt lobes, with each lobe consisting of a smaller anterior lump and a larger posterior lump.

♣ The light yellow carapace is covered with fine whitish setae. A black line extends from the central indentation of the carapace. The thoracic part bears a broad brownish black band, which is somewhat broadened in its anterior part.

The light yellow and weakly conical chelicerae have dark claws. The coxa of the light yellow palpus is very yellow. The reddish brown copulation apparatus bears black spots. The short labium is yellowish white. The elongated heart-shaped sternum bears a broad median white band and is yellow-brown on the sides.

The abdomen is elongated oval, except the sides. The white dorsal part bears two elongated light brown bands, which are narrowed in the frontal part but broadened and stand closer to each other in the rear part. The outer edge of both sides is lined with a gray-black line, forming four shallow arches. The sides and the posterior part of the abdomen around the spinnerets bear a brown-black wave-like venation. A broad median black band and similarly sized brown marks are recognizable on the venter. A gray-yellow band surrounds the spinnerets.

Habitat: In open steppe and semideserts.

Distribution: In the central and especially the southern parts of the Palearctic, very abundant in the Mediterranean region. In the eastern European part of the former USSR. **In Georgia:** Ksani, Tbilisi (Zawadsky 1902), Tbilisi (on southern slopes of the Botanical Garden), Betania, Kodzhori, around Tsiteli Khidi (= Red Bridge, one specimen at the border to Azerbaijan) (Mcheidze 1940–1950).

Taxonomy: Platnick (2013): *Argiope lobata* (Pallas, 1772). Mcheidze also lists the synonym *A. sericea* Olivier, 1789.

7.23.3 *Cyclosa* Menge, 1866

Key to species

- 1(2) Posterior abdomen part with three tubercles, anterior part with two additional tubercles (Fig. 549). Female body length 4–7 mm. In males femur IV with two spines; body length 3–5 mm. 1. *C. oculata* (p. 319)
- 2(1) Posterior abdomen part round or with a single conical tubercle (Fig. 552). Male femur IV without spines. 3
- 3(4) Black sternum with yellow marks on the edge: one anterior transversal, one apical and two lateral marks. Female body length 4–7 mm, male 3.5–5 mm. 2. *C. sierrae* (p. 319)

- 4(3) Sternum entirely black, without yellow marks on the edge. Female body length 4.5–7.5 mm, male 3–5.5 mm. 3. *C. conica* (p. 321)

1. *Cyclosa oculata* (Walckenaer, 1802)

Description: Female body size 5.5–6 mm; male 4 mm. Carapace and sternum brownish black and with reddish marks near the edges. Three tubercles are well visible on the posterior end of the abdomen; the central tubercle consists of two tubercles (Fig. 549). Two additional smaller tubercles are situated on the anterior part of the abdomen.

The yellowish gray dorsum bears dark markings, which in the anterior part consist of cross-like marks; the posterior part bears a leaf-shaped mark. Epigyne like Fig. 551. Male palpus like Fig. 550.

Habitat: In dry and sunny steppe habitats with sparse vegetation.

Distribution: Southern countries of Western Europe, USA, Southern Africa, Asia, China, in the European part of the former USSR, Mikhailovski Pass (Spassky 1937), Transcaucasus. **In Georgia:** Kobuleti, Tbilisi (Zawadsky 1902), Sukhumi, (Spassky 1937), Poti, Batumi, Betania (Mcheidze 1950, 1962).

Taxonomy: Platnick (2013): *Cyclosa oculata* (Walckenaer, 1802).

2. *Cyclosa sierrae* Simon, 1870

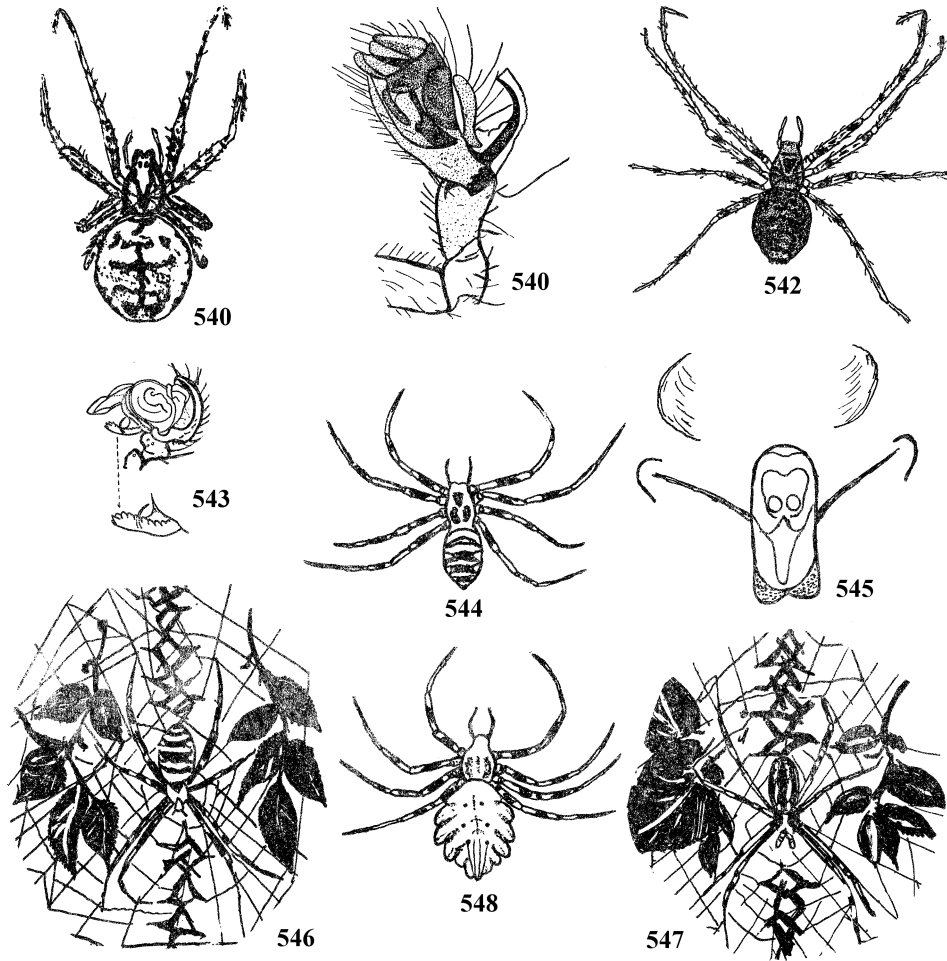
Description: Female body size 4–7 mm; male 3.5–5 mm. The anterior part of the carapace is narrowed; the posterior part is divided by a deep fork-shaped furrow. The dark brown shining carapace is covered with long white setae, which are not visible in frontal view. The sternum is black, sometimes dark brown. The reddish brown chelicerae are bulged. The legs are pale yellow and bear a varying number of rings, the femur tips are black.

The abdomen bears one somewhat prismatic tubercle (Fig. 553). The dark brown or black abdomen bears three broad whitish bands in its anterior part; these bands approximate or merge in the central and posterior part, reaching the terminal tubercle. In frontal view these bands are wave-like and cut or broken by black lines in the central part. The tubercle is decorated with thin white bands.

The anterior part of the abdomen bears white spots of varying shapes, the sides bear stained white spots (Fig. 552), forming a triangular mark in front of the spinnerets. The venter is dark brown or black. The abdomen is divided by a horizontal white band. The epigyne is formed like a transversal tubercle, which is wider than long.

Habitat: In mountain habitats in high grass, bushes, woody plants on twigs in an orb web.

Distribution: Southern Europe, Syria. **In Georgia:** Telavi (Tsivi), Manglisi, Mestia (Mcheidze 1938, 1941). First record in the former USSR.



Figs. 540–548. *Araneidae*, *Meta*, *Argiope*. *M. segmentata*: 540 – habitus; 541 – male palpus. *M. merianae*: 542 – habitus. *A. bruennichi*: 543 – male palpus; 544 – female habitus; 545 – epigyne; 546, 547 – web with stabilimentum (dorsal and ventral view). *A. lobata*: 548 – habitus.

Taxonomy: Platnick (2013): *Cyclosa sierrae* Simon, 1870¹²⁴.

3. *Cyclosa conica* (Pallas, 1772)

Description: Female body length 5.5–7.5 mm; male 4.5 mm.

♀ The carapace is red, the sternum is black. The grayish abdomen bears a black cross mark and leaf-shaped markings in its anterior part (Fig. 554, 555). The black venter bears a broad semilunar mark in its posterior part. Epigyne like Fig. 557.

♂ The coloration of the males is darker than in females. The markings on the dorsal part of the abdomen are diffuse and only a bright band is visible on the sides. Palpus like Fig. 556.

Ecology: This characteristic forest species mostly lives in shady habitats with high herb vegetation. It constructs its web on the lower dry branches.

Distribution: Europe and North America. Everywhere in the former USSR, in Azerbaijan in Kakhi and Zakataly. **In Georgia:** Tbilisi, Pshavi, Vakiri, Lagodekhi (Tshiauri) (Zawadsky 1902), Manglisi, Telavi, Mestia (Mcheidze 1940–1957).

Taxonomy: Platnick (2013): *Cyclosa conica* (Pallas, 1772). In Mcheidze (1997) author without brackets, lapsus.

7.23.4 *Mangora* O. P.-Cambridge, 1889

1. *Mangora acalypha* (Walckenaer, 1802)

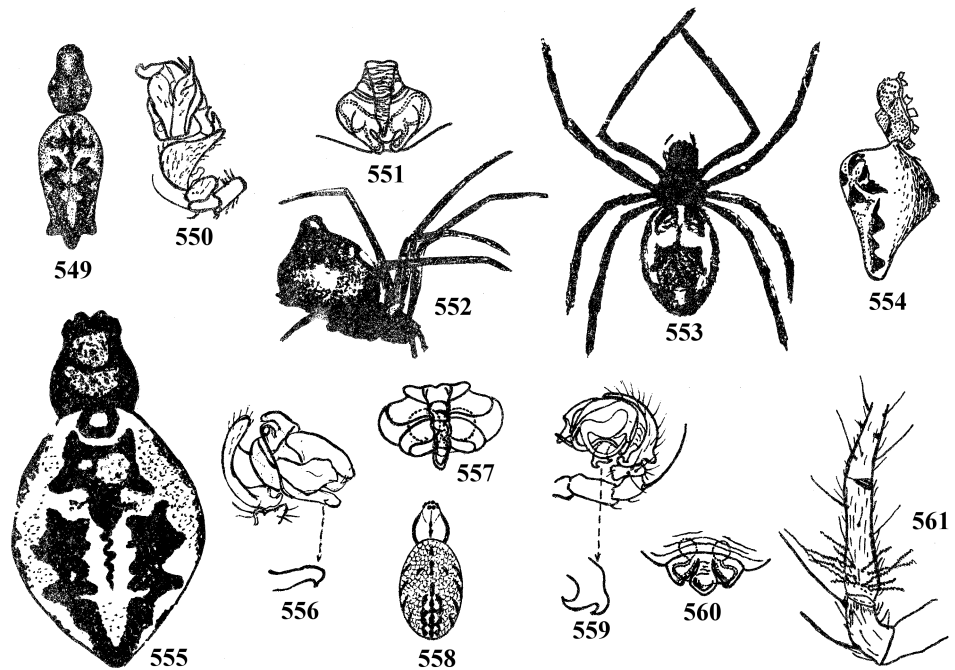
Description: Female body length 5.5 mm; male 3.5 mm. The yellowish carapace bears a dark longitudinal band and a dark fringe. The sternum is black. Tibia III bears two transversal rows of long setae (Fig. 561). The white or yellowish abdomen bears three rows of black marks, which can be merged forming one broad band (Fig. 558). The black venter bears two bright longitudinal marks. Epigyne like Fig. 560. Male palpus like Fig. 559.

Ecology: In broad-leaved and coniferous forests and orchards (plum, quince, apple, hazelnut) in a web on leaves and twigs, on bushes and in high grass in tea and citrus plantations. They feed on pest insects, especially aphids.

Distribution: Palearctic, in the European part of the former USSR south of the forest tundra. **In Georgia:** Kutaisi, Gelati (Kulczyński 1895), Tbilisi, Lagodekhi, Manglisi (Zawadsky 1902), Sukhumi (Spassky 1937). From the Black Sea coast to the high mountains of Kazbegi, Mamisoni Pass, Svaneti, Tusheti (1937–1979).

Taxonomy: Platnick (2013): *Mangora acalypha* (Walckenaer, 1802).

¹²⁴In Mcheidze (1997) sic: '*Cyclosa cierrae*' (lapsus) and author in brackets.



Figs. 549–561. Araneidae, *Cyclosa*, *Mangora*. *C. oculata*: 549 – habitus; 550 – male palpus; 551 – epigyne. *C. sierrae*: 552 – lateral habitus; 553 – dorsal habitus. *C. conica*: 554 – lateral habitus; 555 – dorsal habitus; 556 – male palpus; 557 – epigyne. *M. acalypha*: 558 – habitus; 559 – male palpus; 560 – epigyne; 561 – Tibia III.

7.23.5 *Zygiella* F. O. P.-Cambridge, 1902

Key to species

- 1(2) Sternum in males and females entirely dark brown or black (Fig. 562). Body length 4–5 mm. 1. *Z. montana* (p. 323)
 2(1) Sternum center yellow with a longitudinal mark or entirely black. 2. *Z. x-notata* (p. 323)

1. *Zygiella montana* (C. L. Koch, 1834)

Description: Female body length 5 mm, width 4 mm; carapace length 3 mm, width 4 mm. The main coloration is brownish yellow. The sternum is entirely dark brown or black. The dorsum bears blackish leaf-shaped marks and three pairs of longitudinally arranged spots (male and female like Figs. 562, 563). Yellowish marks are situated alongside a black band on the venter.

Habitat: In grass, on bushes, under rocks, on stone walls and walls of buildings.

Distribution: Europe, in the former USSR in Central Asia, Kamchatka.

In Georgia: Tbilisi, Telavi, Lagodekhi, Sioni, Quro (near Kazbegi), Poti (Mcheidze 1964, 1972). First record in Georgia.

Taxonomy: Platnick (2012): *Parazygiella montana* (C. L. Koch, 1834)¹²⁵.

2. *Zygiella x-notata* (Clerck, 1757)

Description: Male body length 4.5–6 mm. The carapace is finely patterned with black lines. The cephalic region is darkened, especially in the posterior part, forming a triangular mark.

The sides of the abdomen bear blackish spots and lines, which become yellow towards the ventral side. The epigynal opening is situated on a simple black plate. The tarsus of the male palpus is as long as or weakly shorter than the combined lengths of patella and tibia. The paracymbium is shortened, brown and patterned with black lines.

Habitat: In grass, under rocks; hidden during the day and active at night.

Distribution: Latvia, Ukraine. **In Georgia:** Sukhumi (Spassky 1937), Poti, Lagodekhi (Mcheidze 1940).

Taxonomy: Platnick (2012): *Zygiella x-notata* (Clerck, 1757).

¹²⁵Mcheidze also lists the synonym sic: '*Z. litterata* (Oliv., 1789)', probably lapsus.

7.23.6 *Hypsosinga* Ausserer, 1871

Key to species

- 1(2) Carapace with a sharp white longitudinal mark. Body length 2–3 mm. 1. *H. albovittata* (p. 324)
- 2(1) Carapace without white mark. 3
- 3(4) Sternum black and venter dark. Body length 2–3 mm. 2. *H. pygmaea* (p. 324)
- 4(3) Sternum yellow, reddish or auburn-brown but not as dark as venter. 5
- 5(6) Metatarsi I–IV with a thick dorsal spine. Body length 2–3 mm. 3. *H. heri* (p. 325)
- 6(5) Metatarsi I–IV without such spine. Body length 2–2.5 mm. 4. *H. sanguinea* (p. 325)

1. *Hypsosinga albovittata* (Westring, 1851)

Description: Female body length 4 mm; male 2.3 mm.

♀ The brown carapace bears a large white mark. The brown dorsum bears a large white leaf-shaped mark and a white band on the sides (Fig. 564). The black venter bears two longitudinal white bands, which merge above the spinnerets. Epigyne like Fig. 566.

♂ The black carapace bears a longitudinal white line. The almost black abdomen bears a small white mark and narrow bands on the sides. Palpus like Fig. 565.

Ecology: We find this steppe species in dry open places on large plants, where it weaves its web between twigs near the ground.

Distribution: Europe, in the former USSR in the Ukraine, around Moscow, the southern Urals, Crimea, Transcaucasus, Turkmenistan. **In Georgia:** Poti, Tshakvi, Gagra (Mcheidze 1940–1957). First record in Georgia.

Taxonomy: Platnick (2012): *Hypsosinga albovittata* (Westring, 1851).

2. *Hypsosinga pygmaea* (Sundevall, 1831)

Description: Female body length 4.5 mm; male 2–3 mm. The cephalic part of the brown carapace and the sternum are black. The bulged oval and black abdomen bears three broad white longitudinal dorsal bands (Fig. 567). The venter bears two yellow bands. The abdomen of the male is entirely black. Epigyne like Fig. 569. Male palpus like Fig. 568.

Ecology: In open parts of the steppe, on large forest meadows as well as near water bodies in grass.

Distribution: In the European part of the former USSR (except the extreme North), Turkmenistan and western Siberia. **In Georgia:** Poti, Su-

khumi (Mcheidze 1956). First record in the Transcaucasus.

Taxonomy: Platnick (2012): *Hypsosinga pygmaea* (Sundevall, 1831). In Mcheidze sic: 'Hypsosinga pigmaea Sund., 1831', lapsi¹²⁶.

3. *Hypsosinga heri* (Hahn, 1831)

Description: Female body length 5 mm; males 3.5 mm. The carapace and sternum are light brown or rose-yellow. The shining black abdomen is bulged, almost spherical; a broad shining yellow longitudinal band is situated on its dorsal part as well as two similar bands on the sides (Fig. 570). Males are entirely black. Epigyne like Fig. 572. Male palpus like Fig. 571.

Habitat: Mostly near stagnant-water bodies and in swampy habitats in webs between grass.

Distribution: Entire Europe, in the former USSR in the Ukraine, regions of Moscow and Saratov, Southern Urals, Turkmenistan and Western Siberia.

In Georgia: Poti, Kobuleti, Bakuriani (Mcheidze 1939–1940). First record in the Transcaucasus.

Taxonomy: Platnick (2012): *Hypsosinga heri* (Hahn, 1831)¹²⁷.

4. *Hypsosinga sanguinea* (C. L. Koch, 1844)

Description: Female body length 4 mm; male 2–3 mm. The carapace is reddish yellow. The sternum is brown. The dorsum of the elongated oval abdomen is somewhat flattened and reddish yellow (sometimes somewhat brownish black), bearing three longitudinal white bands. Males are entirely brownish black, sometimes with traces of a light band. Epigyne like Fig. 574; male palpus like Fig. 573.

Habitat: This steppe species also lives on forest meadows.

Distribution: Western Europe, North America, Anatolia, in the European part of the former USSR, Kazakhstan, Kamchatka. **In Georgia:** Sukhumi (Spassky 1937), Poti, Batumi (Mcheidze 1967).

Taxonomy: Platnick (2012): *Hypsosinga sanguinea* (C. L. Koch, 1844). In Mcheidze (1997) sic: '(C. L. Koch, 1845)', lapsus.

7.23.7 *Singa* C. L. Koch, 1836

Key to species

Note: *S. hamata* is not keyed.

- 1(2) Small median bulbus apophysis hook-like curved. Epigynal scapus 1.5x longer than wide. Female body length 5–6 mm, males 3–3.5 mm. 1. *S. lucina* (p. 326)

¹²⁶Mcheidze also cites the synonym sic: *H. anthrocina* (C. L. Koch, 1837), lapsi.

¹²⁷Mcheidze also cites the synonym sic: '*H. nigrifrons* C. K., 1845', lapsi.

- 2(1) Small median bulbus apophysis weakly curved (Fig. 575). Epigynal scapus not broader than its lateral plates (Fig. 575a), scapus 3x longer than wide. 2. *S. nitidula* (p. 326)

1. *Singa lucina* (Audouin, 1826)

Description: Female body length 5–6 mm; male 3–3.5 mm. In both males and females the cephalic part of the red carapace is black, especially its anterior part. In males, the inner side of tibia II bears three thick basal spines arranged in a row; the middle spine is small; the two remaining spines are long and similar to each other, except for the apical spine having a thicker base.

The dorsum bears a thin dorsal, brown or black band and three white longitudinal bands; its sides each bear three white spots as well as three small white broken marks not reaching the central white band nor the lateral edge. The middle spot is smaller than the remaining two spots and arranged transversally.

The base of the epigynal scapus is broader than the length of the scapus and of semicircular or triangular shape.

Habitat: In grass.

Distribution: Mediterranean regions, Hungary, Egypt, Palestine, in southern European regions of the former USSR, Transcaucasus (Lenkoran). **In Georgia:** Lagodekhi, Kotshalo, Aspindza (Khizabavra) (Mcheidze 1939). First record in Georgia.

Taxonomy: Platnick (2012): *Singa lucina* (Audouin, 1826). In Mcheidze (1997) sic: '(Sav. et Aud., 1825)'.

2. *Singa nitidula* C. L. Koch, 1844

Description: Female body length 5–6.5 mm; male 3.5–5 mm. The carapace is brown. The sternum is black. The elongated oval abdomen bears two broad brown bands, which are cut in the middle by a number of bright lines, which do not reach the outer edge (Fig. 576). Epigyne like Fig. 575 a. Male palpus like Fig. 575.

Habitat: In moist habitats near water bodies and swampy places.

Distribution: Asia, Cuba, in the European part of the former USSR, Siberia. **In Georgia:** Batumi (Kulczyński 1878), Kobuleti, Lagodekhi (Zavadski 1902), Sukhumi (Spassky 1937), Poti, Gudauta, Gagra (Lake Inkiti), Lagodekhi (Mcheidze 1940, 1953, 1963).

Taxonomy: Platnick (2012): *Singa nitidula* C. L. Koch, 1844. In Mcheidze (1997) sic: '(C. L. Koch, 1845)', lapsi.

3. *Singa hamata* (Clerck, 1757)

Description: Female body length 5–7 mm; male 4–5 mm. The cephalic part of the reddish brown carapace is black. The sternum is black.

The dorsum of the broad oval yellowish white or light brown abdomen bears two dark bands, which are cut in the middle by a thin light band, which somewhat merges with the light median band (Fig. 577). In both males and females tibia and patella III-IV have darkened tips, often also femora I-II.

The epigynal scapus is broader than its lateral plates and 1.5x longer than wide (Fig. 579). Male palpus like Fig. 578.

Habitat: In grass habitats, steppe, forest edges and forest meadows in webs between thick grass halms and twigs.

Distribution: In the European part of the former USSR (except the far North). **In Georgia:** Lagodekhi, Betania, Vardzia (Mcheidze 1955, 1973).

Taxonomy: Platnick (2012): *Singa hamata* (Clerck, 1757). In Mcheidze (1997) sic: '(Sav. et Aud., 1825)'.

7.23.8 *Zilla* C. L. Koch, 1834**1. *Zilla diodia* (Walckenaer, 1802)**

Description: Female body length 3.5–4 mm; male 2.5–3 mm. The shingle-colored white carapace bears a thin edge; its brown cephalic part bears a dark brown edge. The brown sternum bears a black fringe. The long legs are armed with fine long black spines. The tip of the yellowish femur is strongly darkened. The coloration of the legs of the males varies: legs I-II are much longer than the remaining legs; their claws are darkened.

The gray abdomen is stained with white spots and diagonal triangular white anterior marks (Fig. 580). The venter bears a broad black band, which is thin in its posterior part but broadened near the spinnerets and bordered with a white coloration. White spots are situated next to the spinnerets.

Habitat: The web is situated between twigs and low plants. The large web contains thick radial threads.

Distribution: Central and southern Europe, Tunis, in the former USSR in the Rostov Region, Crimea and the Transcaucasus. **In Georgia:** Manglisi (Zavadski 1902), Gudauta (Mcheidze 1966).

Taxonomy: Platnick (2012): *Zilla diodia* (Walckenaer, 1802).

7.23.9 *Araneus* Clerck, 1757

Key to species

1(50)	Males.	2
2(13)	Abdomen with two well-developed tubercles.	3

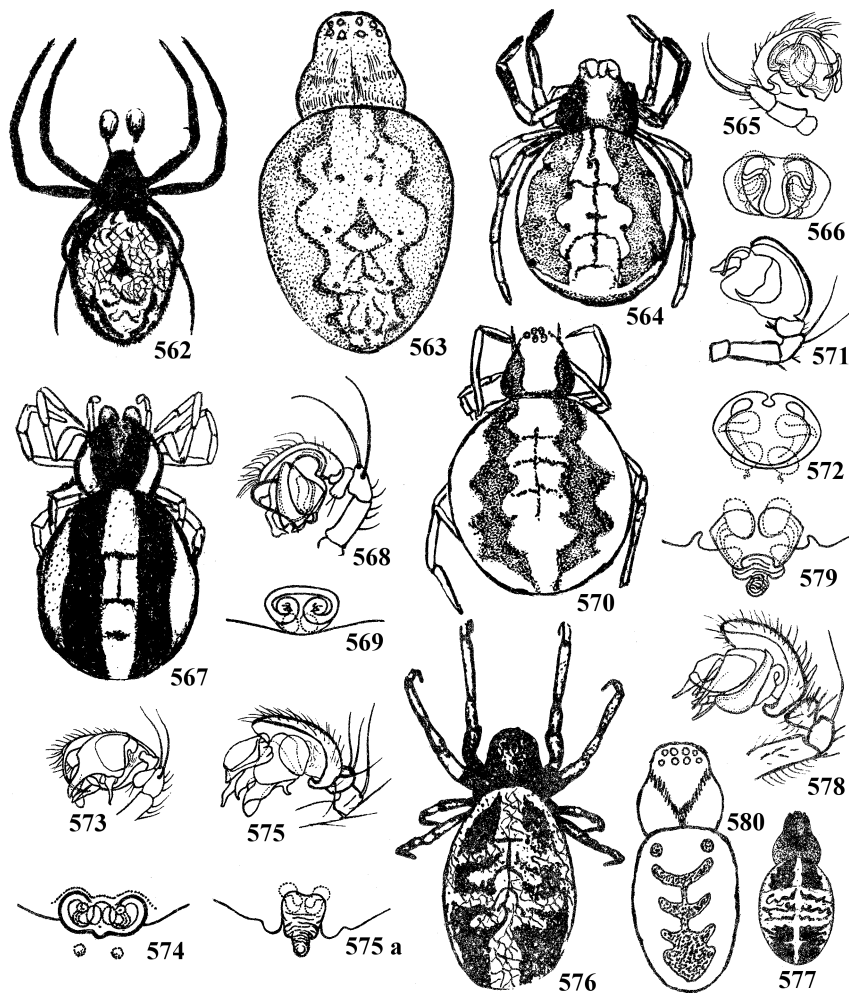
- 3(4) Ventral part of coxa I without small-sized apical tooth. Dorsum grayish brown and with complex composite markings (Fig. 581). Carapace length 5–6 mm. 1. *A. grossus* (p. 334)
- 4(3) Ventral part of coxa I with one small-sized apical tooth, sometimes weakly developed. 5
- 5(6) Tooth on coxa I small and not longer than broad (basally). Sternum unicolor dark (Fig. 584). 2. *A. nordmanni* (p. 334)
- 6(5) Tooth on coxa I large and broader than long (basally). Sternum with a large yellow mark in the center. 7
- 7(8) Apical spine on tibia II situated on a separate projection (Fig. 586). Body length 13–14 mm. 3. *A. circe* (p. 335)
- 8(7) Apical spine on tibia II not situated on a projection or on a weakly developed hump (Fig. 588). 9
- 9(10) Tibia II cylindrical, of similar width in the middle and near the tip (Fig. 588). Body length 9–10 mm. 4. *A. angulatus* (p. 335)
- 10(9) Tibia II not cylindrical. 11
- 11(12) Setae on abdomen directed in all directions. Center of abdomen divided by a sharp transversal black band in a dark anterior part and a bright posterior part (Fig. 593). Tip of bulbus median apophysis divided (Fig. 592). Body length 6.5–7.5 mm. 5. *A. bituberculatus* (p. 335)
- 12(11) Setae on abdomen directed vertically (Fig. 594). Tip of bulbus median apophysis not divided (Fig. 595). 6. *A. ullrichi* (p. 336)
- 13(2) Abdomen without two well-developed anterior tubercles. 14
- 14(25) Coxa basis II with a thick ventral tooth or tubercle. 15
- 15(22) Anterior and posterior parts of the oval abdomen narrowed. Posterior part of ME rectangle not or only weakly narrowed. 16
- 16(19) Venter coloration mainly black. 17
- 17(18) Venter area behind epigastric furrow black and with a sharply contrasting large longitudinal yellow mark. Abdomen like Fig. 597. 7. *A. ceropegius* (p. 336)
- 18(17) Venter entirely black, with weakly visible yellow sprinkles. 8. *A. victoria* (p. 338)
- 19(16) Venter coloration not mainly black. 20
- 20(21) Venter area behind epigastric furrow with a large longitudinal divided white mark; laterally from this mark with longitudinal, dentate and terminally curved marks in close vicinity to longitudinal white bands (Fig. 602). Three pairs of small white marks to the sides of the spinnerets. Male palpus like Fig. 604. 9. *A. svanetiensis* (p. 338)
- 21(20) Abdomen coloration not like this. 22
- 22(15) Abdomen shape not like this. Posterior part of ME quadrangle markedly narrower compared to AME. 23

- 23(24) Bulbus median apophysis long, twice as long as its base width (Fig. 605). Reddish-yellowish or blackish brown abdomen with white marks, forming a cross-like pattern in the anterior part (Fig. 607). Body length 6–10 mm. 10. *A. diadematus* (p. 339)
- 24(23) Bulbus median apophysis hardly longer than its base width (Fig. 611). Body length 6.5–9.5 mm. 11. *A. marmoreus* (p. 340)
- 25(14) Coxa basis II without ventral tooth or tubercle. This subspecies can be recognized by a darker posterior part of the abdomen, compared to the anterior part, in which the white mark is only vaguely developed (Fig. 612). 11 a. *A. marmoreus pyramidatus* (p. 340)
- 26(27) Abdomen broader than long (Fig. 613), brown with dark marks merging with the yellowish fringe. 12. *A. redii* (p. 341)
- 27(26) Abdomen not or only weakly broader than long. **28**
- 28(29) Anterior part of abdomen round and broad, posterior part narrowed. Abdomen covered with long dark setae and patterned with blackish-brownish or (rarely) light brown spots. Middle part of abdomen blackish, bearing two large white spots in front of the spinnerets (Fig. 617). 13. *A. dalmaticus* (p. 343)
- 29(28) Abdomen clearly longer than broad. **30**
- 30(35) Abdominal markings, if existing, consisting of a number of black spots on the sides or in the middle and always without a dentate band in its posterior part. In most specimens the abdomen is green (Fig. 619). **31**
- 31(32) Dark cymbium tip with a thumbtack-shaped broadened appendage (Fig. 621). 14. *A. cucurbitinus* (p. 343)
- 32(31) Lightly colored cymbium tip with a weakly broadened appendage. **33**
- 33(34) Dorsum light green, without black spots. Body length up to 5 mm. 15. *A. inconspicuus* (p. 344)
- 34(33) Dorsum pattern consisting of black spots. Body length 5–5.5 mm. 16. *A. alpicus* (p. 344)
- 35(30) Abdomen always with well-developed complex markings; its posterior half with a dark dentate band. Abdomen never green. **36**
- 36(43) Median bulbus apophysis raised outwards and directed perpendicularly to its surface (Fig. 624) **37**
- 37(38) Tip of median bulbus apophysis branched towards its base. Body length 7–7.5 mm. 17. *A. ocellatus* (p. 345)
- 38(37) Median bulbus apophysis almost halfway branched. **39**
- 39(42) Carapace with white setae forming bright bands on the sides and a longitudinal branched band at the median furrow. Femora with dark ventral spots. **40**
- 40(41) Coloration of body and legs reddish brown. Body length 8–11 mm (and longer) (Fig. 625). 18. *A. ixobolus* (p. 345)

- 41(40) Coloration of body and legs not like this. **42**
- 42(39) Carapace unicolor without bright bands. Femora I and II without dark spots. Body length 7–7.5 mm. . . 19. *A. cornutus* (p. 346)
- 43(36) Median bulbus apophysis tightly attached to its surface. **44**
- 44(47) Coxa I with a small apical ventral tooth. **45**
- 45(46) Abdomen round and strongly flattened (Fig. 630). Main body coloration dark gray, sometimes almost black. Femur I with a longitudinal ventro-lateral row of long spines. Palpus tip like Fig. 631. Body length 7–7.5 mm. 21. *A. umbraticus* (p. 348)
- 46(45) Abdomen oval and not flattened. Light yellow carapace with dark markings. Femur I without longitudinal ventro-lateral row of dark spines, but with long setae. Body length 4–5 mm. Male palpus like Fig. 633. 22. *A. adiantus* (p. 348)
- 47(44) Coxa I without a small ventral tooth. **48**
- 48(49) Tibia II markedly thicker than tibia I. Sternum almost black; its anterior half with a longitudinal yellow mark. Abdomen with yellowish brown and weakly dentate markings. Body length 7.5–11 mm. Male palpus like Fig. 636. 23. *A. quadratus* (p. 349)
- 49(48) Tibia II not or only weakly thicker than tibia I. Reddish yellow sternum with bright lines. Yellow or orange-yellow abdomen with longitudinal wave-like dorsal lines (Fig. 638). Body length 6.5–8.5 mm. 24. *A. alsine* (p. 350)
- 50(1) Females. **51**
- 51(63) Abdomen with two well-developed antero-dorsal tubercles. . . **52**
- 52(61) AME markedly larger than PME. Epigyne with a long scapus, which is raised above the venter surface along its entire length. **53**
- 53(58) Dark sternum with a bright band in the middle. Distance between AME larger than between PME. Long and curved scapus base not broader than its tip. **54**
- 54(55) Scapus with two cone-shaped lateral structures (Fig. 589). Body length 15–18 mm. 4. *A. angulatus* (p. 335)
- 55(54) Scapus without cone-shaped lateral structures. **56**
- 56(57) Epigyne with a narrow longitudinal opening behind the scapus. Body length 20–21 mm. 3. *A. circe* (p. 335)
- 57(56) Epigyne with a broad longitudinal opening behind the scapus (Fig. 582). Body length 22–24 mm. 1. *A. grossus* (p. 334)
- 58(53) Dark sternum without bright band. Distance between AME not longer than between PME. Scapus comparatively short, its base twice as broad as its tip. **59**
- 59(60) Scapus base 2x longer than broad (Fig. 585). 2. *A. nordmanni* (p. 334)
- 60(59) Width and length of scapus not like this. **61**
- 61(52) AME larger than PME. Epigyne with a short scapus, of which only the tip is raised above the venter surface. **62**

- 62(63) Abdomen tubercles directed in various directions and with a sharp black band behind them (Fig. 593). Body length 8–9.5 mm. 5. *A. bituberculatus* (p. 335)
- 63(62) Abdomen tubercles tapering and directed vertically upwards, lacking a black band. Scapus short (Fig. 596). **64**
- 64(71) Oval abdomen without tubercles and with narrowed anterior and posterior parts. 6. *A. ullrichi* (p. 336)
- 65(68) Venter black. **65**
- 66(67) Venter black behind epigastric furrow and with a large longitudinal mark. Abdominal markings like Fig. 597. Body length 12.5–13.3 mm. Epigyne like Fig. 598. 7. *A. ceropegius* (p. 336)
- 67(68) Venter behind epigastric furrow entirely black or with only a small yellow mark. Body length 12–13.5 mm. Epigyne like Fig. 599. 8. *A. victoria* (p. 338)
- 68(65) Venter not black. **69**
- 69(70) Venter behind epigastric furrow dark brown and longitudinally divided by a long white mark and laterally situated longitudinal white dentate and terminally curved marks near the diagonal white bands. Spinnerets with three pairs of small, white lateral marks (Fig. 602). Epigyne like Fig. 603. Dorsum like Fig. 601. 9. *A. svanetiensis* (p. 338)
- 70(69) Venter markings not like this. **71**
- 71(64) Abdomen shape not like this. **72**
- 72(73) Abdomen broader than long (Figs. 613, 614) and densely covered with thick pubescent setae. Epigyne like Fig. 615. Body length 7–8.5 mm. 12. *A. redii* (p. 341)
- 73(72) Abdomen not broader than long and without dense cover of pubescent setae. Epigyne not like this. **74**
- 74(75) Abdomen almost as broad as long (length 8 mm, width 7.8 mm). Dorsum almost triangular but with blunt corners; with gray spots on blackish brown background, sometimes light brown with a small and strongly dentate posterior leaf shape, bordered by a fine black line. Middle part of abdomen blackish and with two large white spots above the spinnerets (Fig. 617). 13. *A. dalmaticus* (p. 343)
- 75(74) Abdomen coloration and markings not like this. **76**
- 76(81) Abdominal markings, if existing, consisting of only a few lateral and central black spots. Never with a dark dentate band in the posterior part of the abdomen. Abdomen most often colored green. **77**
- 77(80) Scapus tip strongly narrowed. **78**
- 78(79) Dorsum of greenish abdomen without black spots. Body length 8.5 mm. **79**

- 79(78) Dorsum with markings consisting of black spots. Epigyne like Fig. 522. Body length 7.5 mm. 16. *A. alpicus* (p. 344)
- 80(77) Scapus tip not narrowed. 14. *A. cucurbitinus* (p. 343)
- 81(76) Dorsum with sharp and complex markings and always with a dark dentate band in its posterior part. Abdomen never green. ... **82**
- 82(95) Scapus distant from the epigastric furrow. **83**
- 83(84) Scapus originating from the middle part of the epigyne (Fig. 632). Body length 13–16 mm. 21. *A. umbraticus* (p. 348)
- 84(83) Scapus originating from the anterior part of the epigyne. **85**
- 85(86) Scapus somewhat longer than wide (but not more than twice as long), with blunt tip. Light brown oval abdomen with white markings (Fig. 641). Venter black behind epigyne and with two parallel yellow bands merging with four yellow marks near the spinnerets. Body length 10–12 mm. 25. *A. bisantinus* (p. 350)
- 86(85) Scapus length and width and abdominal markings not like this. **87**
- 87(90) Scapus length exceeding its base width not more than twofold. **88**
- 88(89) Body length 5–7 mm. Epigyne like Fig. 634. Narrow abdomen hardly broader than carapace; lacking antero-dorsal cross-like markings. 22. *A. adiantus* (p. 348)
- 89(90) Body length 13–20 mm. Epigyne like Fig. 637. Abdomen much broader than carapace and with antero-dorsal cross-like markings (Fig. 635). 23. *A. quadratus* (p. 349)
- 90(87) Scapus length exceeding its base width four times or more. .. **91**
- 91(94) Scapus base somewhat broader than its tip. **92**
- 92(93) Abdomen broadest in its anterior third. Scapus weakly developed (Fig. 606). Body length 7.5–11 mm. 10. *A. diadematus* (p. 339)
- 93(92) Abdomen broadest in its middle part. Scapus well developed (Fig. 610). Body length 10–15 mm. 11. *A. marmoreus* (p. 340)
- 94(91) Basal part of scapus not broader than its tip (Fig. 640). Body length 11.5–15 mm. 24. *A. alsine* (p. 350)
- 95(82) Scapus not reaching epigastric furrow. **96**
- 96(99) Femora I and II with dark ventral spots. **97**
- 97(98) Main body color dark gray to grayish brown. **97**
- 98(97) Main body and leg color reddish brown (Fig. 625). Body length 16–17 mm. 18. *A. ixobolus* (p. 345)
- 99(96) Femora I and II lacking dark ventral spots. **100**
- 100(101) Tibia and metatarsus IV with dark median rings. Epigyne like Fig. 623. 17. *A. ocellatus* (p. 345)
- 101(100) Tibia and metatarsus IV lacking dark median rings. Epigyne like Fig. 627. 19. *A. cornutus* (p. 346)



Figs. 562–580. Araneidae, *Zygiella*, *Hypsosinga*, *Singa*, *Zilla*. *Zygiella montana*: 562 – male habitus; 563 – female habitus. *H. albovittata*: 564 – habitus; 565 – male palpus; 566 – epigyne. *H. pygmaea*: 567 – habitus; 568 – male palpus; 569 – epigyne. *H. heri*: 570 – habitus; 571 – male palpus; 572 – epigyne. *H. sanguinea*: 573 – male palpus; 574 – epigyne. *S. nitidula*: 575 – male palpus; 575 a – epigyne; 576 – habitus. *S. hamata*: 577 – habitus; 578 – male palpus; 579 – epigyne. *Zilla diodia*: 580 – habitus.

1. *Araneus grossus* (C. L. Koch, 1844)

Description: Female carapace length 8.5 mm, width 7.5 mm; abdomen length 15 mm, width 14 mm. Male carapace length 5–6 mm.

The body coloration is brown; the abdomen is of brighter color than carapace and legs. The legs are stained with dark and bright marks (Fig. 583) and bear thick spines. The outer edge of the cheliceral furrow bears three teeth; the inner edge bears four teeth.

The anterior part of the abdomen bears two tubercles and leaf-shaped markings; its posterior part is long and tapering (Fig. 581). The epigyne consists of three parts: two lateral parts and one median part; the median part bears a small tubercle (Fig. 582). The abdomen of the male is grayish brown and bears complex markings.

Ecology: In forests on bushes, constructing an orb web between twigs (Figs. 583, 583 a). It feeds on large insects: butterflies, grasshoppers, dragon flies, flies, midges and others.

Distribution: Europe and European part of the former USSR, Transcaucasus, Kazakhstan. **In Georgia:** Ksani, (Zavadski 1902), Tbilisi (Lake Kus, Lake Lisi), Lagodekhi, Telavi, Khashuri, Kharagauli, Abastumani, Ambrolauri, Khotevi, Mt. Satsalike, Mestia, Poti (Mcheidze 1938–1974).

Taxonomy: Platnick (2013): *Araneus grossus* (C. L. Koch, 1844)¹²⁸.

2. *Araneus nordmanni* (Thorell, 1870)

Description: Female body length 9–10 mm; male 8–9 mm.

♀ The anterior part of the dark brown carapace is brighter. The narrow and weakly bulged cephalic part bears a well-visible band and is divided by straight lines. The ME are of almost the same size; the AME stand more distant from each other compared to the PME. The black sternum is raised above the bases of legs I and II. The tip of the anterior part of the chelicerae is brown-yellow; its bases are dark. The legs are thick, long and dark.

The anterior part of the high abdomen is round and broad. Two closely standing tubercles are situated in the broad part of the abdomen. The part in front of the tubercles is black; the mainly gray part behind the tubercles bears white median marks and is broadened laterally. A posterior dentate leaf-shaped mark bears white marks, which are cut by lines of the same color. Epigyne like Fig. 585.

Habitat: On bushes.

Distribution: Switzerland, in the former USSR in Gorki Region, Western Siberia, St. Petersburg. **In Georgia:** Kazbegi (Devdorak Glacier) (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Araneus nordmanni* (Thorell, 1870).

¹²⁸In Mcheidze (1997) with year '1845', lapsus.

3. *Araneus circe* (Audouin, 1826)

Description: Female body length 8 mm, width 6,5 mm; abdomen length 12 mm, width 9 mm. Male body length 13–14 mm. The dark yellow carapace bears large black lateral marks in its posterior half. The brown sternum bears a yellow median band and edges with large, long, brown and yellow marks and numerous long spines.

The bright abdomen bears three to four pairs of dark spots and marks arranged in rows. Two tubercles are situated in the anterior part of the abdomen as well as a leaf-shaped mark behind them (Fig. 587).

Ecology: In cracks of stone buildings, in rock crevices, rarely on plants. They feed on common insects.

Distribution: Batumi (Zavadski 1895, Spassky 1937), Tsqneti, Khashuri, Breti, Mestia (Shikhra) (Mcheidze 1940, 1979).

Taxonomy: Platnick (2013): *Araneus circe* (Audouin, 1826).

4. *Araneus angulatus* Clerck, 1757

Description: Female body length 15–18 mm; male 9 mm.

♀ The dark brown carapace bears a longitudinal yellow band. The triangular abdomen bears a well-developed blunt anterior tubercle and a white anterior mark. Leaf-shaped markings originate behind the lateral tubercles and are bordered by a black line (Fig. 591). The brown venter bears a rudimentary semi-lunar mark, which is only developed in the posterior part and sometimes as a bright narrow line in the anterior part. Epigyne like Fig. 589.

♂ The males are darker than the females and have more pronounced dorsal markings.

Ecology: In forests in sunlit places near the forest edge or on meadows as well as on bushes in gardens. In orb webs between twigs at heights between 0.5–2.5 m above the ground.

Distribution: Palearctic (except North Africa), in the European part of the former USSR, Kyrgyzstan, Kazakhstan, Siberia. **In Georgia:** Tbilisi (Simon 1899), Kobuleti, Batumi, Shakriani, Lagodekhi, Kakhi (Zavadski 1902), Tbilisi, Kharagauli, Batumi (Mcheidze 1961).

Taxonomy: Platnick (2013): *Araneus angulatus* Clerck, 1757.

5. *Araneus bituberculatus* Walckenaer, 1802

Description: Body length 8.5 mm; male 6.5–7.5 mm.

♀ The brown-red legs bear thin rings. The broad, oval and brown abdomen bears two erect pointy and distantly spaced tubercles (Fig. 593). A broken black band stretches between the anterior and posterior parts of the abdomen.

♂ In dorsal view the apical part of the outer bulbus apophysis is divided into three small appendages (Fig. 592). Femur II is armed with six to seven ventral spines, which are arranged in a row reaching the femur base.

Habitat: In the steppe in an orb web among grass.

Distribution: Central and Southern Europe, Egypt, Palestine, in the steppe zone of the European part of the former USSR, Transcaucasus. **In Georgia:** Lagodekhi (Zavadski 1902), Aspindza (Mcheidze 1965).

Taxonomy: Platnick (2013): *Gibbaranea bituberculata* (Walckenaer, 1802). Mcheidze (1997) also cites the synonym *A. dromedaria* (Walckenaer, 1802).

6. *Araneus ullrichi* (Hahn, 1835)

Description: Female body length 7.5 mm; male 5.5. The body is mainly brown. The bright sternum bears a longitudinal line, which is broken in the middle.

The anterior part of the abdomen bears two high and tapering tubercles with a bright transversal band. Dark leaf-shaped markings originate behind the tubercles (Fig. 594). The venter bears a strongly curved semilunar mark. Epigyne like Fig. 596. Male palpus like Fig. 595

Habitat: In the steppe in bright sunlit places in scarce low vegetation.

Distribution: Germany, France, Hungary, in the former USSR in Moscow Region, Southern Urals, Turkmenistan, Crimea, Baikal region. **In Georgia:** Shiraki steppe (Mcheidze 1972). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Gibbaranea ullrichi* (Hahn, 1835)¹²⁹.

7. *Araneus ceropegius* (Walckenaer, 1802)

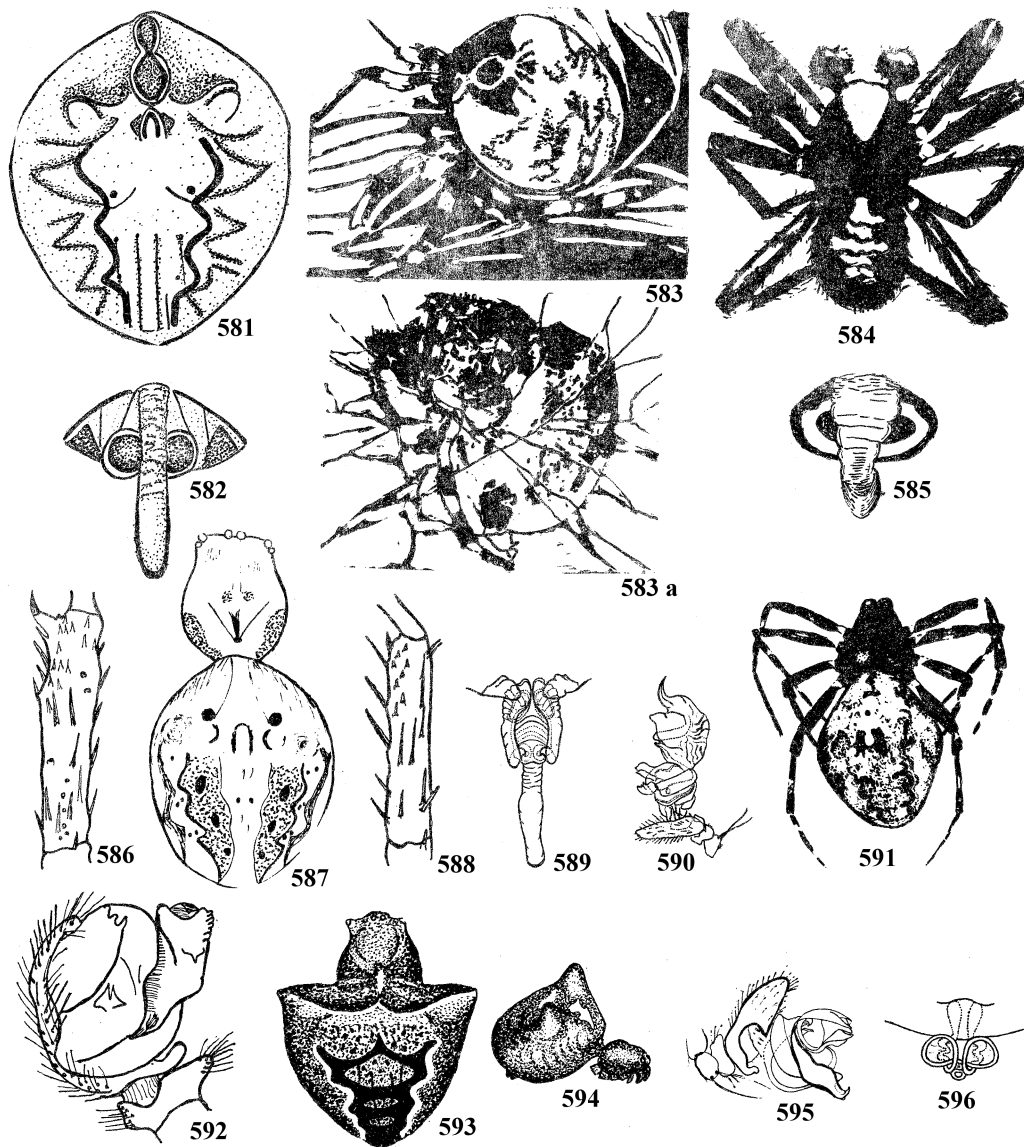
Description: Female carapace length 5.5 mm, width 4.1 mm; abdomen length 9.5 mm, width 6.1 mm. Male carapace length 4 mm, width 3 mm; abdomen length 5–6 mm, width 5 mm.

♀ Parts of the anterior carapace part are yellow. The bright anterior mark is outlined by a dark red fringe. Numerous long setae cover the anterior part of the carapace. The ME form a trapezoid. The sternum bears long reddish yellow or brown setae. The bases of the chelicerae are yellow; their sides are reddish brown.

The mainly yellow or whitish abdomen bears characteristic median markings of yellowish white color, which are outlined black or brown. These markings are cut by web-like lines. The second triangle of the median band is distinctly larger than the first one (Fig. 597). The venter bears curved white, narrow and hook-like bands and a broad median band. These bands do not reach the spinnerets. Epigyne like Fig. 598.

♂ Males are darker than the females. Tibia II is armed with a row of four spines on the inside.

¹²⁹In Mcheidze (1997) with year '1834', lapsus.



Figs. 581–596. Araneidae, *Araneus* (in part.). *A. grossus*: 581 – dorsum; 582 – epigyne; 583, 583 a – ventral habitus. *A. nordmanni*: 584 – habitus; 585 – epigyne. *A. circe*: 586 – tibia II; 587 – habitus. *A. angulatus*: 588 – tibia II; 589 – epigyne; 590 – male palpus; 591 – habitus. *A. bituberculatus*: 592 – male palpus; 593 – habitus. *A. ullrichi*: 594 – lateral habitus; 595 – male palpus; 596 – epigyne.

Ecology: In forests and shrub habitats in high grass. The orb web is made of strong silk threads and contains a discoid hub. The spider hides in a silken retreat. The egg sac is brown. The spiders feed on large-sized pest insects. This species is characteristic for high-mountain habitats up to 3000 m a.s.l.

Distribution: Palearctic (except Japan), in the former USSR in Moscow Region, lower River Volga, Ukraine, Transcaucasus (Dilidzhani). **In Georgia:** Tusheti (Omalo), Lagodekhi (Mt. Ninigori), Kotshalo, Kazbegi, Surami Pass (1800 m a.s.l.), Tqibuli (Nakerala Pass, 1500 m a.s.l.), Shovi (Mamisoni Pass, 3000 m a.s.l.), Ambrolauri (Khotevi), Mestia, near Mt. Ushba (on *Rhododendron sp.*), Lentekhi, Borjomi, Bakuriani, Akhaltsikhe, Manglisi, Betania (Mcheidze 1938, 1940, 1960, 1975). First record in Georgia.

Taxonomy: Platnick (2013): *Aculepeira ceropegia* (Walckenaer, 1802).

8. *Araneus victoria* (Thorell, 1870)

Description: Female body length 12.5-14 mm; male 8 mm. The carapace is brown. The elongated, reddish brown and sometimes almost black abdomen bears broad longitudinal yellowish band-like markings, which are cut by a lateral apophysis and dispersed marks and spots. The venter bears an always well-visible longitudinal dark median mark.

Epigyne like Fig. 599; male palpus like Fig. 600.

Habitat: This steppe species lives in bright sunny places, constructing its web between stems and twigs of herbs and bushes.

Distribution: Balkans, China, Asia, in the southern European parts of the former USSR: Crimea, Transcaucasus, Central Asia, Siberia. **In Georgia:** Tbilisi (Kulczyński 1889), Garedzhi (Mcheidze 1941)

Taxonomy: Platnick (2013): *Aculepeira armida* (Audouin, 1826).

9. *Araneus svanetiensis* Mcheidze, 1997

Description Female: ♀ Carapace length 5–5.1 mm, width 4 mm; abdomen length 11 mm, width 6 mm. The anterior part of the carapace is velvety yellow; its sides bear a broad band. An anterior bright mark is outlined with a dark red fringe, which merges with the thoracic part on a red-brown background. The cephalic region bears somewhat long and fine setae.

The transversal indentation on the central carapace extends onto the posterior slope; this part is the brightest on the carapace. The three pairs of radial lines in the thoracic region are dark red or brown. The red part of the carapace bears fine spots or lines. The ME form a trapezoid with more distantly spaced and smaller AME compared to the PME; the LE are of similar size.

The sternum is mainly yellow and bears long black, sparsely spaced and protuberant setae. The center of the blackish brown labium is yellow. The

antero-basal parts of the chelicerae are yellow; their sides are reddish brown. The cheliceral tip and the claw are tar-colored black.

The mainly brown yellow femora bear one fine, long, ventral, basal spine and a row of six ventro-anterior thicker and longer spines of varying lengths and thicknesses as well as a row of five variable anterior spines. Eight anterior spines are situated on the dorsal side. The posterior side bears four long setae in its proximal half and four trichobothria. The postero-ventral side bears two longer spines and 9–10 trichobothria. The distal part of the patella is darkened brown, with a semicircular ventral side; its dorsal distal part is yellow. It is armed with 2–2, 1.1 dorsal and 1.1 posterior spines, lacks ventral spines and its distal part bears a group of setae, whereas its sides bear a semicircular group of longer setae. The tibia and metatarsi each bear three rings and numerous spines as well as ventral setae. The tarsus is darkened.

The dorsum bears weak characteristic central markings of yellowish whitish color as well as three pairs of marks arranged in one longitudinal row. The anterior region of these marks forms the background of two lateral semilunar marks. Surrounding these markings, the abdomen is darkened in form of a longitudinal band, in which transversal granulated marmorate markings can be recognized. The posterior end of the abdomen bears elongated rust-brown to brownish marks in both parts of the brownish yellow background (Fig. 601).

The median band on the venter is developed without additional spots and reaches the spinnerets. The lateral bands are curved hook-like towards the center. The inner fringes of the spinnerets are dentate; two pairs of small marks are situated on both sides. The lateral diagonal lines do not merge into one single band, but instead are situated diagonally from the lateral bands of the venter (Fig. 602). The scapus is four times narrower than the width of the epigyne and its is 2–6 times longer than wide (Fig. 603).

Description Male: Carapace length 5 mm, width 4 mm; abdomen length 6 mm, width 4 mm. The abdominal markings are developed as in the female, but with more pronounced markings and with white forms on the central and posterior abdomen (except the dark posterior part). Palpus like Fig. 604.

Habitat: On the forest edge in high grass and on bushes in an orb web.

Material: Tusheti (Alvani): 5 ♀, 2 ♂. Lagodekhi Reserve: 10 ♀, 4 ♂. Mestia, Shikhra, Betsho: 4 ♀, 1 ♂. 1939-1940.

Taxonomy: Platnick (2013): *Araneus svanetiensis* Mcheidze, 1997.

10. *Araneus diadematus* Clerck, 1757

Description: Female body length 13–17 mm; male 5.5–11 mm. The body coloration varies substantially between light brown and black-brown. The dark carapace bears central and lateral markings. The bright legs bear dark

rings.

The elongated abdomen is broadest in its anterior third, where it is also somewhat raised but still lacking true tubercles. A good character for determination of this species are the cross-like dorsal markings consisting of white marks (Fig. 607). The well-visible leaf-shaped markings in the posterior part of the abdomen are outlined with dark and bright bands. The venter bears a long semilunar mark, which is curved rectangularly in its posterior part. Epigyne like Fig. 606; male palpus like Fig. 605.

Ecology: This forest species weaves an orb-web between twigs, in rock crevices, in high grass and on bushes. It can also be found on the outside of buildings.

Usually, the spider hangs in its web upside-down (Fig. 608). If threatened, the spider drops to the ground via a strong silken thread and hides there. If a large insect, e. g. a vespid wasp, enters the web, the spider can sever the catching threads, thus helping the insect to escape from the web. The height of the web reaches 35–40 cm, the width 30–35 mm.

Its silk threads are used in optical devices (e.g. in the observatorium of Abastumani). Spider threads are thinner and more durable than those of the silkworm; they are also very shiny and can easily be dyed. Their chemical structure is very similar to silk threads. Masses of 3.76 g can be suspended on silk threads; spider threads sustain masses of up to 4 g (Spassky 1927, Charitonov 1946).

During both night and day they feed on several kinds of insects: e. g. flies, midges, grasshoppers, aphids and butterflies. In our regions, they lay their eggs between April and May, 80–160 in one egg sac. The eggs of 1.2 mm diameter hatch after 16–18 days and the juveniles start making their own webs soon thereafter. The main predators of the garden spider are pompilid and vespid wasps.

Distribution: Europe, tropical Africa and Central Asia, North America (Holarctic). Everywhere in the former USSR, Azerbaijan (Kakhi, Zavadski 1902). **In Georgia:** Kutaisi (Kulczyński 1895), Kobuleti, Sakotshavi, Tbilisi, Magharo, Lagodekhi. Everywhere between the Black Sea Coast in Abkhazia and Batumi/Kobuleti to Svaneti, Mamisoni Pass, Gergeti and the Devdorak Glacier. Numerous in the regions of Kazbegi, Mestia, Tusheti as well as Batumi and Kobuleti (Mcheidze 1937–1978).

***Araneus diadematus stellatus*:** Kazbegi, Devdorak Glacier, Mestia (Mcheidze 1938, 1940).

Taxonomy: Platnick (2013): *Araneus diadematus* Clerck, 1757.

11. *Araneus marmoreus* Clerck, 1757

Description: Female body length 11–19 mm; male 8.5–11 mm. The yellowish white, yellow or smoky-yellow oval abdomen of the female bears markings made of white marks; sometimes these marks are karmine red, the leaf-

shaped markings are brown or black and somewhat narrow (Fig. 609). In males these markings are weakly developed, but the leaf-shaped mark is well visible.

The venter bears a semilunar mark shaped like a square nail. In males this mark is reduced; only its broadened posterior part is visible. Epigyne like Fig. 610. Male palpus like Fig. 611.

Habitat: This forest species lives near the forest edge, in bright sunlit places, feeding on large-sized pest insects (Orthoptera).

Distribution: North America, Europe, in all forest regions of the former USSR. **In Georgia:** Telavi, Tusheti, Omalo, Lagodekhi, Bakhmaro, Ambrolauri, Tqibuli, Nakerala, Mestia (near Mt. Ushba), Surami Pass (at 1800 m a.s.l.), Rkinis Dzhvari (at 2000 m a.s.l. in the alpine zone), Kharagauli, Batumi, Mtirala (Mcheidze 1938, 1940, 1961, 1974).

Taxonomy: Platnick (2013): *Araneus marmoreus* Clerck, 1757¹³⁰.

11 a. *Araneus marmoreus pyramidatus* Clerck, 1757

Description: ♂ Body length 13.5 mm. The coloration of sternum, venter and the dorsal part of the abdomen are very similar to *A. marmoreus* but it differs in having a dark broad dorsal band in the posterior half of the abdomen (Fig. 612). The epigyne differs from *A. marmoreus*.

Habitat: In the same habitats as *A. marmoreus*.

Distribution: Europe, widely distributed in the former USSR. **In Georgia:** Mestia (near Mt. Ushba), Shikhra, Ambrolauri, Nakerala Pass, Tusheti (1940–1941). First record in Georgia.

Taxonomy: Platnick (2013): *Araneus marmoreus* Clerck, 1757.

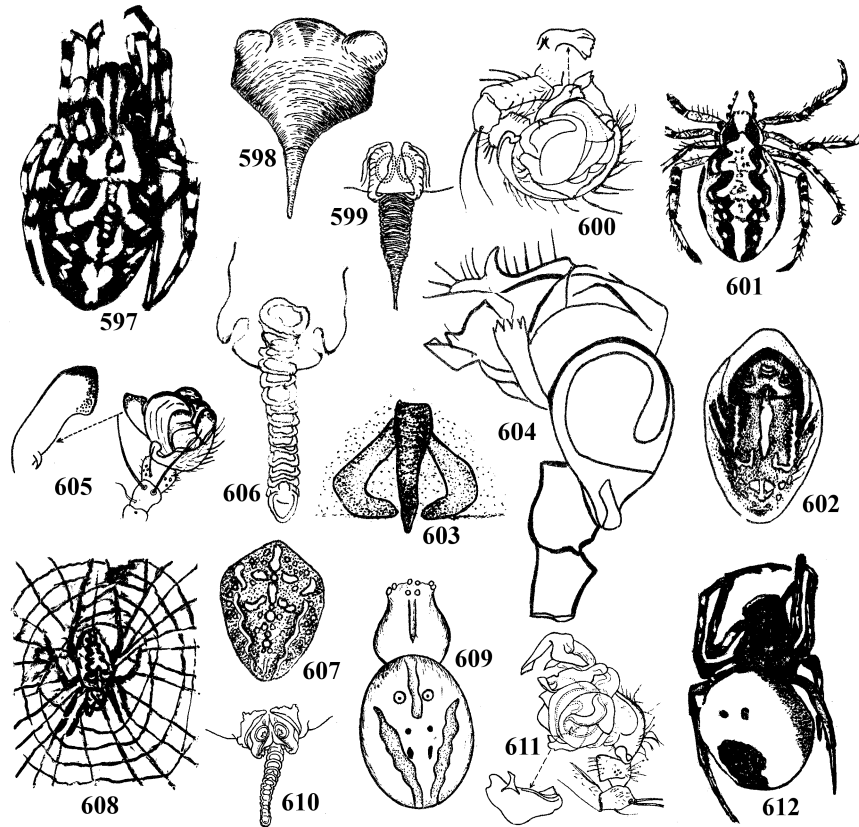
12. *Araneus redii* Scopoli, 1763

Description: Female body length 7–8.5 mm; male 3.5–5.5 mm. The carapace is brown. The sternum bears elongated bright marks, which are broken in the center. The short broad abdomen is of green color and covered with pubescent setae (Figs. 613, 614). The abdominal markings are variable; the black venter bears strongly curved semilunar markings. Epigyne like Fig. 615. Male palpus like Fig. 616.

Habitat: This steppe species lives in dry sunlit habitats; on plants (bushes, grass).

Distribution: Holarctic, in the steppe zone of the former USSR, Southern Kazakhstan, Uzbekistan and Tajikistan, Mikhailovski Pass (W of Sukhumi, Spassky 1937). **In Georgia:** Poti (Simon 1899), Tbilisi, Lagodekhi (Zavadski 1902), Batumi, Sukhumi, Kobuleti, Tbilisi (Botanical Garden), Kodzhori (Mcheidze 1966–1967).

¹³⁰Mcheidze (1997) also cites the synonym *Araneus raji* Scopoli, 1763 sic: 'A. rafi', lapsus.



Figs. 597–612. Araneidae, *Araneus* (in part.). *A. ceropegius*: 597 – habitus; 598 – epigyne. *A. victoria*: 599 – epigyne; 600 – male palpus. *A. svanetiensis*: 601, 602 – dorsal and ventral habitus; 603 – epigyne; 604 – male palpus. *A. diadematus*: 605 – male palpus; 606 – epigyne; 607 – habitus; 608 – habitus in the web. *A. marmoreus*: 609 – habitus; 610 – epigyne; 611 – male palpus. *A. marmoreus pyramidatus*: 612 – habitus.

Taxonomy: Platnick (2013): *Agalenatea redii* (Scopoli, 1763).

13. *Araneus dalmaticus* (Doleschall, 1852)

Description: Female carapace length 4.1 mm, width 3.1 mm; abdomen length 8 mm, width 7.8 mm. Male carapace length 3–4 mm, width 2.5–3 mm.

♀ The dark olive brown carapace is very uniform and lacking setae. The cephalic region is narrowed and has a cut-off front. The thick legs are sometimes brown with a bright olive band. The apical part of the femur base is sometimes light brown.

The very broad and raised abdomen is flattened and almost triangular, bearing blunt corners (no tubercles); its color is brown with blackish brown marks. The venter bears two large central white marks above¹³¹ the spinnerets. Epigyne like Fig. 618.

♂ The brown to olive carapace is covered with long brown setae, especially on both sides of the clypeus. The cephalic region is markedly elongated, narrow and blunt. The small sternum is unicolor dark brown and bears a bright median mark. The brown femora and red or brown tibiae I–II are thickened and apically somewhat elongated. Tibia II is covered along its entire length with numerous (45–50) spines.

The anterior part of the broad round abdomen is broadened; its posterior part is covered with long brown setae (Fig. 617).

Habitat: In grassy habitats, where it is camouflaged by its body coloration.

Distribution: Southern Europe, Hungary, Palestine, Transcaucasus, Crimea. **In Georgia:** Kutaisi (Kulczyński 1937), Tbilisi, Sighnaghi (Zavadski 1902), Sukhumi (Spassky 1937), Lagodekhi, Telavi, Qvareli, Gremi, Abasha, Poti, Ambrolauri (Mcheidze 1939–1972).

Taxonomy: Platnick (2013): *Neoscona subfusca* (C. L. Koch, 1837).

14. *Araneus cucurbitinus* Clerck, 1757

Description: The shining light-colored femur is yellowish orange; the remaining segments are shingle-colored yellow or colorless. Femur, patella and tibia bear broad black or brown apical rings. Male palpus like Fig. 621.

The light yellow abdomens of both male and female of both male and female bear two rows of black spots (4–4 or 5–5) as well as an apical red, and often dentate, mark. The venter is darker, uniformly greenish, and sometimes outlined in white and brown colors. The pale area of the spinnerets bears two small spots (Figs. 619, 620).

Habitat: This forest-edge species lives on bushes, in high grass in an orb web between twigs. The small web is horizontal or somewhat diagonally inclined.

¹³¹Sic Mcheidze (1997).

Distribution: Europe, Madagascar, Tunis, Palestine, Japan, Algiers, in the former USSR in the Transcaucasus, Turkmenistan, Mikhailovski Pass (Spassky 1937). **In Georgia:** Kutaisi (Kulczyński 1895), Lagodekhi, Manglisi (Zavadski 1902), Tbilisi, Telavi, Tsinandali, Tusheti, Lagodekhi (Tshiauri Forest), Kodzhori, Betania, Manglisi, Borjomi, Bakuriani, Abastumani, Aspindza, Gori, Kharagauli, Tshiatura, Zestaponi, Baghdati, Zekari Pass, Tqibuli, Oni, Ambrolauri, Shovi, Bakhmaro (Mcheidze 1937–1978).

Taxonomy: Platnick (2013): *Araniella cucurbitina* (Clerck, 1757)¹³².

15. *Araneus inconspicuus* (Simon, 1874)

Description: Female body length 7–8 mm; male 4.5 mm. The pale bright yellow or green abdomen of both males and females is lacking any black spots and an apical red mark. The venter is uniformly whitish yellow or greenish, except its posterior part. Juveniles, especially females, have two small whitish marks near the spinnerets. The dorsal and lateral parts of the abdomen are sometimes entirely dark red shingle-colored.

In males the legs are dark brown shingle-colored or colorless; patella and tibia I are narrow and stained dark near the tip. The submarginal band of the carapace is weakly developed or entirely missing.

Habitat: On bushes.

Distribution: Western Europe, China, in the former USSR in the regions of Orlov and Moscow, Crimea, Caucasus, Kazakhstan, Sakhalin. **In Georgia:** Batumi (Simon 1899), Poti, Lagodekhi (Mcheidze 1948).

Taxonomy: Platnick (2013): *Araniella inconspicua* (Simon, 1874)¹³³.

16. *Araneus alpicus* (L. Koch, 1869)

Description: Female body length 7 mm; male 5 mm. The buckskin-yellow carapace is weakly marked with a muscular fovea and a narrow white lateral fringe. The tips of the yellow legs are darkened; the coxa and trochanter of all legs bear a small black anterior mark near the attachment to the femur.

The rear end of the abdomen bears closely approximated and sharply contrasting black spots, each of which being surrounded by a white arch. The tips of the yellow spinnerets are brown; two pairs of yellow marks are situated next to the spinnerets. The region behind the spinnerets bears the same raspberry-colored mark, which is characteristic for *A. cucurbitinus*. The internal structure of the epigyne (vulva) is triangular; it bears egg-shaped lateral folds, which contain the sperm ducts dividing the central trapezoid area. The scapus is somewhat tapering (Fig. 622).

Habitat: In grass and on bushes.

¹³²In Mcheidze (1997) author with brackets, lapsus.

¹³³Mcheidze (1997) sic: 'Araneus incaspicuus', lapsus.

Distribution: In the former USSR, Transcarpathia, regions of Orlov and Moscow, Crimea. **In Georgia:** Lagodekhi (Mcheidze 1959). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Araniella alpica* (L. Koch, 1869).

17. *Araneus ocellatus* Clerck, 1757

Description: Female body length 8–12 mm; male 7–8 mm. The carapace is brown. The elongated oval abdomen bears dark reddish brown leaf-shaped and round markings, which are cut in the middle by a bright broad transversal band. The black venter bears white semilunar marks. Epigyne like Fig. 623.

The male is darker than the female. Male palpus like Fig. 624.

Habitat: This forest species constructs its web between the twigs of bushes and trees and in high grass at heights between 1 and 1.5 meters above the ground. They feed on pest insects of forests.

Distribution: Holarctic, everywhere in the forest zone of the former USSR. **In Georgia:** Zekari Pass, Martvili (Mcheidze 1947–1976). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Larinioides patagiatus* (Clerck, 1757). Mcheidze (1997) also lists the names *A. patagiatus* Clerck, 1757 and *A. dumetorum* Fourcroy, 1785.

18. *Araneus ixobolus* (Thorell, 1873)

Description: Female carapace length 5 mm, width 4.5 mm; abdomen length 7.2 mm, width 6 mm. Male carapace length 5 mm, width 4 mm.

♀ The brown-red carapace bears long white setae; the cephalic region is long, flat and somewhat narrowed. The clypeus is broad and square. The dark brown legs lack rings and bear long thick black spines, which are especially numerous on the metatarsi. The epigyne is almost circular and bears a scapus; its anterior part is somewhat broadened and bears a thick black lateral suture and in some parts wrinkles.

The oval, dark-brown and flattened abdomen is covered with brown setae, between which are sparsely spaced coarse black setae. The broad leaf-shaped mark is well defined and changing towards the rear end; it is outlined by a fine line (Fig. 625). The central part of the abdomen is blackish.

♂ The dark brown-red carapace bears long white setae and is similar to the carapace of the female (Fig. 625). The sternum is dark brown. The proximal parts of the legs are broadened; the legs are very long and thick, brown with black spots. The dorsal sides of the femora are blackish and bear long setae.

Habitat: In rock crevices, rock walls, between plant roots.

Distribution: Western Europe, China, in the European part of the USSR, Caucasus (Novorossiia), Kazakhstan. **In Georgia:** Kheta, Khobi (Mcheidze 1967). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Larinioides ixobolus* (Thorell, 1873). In Mcheidze (1997) author without brackets, lapsus.

19. *Araneus cornutus* Clerck, 1757

Description: Female carapace length 4–6 mm. Male carapace length 4.9 mm, width 4.1 mm.

♀ The brown-red carapace bears long white setae. The cephalic region is somewhat raised, broad and cut-off straight. Sternum and chelicerae are black. The femur is light yellow; the other leg segments are brown-red.

The bright or whitish oval abdomen is bulged and bears short white setae. The dorsum bears a leaf-shaped mark (Fig. 626). The epigyne is not very long and its tip is not broadened. The central part of the scapus is thick and forms a large red cylinder (627).

♂ The dark brown-red carapace is entirely covered with long white setae. The cephalic region is long, somewhat raised and its anterior part is narrowed. The clypeus is not broad. The carapace fovea is deep. The sternum is indented near the bases of the legs. The legs are dark and thick; the femur has a light yellow basis, but its tip is dark brown.

Habitat: This hygrophilous species lives near water bodies in bushes and high grass; on river banks on willows and in dry leaves of *Urtica sp.* (e.g. at Tabatsquri Lake).

Distribution: Holarctic. **In Georgia:** Tbilisi (Botanical Garden, Lake Lisi), Gardabani (near irrigation canals), Lake Tabatsquri, Poti (Lake Paliasotomi), Ambrolauri, Tqibuli, Borjomi, Lagodekhi, Mestia, Khulo (Ghordzhomi), Bakhmaro, Mestia (Leli, Bodishi) (Mcheidze 1939, 1961, 1963). First record in the Transcaucasus.

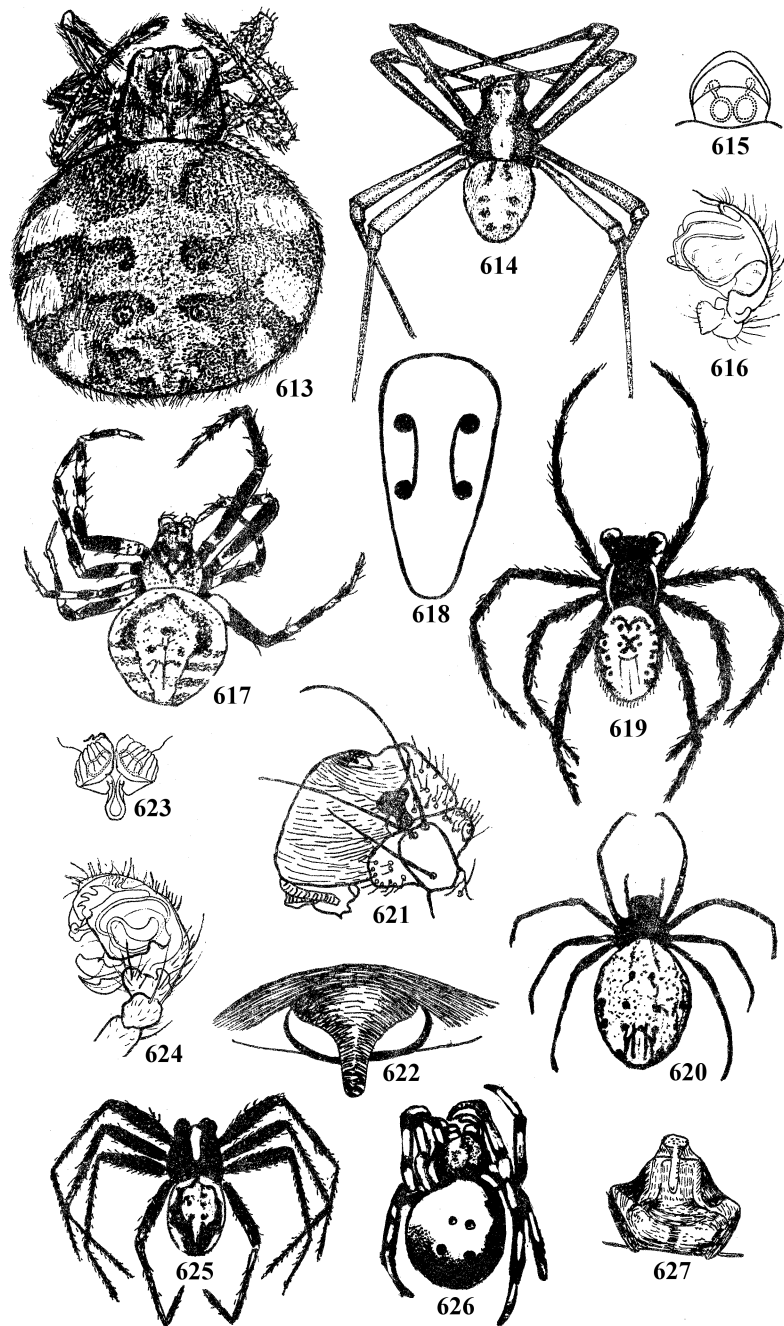
Taxonomy: Platnick (2013): *Larinioides cornutus* (Clerck, 1757). In Mcheidze (1997) author with brackets, lapsus.

20. *Araneus folium* Schrank, 1803

Description: Female body length 9–13 mm, width 5 mm. Male body length 7–9 mm.

♀ The carapace is reddish brown. The large sternum is white. The background of the elongated oval abdomen is usually very bright: yellowish, reddish or white. The markings of the dorsum are of gray color and divided by a broad bright band. The leaf-shaped mark has acute angles. The black venter bears pale white semilunar marks. Epigyne like Fig. 629.

♂ The coloration of the male is brown with black markings. Palpus like Fig. 628.



Figs. 613–627. Araneidae, *Araneus* (in part.). *A. redii*: 613 – female habitus; 614 – male habitus; 615 – epigyne; 616 – male palpus. *A. dalmaticus*: 617 – habitus; 618 – epigyne. *A. cucurbitinus*: 619 – male habitus; 620 – female palpus; 621 – male palpus. *A. alpicus*: 622 – epigyne. *A. ocellatus*: 623 – epigyne; 624 – male palpus. *A. ixobolus*: 625 – habitus. *A. cornutus*: 626 – habitus; 627 – epigyne.

Habitat: In sunlit places near water bodies, in webs in high grass, on trees, sometimes on small bushes.

Distribution: Europe, Anatolia, North America, widely distributed in the former USSR. **In Georgia:** Batumi, Kobuleti, Lagodekhi (Verzhbitski 1902), Tbilisi (Zavadski 1902), Poti, Lake Bazaleti (Mcheidze 1959).

Taxonomy: Platnick (2013): *Nomen dubium*.

21. *Araneus umbraticus* Clerck, 1757

Description: Female carapace length 5.5 mm, width 5.2 mm; abdomen length 10 mm, width 8 mm. Male carapace length 5.5 mm, width 5 mm.

♀ The carapace is dark reddish brown. The flat oval abdomen bears four deeply imprinted spots, of which two spots are deeper imprinted than the other two. The abdomen is entirely brown with brighter sides. The leaf-shaped mark is outlined white and includes two long black and curved marks (Fig. 630). The epigynal plate is broad and short with a black and weakly broadened scapus (Fig. 632).

♂ The dark brown-red carapace is covered with long white setae. The cephalic region is somewhat elongated with a broad clypeus. The carapace fovea is deep; the carapace itself flattened. The oval sternum is black and somewhat raised on the sides. The chelicerae are short and thick; the outer cheliceral furrow bears four teeth, the inner furrow three teeth.

The legs are long, thick and of red color. The palpus femur is short, its patella is somewhat bulged. The inner apophysis of the bulbus is simple, short and weakly bulged (Fig. 631). Males and females are very similar to each other.

Habitat: In wooden pillars, under boards or in crevices of rocks and wood. Because of its flat body shape it can easily hide within small cracks. Females oviposit in June, laying approx. 160 eggs in one egg sac. They feed on insects, possibly also on eggs and larvae of bark beetles.

Distribution: European part of the former USSR, Mikhailovski Pass (Spas-sky 1937). **In Georgia:** Borjomi, Lagodekhi (Zavadski 1902), Tbilisi, Batumi (in large numbers at Kakhaveri), Tshokhatauri, Bakhmaro, Ozurgeti, Kheta, Baghdati, Vani, Akhaltsikhe, Adigeni, Borjomi, Bakuriani, Lagodekhi (Tshiauri Forest), Qvareli (Mcheidze 1942, 1946, 1972).

Taxonomy: Platnick (2013): *Nuctenea umbratica* (Clerck, 1757). Mcheidze also lists the synonym *A. sexpunctatus* L., 1758.

22. *Araneus adiantus* Walckenaer, 1802

Description: Female body length 6.5–9 mm; male 6–6.5 mm. The yellow carapace bears a median band and a dark fringe. The sternum is almost black. The elongated egg-shaped abdomen is reddish or brownish and bears

a white central part, which is outlined by a black and white band. The black venter bears white or yellow, somewhat curved semilunar marks.

Males are darker than the females. Epigyne like Fig. 634. Male palpus like Fig. 633.

Ecology: This steppe species lives in dry sunlit places, near the forest edge in high grass and on annual plants as well as on leaves of cornel, appel and plum, feeding on aphids.

Distribution: Palearctic, Indo-Malaya (southern forms), in the former USSR in the Ukraine, middle part of River Volga, Southern Urals, in Central and Southern Siberia, Transcaucasus, Azerbaijan (Kakhi, Zavadski 1902) and Central Asia. **In Georgia:** Ksani, Zestaponi, Vakiri, Pshaveli, Shakriani, Sukhumi (Spassky 1937), Manglisi, Betania, Tbilisi, Kodzhori, Gurdzhaani, Lagodekhi (Tshiauri Forest), Kutaisi, Mestia, Poti (Mcheidze 1939, 1940, 1960, 1963).

Taxonomy: Platnick (2013): *Neoscona adianta* (Walckenaer, 1802).

23. *Araneus quadratus* Clerck, 1757

Description: Carapace length 5 mm, width 4 mm; abdomen length 10 mm, width 8 mm. The carapace is brown-yellow or brown-red, with white setae. It bears a dark median band and a brown fringe. The cephalic region is long. The black sternum bears a longitudinal yellow mark. The chelicerae are brown and thick. The legs are light brown and thick.

Adult females have a nearly spherical abdomen; its coloration varies a great deal: from often greenish yellow or brown red to light yellow or brown. Four large white and pairwise arranged spots are situated in the anterior part of the dorsum; they are outlined black. Often, an elongated median mark is situated on the anterior edge of the abdomen. A leaf-shaped mark is hardly visible or absent on the posterior part of the abdomen (Fig. 635). The brown venter bears two white semilunar marks, which are weakly curved. Epigyne like Fig. 637.

Males are considerably smaller than the females. They have a light-colored abdomen with a well-visible leaf-shaped mark. The venter bears a semilunar mark. Palpus like Fig. 636.

Ecology: This hygrophilous species lives in grass and bushes, often on *Azalea sp.*, constructing its orb web among twigs. It is characteristic for high-mountain habitats. Its web is very large and its hub contains a number of cross-wise arranged threads.

The almost spherical egg sac is suspended next to the web and made of especially strong white threads. One egg sac can contain up to 900–1000 yellow eggs. They feed on large insects (e.g. grasshoppers and beetles)

Distribution: Europe, Asia, China, in the former USSR in the Transcaucasus (Azerbaijan), Southern Urals, Siberia, Kamchatka. **In Georgia:**

Tusheti, Lagodekhi (Mt. Kotshalo), Mestia (Shikhra, Mt. Ushba), Lentekhi, Bakhmaro (Mcheidze 1938, 1940, 1944). First record in Georgia.

Taxonomy: Platnick (2013): *Araneus quadratus* Clerck, 1757.

24. *Araneus alsine* (Walckenaer, 1802)

Description: Female body length 11.5–15 mm; male 6.5–8.5 mm. The carapace is orange-yellow, in living specimens brown-red. The sides of the cephalic region are light brown. The longitudinal orange band consists of three broad parts. Longitudinal brown lines originate between the PE and reach the fovea. The eyes have a brown arch. The maxillae are yellow; the sternum is brownish. The legs are lemon-colored to yellow (Fig. 638).

The whitish-yellow abdomen has four yellow spots in its anterior half; the posterior half bears brown longitudinal zig-zag bands, which are situated somewhat close to the rear end of the abdomen. The sides of the abdomen are spotted with orange-yellow spots. The white semilunar marks on the venter are strongly curved. The spinnerets are brown-yellow.

Epigyne like Fig. 640. Male palpus like Fig. 639.

Habitat: This forest species lives in moist habitats and meadows with *Carex* sp. and *Sphagnum* mosses as well as in shaded places on forest roads. The comparatively small web is suspended between twigs or high grass approx. 20–25 cm above ground. The retreat is a silken tube but the spider often sits in its web secured by a silk thread.

Distribution: Central Europe, European part of the former USSR, Siberia, Kamchatka. **In Georgia:** Kobuleti (sphagnum mires, Mcheidze 1964). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Araneus alsine* (Walckenaer, 1802).

25. *Araneus bisantinus* Pavesi, 1876

Description: Female carapace length 4–5 mm; abdomen length 6–8 mm. The cephalic region is narrowed, yellow and covered with white silky setae. Three brown lines stretch along the the carapace, which in the middle are broadened and branching. The ME are uniform in size and form a trapezoid, which is longer than wide. The clypeus is almost as high as the diameter of the AME; the chelicerae are twice as long as this eye diameter. The outer edge of the cheliceral furrow bears two large teeth. The brown-black sternum bears scattered white marks.

The tips of the reddish brick-colored legs bear black rings. The brown femora I–II are armed with spines; femur IV bears a longitudinal brown dorsal band.

The anterior part of the egg-shaped abdomen is somewhat enlarged, light-brown with a white mark, which bears black lines. This white mark is more or less visible on the surface of the abdomen. Four transversal black lines

are situated in the posterior region of the abdomen, which become more and more reduced towards the rear end. The brownish sides of the abdomen bear diagonal and somewhat dark branching markings (Fig. 641).

The venter is black behind the epigynal area and decorated with two parallel yellow bands, which are somewhat narrowed in their anterior parts. Four marks of this yellow color form a belt around the spinnerets. The scapus of the epigyne is somewhat long compared to its width; its coloration and size are similar to those of *A. ceropegius* but belong to the *A. adiantus* group.

Habitat: In forests and shrubby habitats in high grass.

Distribution: Istanbul. **In Georgia:** Lagodekhi (Tshiauri Forest), Kodzhori, Betania, Kiketi, Manglisi (Mcheidze 1938–1963). First record in the former USSR.

Taxonomy: Platnick (2013): *Neoscona byzanthina* (Pavesi, 1876).

26. *Araneus tbilisiensis* Mcheidze, 1997

Description Female: Carapace length 2.5 mm, width 2 mm; abdomen length 4.7 mm, width 3.4 mm. The coloration is similar to the coloration of the male. The anterior part of the carapace is gray-yellow: the cephalic region bears a mark, which is brighter and broader than in the female. The fringe of the yellow sternum is somewhat darkened and armed with short brown setae. The tips of the yellow labium and gnathocoxae are white. The ME form a quadrangle, which is longer than wide. The LE almost touch each other.

Leg Armament: **Leg I:** femur: 1.1.1d, 1.1.1a, 1.1p, two rows of thin ventral spines; patella 1.1d, 1.1a, 1p; tibia 1.1.1d, 1.1.1a, 1.1p, 2.2.2v. **Leg II:** femur: 1.1.1.1d, 1.1a, 1.1p; patella 1.1d, 1.1a, 1p; tibia: 1.1.1d, 1.1.1a, 1.1p, 2.2.2.2v; metatarsus 1d, 1a, 1p, 1.1.2.1v. **Leg III:** femur: 1.1.1d, 1a, 1p, two rows of thin ventral spines, of which the posterior row is longer; patella: 1.1d; tibia: 1.1d, 1.2.2v; metatarsus: 1.1d, 1.1a, 1.1p, 1.1.1v. **Leg IV:** femur: 1.1.1d, 1a, 1p; patella: 1.1d, 1a, 1p; tibia: 1.1.1d, 1.1a, 1.1p, 1.1.2v; metatarsus: 1.1d, 1.1a, 1.1p, 1.1.1.1.2v.

The anterior end of the oval abdomen is blunt; its posterior end is rounded. The light-blue-gray rhomboid markings are similar to the markings of the male. The abdomen bears an antero-dorsal white band. The black spots are outlined with white marks (Fig. 642).

The anterior part of the venter is gray-brown on the sides; its center is whitish gray, extending to the spinnerets. Four pairs of longitudinal spots of brown color are situated in the center of the white area. The tips of the yellowish brown spinnerets are darkened and surrounded by a white area as well as two white marks on each side; the posterior marks are merging (Fig. 643).

The lateral parts of the epigyne are yellowish gray; its light gray central

part is outlined with a blackish brown fringe. The basis of the central part is narrow and orange; farther back it is broadened and its tip is once again narrowed and again broadened and more or less round. The posterior part of the epigyne bears transversal wrinkles, which are sparsely covered with long setae.

The external structure of the epigyne is very similar to *Araneus croaticus* Kulczyński (1905), but the central part of the epigyne of *A. tbilisiensis* is broader and in total shorter than in *A. croaticus*. The tip of the epigyne is once again very similar to *A. croaticus*, but differs from it by its dark lateral fringe (Fig. 644).

Description Male: Carapace length 1.7 mm, width 1.45 mm; abdomen length 2.05 mm, width 1.58 mm. The cephalic region of the carapace is yellow and somewhat gray; its posterior part is plain yellow and has the form of an elongated triangle. The cephalic region is separated from the thoracic region by a weak indentation and a broad brown band. Shining bright bands pass this band in its posterior part. Both parts of the thoracic region bear three brown-yellow bands, which follow the yellow bands. All radial lines extend towards the longitudinal lateral, broader brown band, which is grayish yellow near the outer fringe (Fig. 642).

The eye region and the clypeus are yellow; The AE form a curved line; the PE are curved forward (downward); the ME quadrangle is longer than wide. The LE are situated close to each other; the ME tubercles touch each other. The ALE and PLE are of approximately the same size. The sternum is yellow. The light brown chelicerae have brownish claws. The legs are light yellow and patella and tibia of all legs are darkened and bear thin rings.

Leg Armament: **Leg I:** femur: 1.1.1.1d, 1.1.1a, 1.1dp, 1v basal and 1 distal; patella: 1.1d, 1.1a, 1p; tibia: 1.1.1d, 1.1.1a, 1p, 2.2.2.2v (central); metatarsus: 1.1d, 1.1a, 1p, 1v. **Leg II:** femur: 1.1.1.1d, 1.1a, 1.1dp, 1.1.1.1.1v; patella: 1.1d, 1.1a, 1p; tibia: 1.1.1d, 1.1.1a, 1p, 2.2.2v; metatarsus 1d (basal), 1.1a, 1p (central), 1.1v. **Leg III:** femur: 1.1.1d, 1a, 1p, 1.1.1v; patella 1.1, 1a, 1p; tibia: 1.1d, 1a, 1p, 1.2v; metatarsus 1.1d, 1a, 1.2.2v. **Leg IV:** femur: 1.1.1d, 1a, 1p, 1.1.1v; patella 1.1d, 1a, 1p; tibia: 1.1d, 1a, 1p, 1.1.1v; metatarsus: 1.1d, 1.1a, 1.2v.

The oval abdomen is somewhat flattened dorso-ventrally; its anterior end is blunter than the posterior end. The abdomen bears two pairs of thick imprinted spots and another pair of smaller spots. Two additional pairs of small imprinted spots are situated behind the other spots. The sides in the posterior half bear three pairs of round spots, which are surrounded by a white field.

The abdomen is sparsely covered with very long (in the anterior part) and short (in the posterior part) yellow setae, originating from dark yellow spots. The central part of the abdomen is light-blue gray; its anterior part and the sides are of yellowish color. The anterior center of the abdomen bears a gray field; the posterior half is decorated with four more or less parallel lines and

furrows. The gray sides and posterior region bear very short and more or less parallel furrows.

The gray central part of the venter bears small white marks. Four pairs of small yellowish spots stretch on a median line from behind the epigastric furrow to the spinnerets. The light brown spinnerets are surrounded by a broken band and small white marks.

The palpus tibia is very thick and more or less branched; two long spines are situated near its tip, diverging from the central part of the copulation apparatus.

Material: 1 ♂, 4 ♀, Tbilisi, Andreevski, 1921 (Coll. Nr. 132, Zoological Institute of the Academy of Sciences of Georgia).

Taxonomy: Platnick (2013): *Araniella tbilisiensis* (Mcheidze, 1997).

7.23.10 *Cyrtarachne* Thorell, 1868

1. *Cyrtarachne ixoides* (Simon, 1870)

Description: ♀ The brown-yellow swollen carapace is somewhat irregular, leather-like and transparent. The legs are brown. The abdomen is brown orange, sometimes with a blackish dorsum; it is broader than long (6–7 mm vs. 4.5 mm). Its sides are pale brown with four round tubercles and two spoon-like structures in between.

♂ Body length 1.5–2 mm. The carapace is very bulged, leather-like and transparent.

The dorsum is covered with a rough leather-like, dark reddish or brown scutum; its posterior part is yellow. The abdomen bears simple round tubercles, in the anterior part six almost uniform tubercles and in the posterior part four tubercles, of which the lateral tubercles are the largest (with a number of smaller tubercles in between).

Ecology: In high grass and on bushes. It constructs a beautiful spindle-shaped green egg sac, from which the juveniles emerge in August.

Distribution: Corsica, Damascus, Toscana, in the former USSR in Khosta (Spassky 1937). **In Georgia:** Sukhumi (Spassky 1937).

Taxonomy: Platnick (2013): *Cyrtarachne ixoides* (Simon, 1870)¹³⁴.

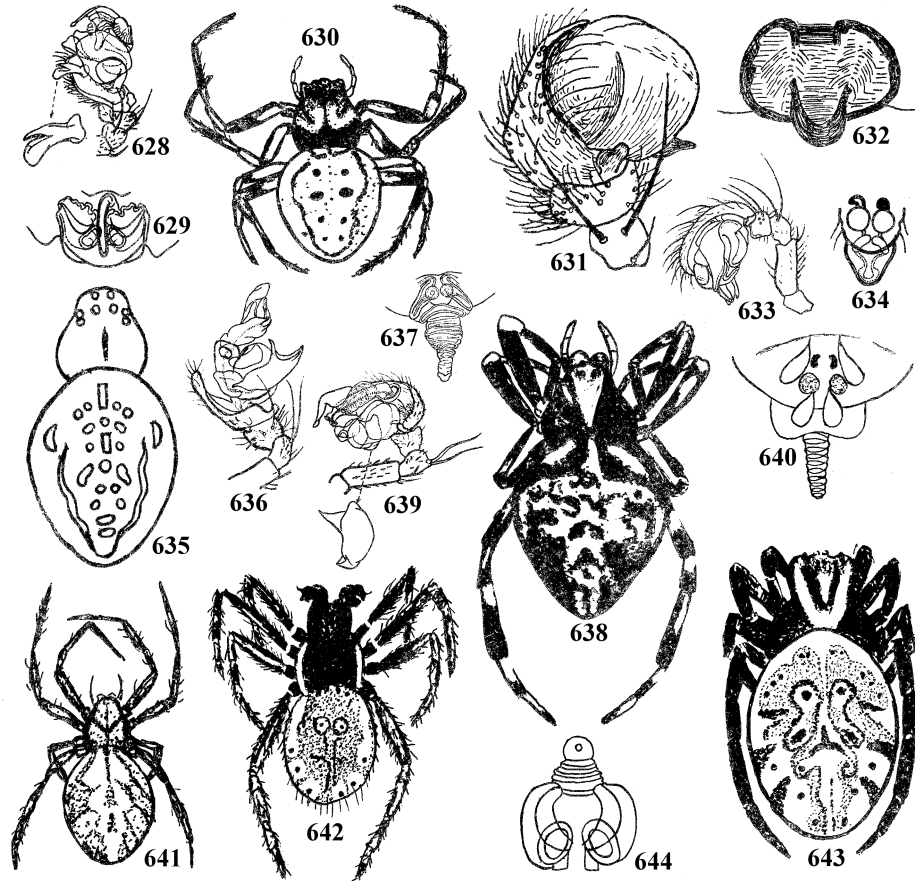
7.23.11 *Larinia* Simon, 1874

1. *Larinia bonneti* Spassky, 1939

Description: Female carapace length 1.76–2 mm, width 1.54 mm; abdomen length 2.6–4.5 mm, width 1.66–2.6 mm. Male carapace length 1.25 mm, width 1.21 mm; abdomen length 2.21 mm, width 1.39 mm.

♀ The pale yellow carapace bears a brown fovea; its anterior part is narrowed. The cephalic part bears two white posterior marks, which diverge

¹³⁴Mcheidze (1997) sic: 'G. ixodoides (Sim., 1870)', lapsi.



Figs. 628–644. *Araneidae*, *Araneus* (in part.). *A. folium*: 628 – male palpus; 629 – epigyne. *A. umbraticus*: 630 – habitus; 631 – male palpus; 632 – epigyne. *A. adiantus*: 633 – male palpus; 634 – epigyne. *A. quadratus*: 635 – habitus; 636 – male palpus; 637 – epigyne. *A. alsine*: 638 – habitus; 639 – male palpus; 640 – epigyne. *A. bisantinus*: 641 – habitus. *A. tbilisiensis*: 642, 643 – male and female habitus; 644 – epigyne.

towards the front. Gnathocoxa, femur and palpus are pale yellow. The sternum is brown.

The abdomen is chalk-colored, pale yellow or clay-colored; its anterior half bears four brown imprinted spots forming a trapezoid. Four more spots are situated in the posterior part, forming parallel longitudinal lines. Rarely a white leaf-shaped mark is situated on the dorsum.

The chalk-colored sides of the abdomen are crossed by numerous curved pale yellow bands. The venter is blackish white; its center is light gray. Two small marks are situated on both sides of the spinnerets. The posterior part of the horned epigynal plate is curved and narrow.

♂ The coloration of the male is similar to the coloration of the female but in males the thoracic fovea is divided by a brown-red band. The center of the sternum is paler than its fringe. The almost ellipsoid whitish abdomen is covered with setae; it is darker than the abdomen of the female and more distinct. The imprinted spots, thin bands and the posterior part of the abdomen are developed as in the female.

Habitat: In high grass and on bushes.

Distribution: Qubani, Khosta. **In Georgia:** Poti, Kobuleti (Mcheidze 1945). Caucasian endemic species.

Taxonomy: Platnick (2013): *Larinia bonneti* Spassky, 1939¹³⁵.

7.24 Tetragnathidae

These spiders have elongated (*Tetragnatha*) or short round abdomens (*Pachygnatha*). The eyes are of uniform size and arranged in two rows. The chelicerae, especially of males, are large and bear numerous teeth and apophyses. The cheliceral claws are large and strongly curved. The gnathocoxae are long and of almost the same size as the sternum (*Tetragnatha extensa*) or are half as long as the sternum (*Pachygnatha*). The thin long legs bear numerous spines; all femora bear one or more basal trichobothria.

The male palpus bears a bulbus with a large paracymbium. Adult females have an endogyne instead of an epigyne; only in *Pachygnatha* is the epigynal opening covered by a plate similar to an epigyne. Differing from other spiders the females of this family have not two, but three sperm ducts.

The majority of species in this family constructs orb webs in high grass or on bushes near water bodies; some species even place their webs directly above the water on the twigs of trees. Species of *Pachygnatha* do not construct webs to catch prey; as hunting spiders they pursue their prey on leaves and twigs of herbs and trees.

Mating takes place in spring and summer. The well-camouflaged and semicircular egg sacs are attached to plant stems and contains 60-150 eggs.

¹³⁵Mcheidze (1997) epithet with brackets, lapsus.

The juveniles leave the egg sac in spring or fall, dispersing via ballooning on a silk thread (*Tetragnatha* in fall, *Pachygnatha* in spring).

This family contains 500 known species, 11 in the European part of the former USSR and three genera with nine species in Georgia.

Key to genera

- 1(2) All LE very close to each other or touching. Legs without spines. Abdomen round (*Pachygnathinae*). . . . 1. ***Pachygnatha*** (p. 356)
- 2(1) LE distant from each other. Legs with spines. Abdomen elongated (*Tetragnathinae*). **3**
- 3(4) Distance between ALE and PLE as long as distance between AME and PME. Abdomen extending backwards beyond the spinnerets, forming a long conical projection (Fig. 654). . . 2. ***Eucta*** (p. 358)
- 4(3) Distance between ALE and PLE shorter than distance between AME and PME. Abdomen not extending far behind the spinnerets; anterior part of abdomen broadened. . . 3. ***Tetragnatha*** (p. 358)

7.24.1 *Pachygnatha* Sundevall, 1823

Key to species

- 1(2) Pale yellow carapace with a well-developed dark median band and two more or less well-visible lateral bands (Fig. 646). Male cheliceral tip with a blunt tooth-like apophysis above the base of the claw (Fig. 645). Female genital opening like Fig. 647. Female body length 4.8–5.2 mm, male 4.6–5 mm. 1. ***P. clercki*** (p. 356)
- 2(1) Male cheliceral tip without such a blunt tooth-like apophysis. Dark brown or light yellow carapace with a dark median band but lacking lateral bands. **3**
- 3(4) Carapace light yellow. Male paracymbium tip strongly curved (Fig. 651). Female genital opening like Fig. 652. Female body length 4–5 mm, male 3–4.5. 2. ***P. listeri*** (p. 357)
- 4(3) Carapace darker, yellowish brown. Male paracymbium tip not curved (Fig. 653). Female genital opening simple. Female body length 3.5–4.2 mm, male 3–3.5 mm. 3. ***P. degeeri*** (p. 357)

1. *Pachygnatha clercki* Sundevall, 1823

Description: Female body length 5.3–6 mm; male 5–5.5 mm. The light brown carapace has a thin black fringe. The sternum is brown. The short and thick female chelicerae bear three thick teeth on the outside. The massive male cheliceral claw bears a thick tooth in the middle; its dorsal appendage

is blunt and curved inward (Fig. 645).

The dorsum of the round-oval, brown-gray abdomen bears a broad leaf-shaped mark, which is outlined with a black and silver band (Fig. 646). Epigyne like Fig. 648. Male palpus like Fig. 649.

Habitat: This hygrophilous species lives near water bodies. It can be found in both lowland and mountainous habitats.

Distribution: Palearctic (except North Africa), everywhere in the former USSR. **In Georgia:** Poti, Shovi, Mestia, Lagodekhi (Mcheidze 1955, 1966). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Pachygnatha clercki* Sundevall, 1823¹³⁶.

2. *Pachygnatha listeri* Sundevall, 1830

Description: Female body length 4–5 mm; male 3–4.5 mm.

♀ The light brown carapace bears dark lateral bands (Fig. 650)¹³⁷. The strongly curved female genital opening is directed forwards; its anterior edge is strongly chitinized (Fig. 652).

♂ The tarsus branch is cut off; it is as long as the dorsal part of the tibia. The paracymbium tip is strongly curved (Fig. 651).

Habitat: In grassy habitats on bushes and in mosses.

Distribution: Europe, Transcaucasus (Kusari), Siberia. **In Georgia:** Poti, Kobuleti, Lagodekhi, Shovi, Mestia (Mcheidze 1940–1950). First record in Georgia.

Taxonomy: Platnick (2013): *Pachygnatha listeri* Sundevall, 1830¹³⁸.

3. *Pachygnatha degeeri* Sundevall, 1830

Description: Female body length 3.5–4.5 mm; male 3–3.5 mm.

♀ The carapace is dark reddish brown. The simple genital opening is directed forward and is weakly raised; its anterior edge is somewhat different from the posterior edge.

♂ The paracymbium terminates on the dorsal side of the tarsus; it is twice as long as the dorsal side of the tibia. Its dorsal part is straight, not curved near the end (Fig. 653).

Habitat: In grass, in leaf litter, under rocks, in mosses in moist habitats.

Distribution: Widely distributed in Western Europe, everywhere in the former USSR, Kyrgyzstan, Siberia. **In Georgia:** Sukhumi (Spassky 1937), Poti, Batumi Botanical Garden, Eshera (Mcheidze 1969).

Taxonomy: Platnick (2013): *Pachygnatha degeeri* Sundevall, 1830¹³⁹.

¹³⁶In Mcheidze (1997) sic: '*Pachygnatha clarki*', lapsi.

¹³⁷Contra determination key instance 2.

¹³⁸In Mcheidze (1997) author sic: '*Sund.*, 1829', lapsus.

¹³⁹In Mcheidze (1997) author sic: '*Sund.*, 1829', lapsus.

7.24.2 *Eucta* Simon, 1881

1. *Eucta isidis* (Simon, 1880)

Description: Female body length 12 mm; male 8–11 mm. The brownish yellow carapace bears two brown longitudinal bands. The brown sternum bears a black fringe. The AE are very small compared to the PE. The short cheliceral claws are situated between two rows of small teeth, each with seven teeth (Fig. 655). In males the chelicerae bear thin and long claws; its chitinized dorsal apophysis is somewhat curved and its tip branched (Fig. 656).

The abdomen is strongly elongated; its frontal end is abruptly cut off. Behind the spinnerets the abdomen is elongated, forming a tapering cone. The dorsum is greenish silver and bears a longitudinal yellow band (Fig. 654). Epigyne like Fig. 658. Male palpus like Fig. 657.

Habitat: In grass near water bodies in lowland habitats.

Distribution: Mediterranean regions: France, Hungary, Balkans, North-Western and equatorial Africa; Central Asia, South-Western Asia, India. In the southern regions of the former USSR. **In Georgia:** Poti (Mcheidze 1941). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tetragnatha isidis* (Simon, 1880). Mcheidze (1997) also lists the synonyms *E. gallica* Simon, 1881 and *E. lutescens* Lendl, 1886, in Mcheidze (1997) sic: 'E. lutesens Lende 1886', lapsi..

7.24.3 *Tetragnatha* Latreille, 1804

Key to species

- | | | |
|-------|---|--------------------------------------|
| 1(10) | Males. | 2 |
| 2(5) | Dorsal side of chelicere with a thick appendage near the claw base and largest tooth of cheliceral furrow with two teeth (Fig. 659). Sternum center with a bright wedge-shaped mark. | 3 |
| 3(4) | Cheliceral appendage situated in the center of the outer side of the chelicere and with a sharp tip (Fig. 659). Inner edge of cheliceral furrow with a row of 7–9 excentrically arranged teeth. Silver-white abdomen with dark brown markings. Body length 6.2–8.2 mm. | 1. <i>T. montana</i> (p. 359) |
| 4(3) | Outer edge of cheliceral furrow with blunt teeth; inner edge with 7–8 teeth arranged in one row and with 2–3 teeth situated somewhat distant from the cheliceral furrow. Abdominal coloration as in the beforementioned species. Body length 6–8 mm. | 2. <i>T. nigrita</i> (p. 361) |
| 5(2) | Dorsal side of chelicere with one tooth. Sternum center with or without bright mark. | 6 |
| 6(9) | Black sternum with longitudinal yellow band. | 7 |

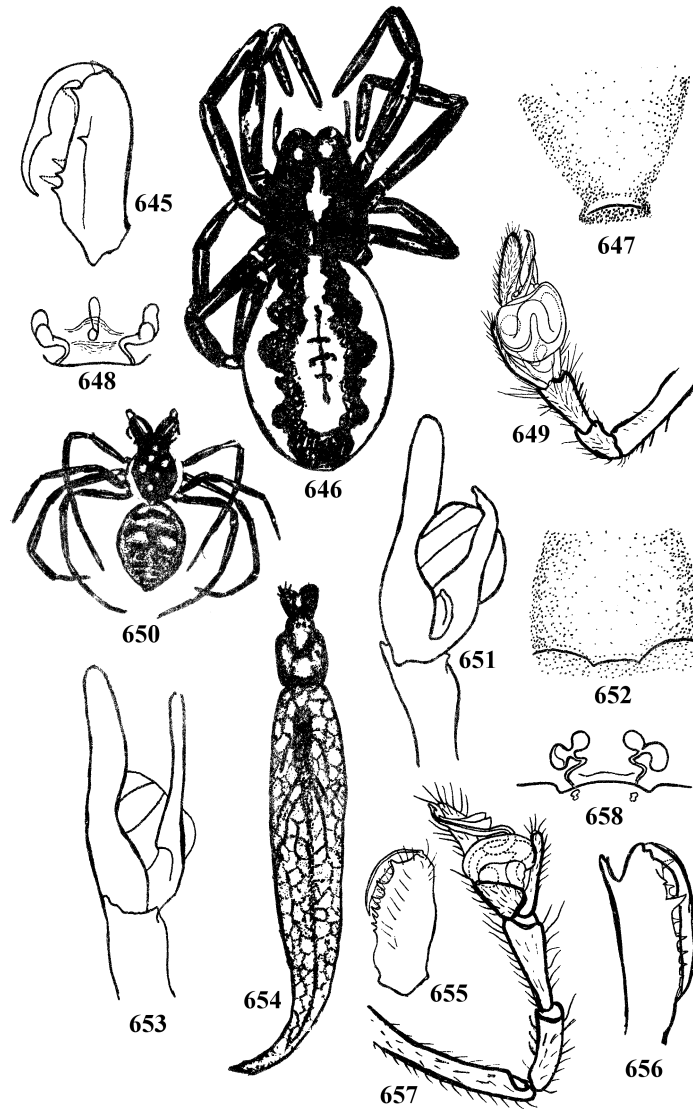
- 7(8) Labium tip bright and broadened. Long appendage on the dorsal side of the chelicere weakly branched (Fig. 663). Body length 6–9 mm. 3. *T. extensa* (p. 361)
- 8(7) Labium tip bright and narrowed. Long appendage of the dorsal side of the chelicere not branched (Fig. 668). Body length 4.5–5 mm. 4. *T. pinicola* (p. 362)
- 9(6) Unicolored sternum sometimes with a darker fringe. Appendage on the dorsal side of the chelicere situated near the claw base. Body length 4–5.5 mm. 5. *T. obtusa* (p. 362)
- 10(1) Females. 11
- 11(14) Black or brown sternum with a yellow median band. 12
- 12(13) Labium tip bright and broadened. Dorsal side of the chelicere with a small tooth near the claw basis in addition to the usual teeth on the edges of the cheliceral furrow (Fig. 664). Body length 8–11 mm. 3. *T. extensa* (p. 361)
- 13(12) Labium tip bright and narrowed. Dorsal side of the chelicere lacking such a tooth near the claw basis (Fig. 669). Body length 5–6 mm. 4. *T. pinicola* (p. 362)
- 14(11) Sternum unicolor, sometimes with darkened edges. 15
- 15(16) Chelicere in its basal half on the dorsal side with a blunt tooth-like tubercle near the claw basis. Body length 7–10 mm. 1. *T. montana* (p. 359)
- 16(15) Chelicere lacking such a tubercle. 17
- 17(18) Cheliceral claw basis somewhat prominent. Dorsal side of the chelicere with a small tooth near the claw basis in addition to the usual teeth on the edges of the cheliceral furrow. 1. *T. nigrita* (p. 361)
- 18(17) Cheliceral claw basis not like this. Body length 4.5–6.5 mm. 5. *T. obtusa* (p. 362)

1. *Tetragnatha montana* Simon, 1874

Description: Female body length 7.5–10.5 mm; male 7–8.5 mm. The brown carapace bears a dark fringe and a vague dark central mark. The chelicerae of the female are short. The thin and long chelicerae of the male bear a dorsal appendage with a branched tip (Fig. 660). The dorsum of the silver-white, sometimes brown-gray abdomen bears a row of wedge-shaped marks near the lateral fringe. Male palpus like Fig. 661.

Habitat: This hygrophilous forest species lives near rivers and other water bodies, constructing its web between the twigs and leaves of shrubs.

Distribution: Europe, Central Asia, China, USSR. **In Georgia:** Tbilisi, Gardabani, Lagodekhi, Borjomi, Bakuriani, Tqibuli, Kobuleti, Batumi, Sukhumi, Akhali Atoni, Poti, Samegrelo (Mcheidze 1938, 1968, 1972). First record in the Transcaucasus.



Figs. 645–658. Tetragnathidae, *Pachygnatha*, *Eucta*. *P. clercki*: 645 – chelicere; 646 – female habitus; 647 – female genital opening; 648 – epigyne; 649 – male palpus. *P. listeri*: 650 – dorsal habitus; 651 – male palpus; 652 – femae genital opening. *P. degeeri*: 653 – male palpus. *E. isidis*: 654 – female habitus; 655 – female chelicere with short claw; 656 – male chelicere with long claw; 657 – male palpus; 658 – epigyne.

Taxonomy: Platnick (2013): *Tetragnatha montana* Simon, 1874¹⁴⁰.

2. *Tetragnatha nigrita* Lendl, 1886

Description: Female body length 6–11 mm; male 6–8 mm. The black or dark brown sternum bears a central yellow longitudinal band. The legs are brown or olive and bear black rings. The bases of the coxae and femora are bright.

The silver-white abdomen bears dark brown markings (Fig. 662). The black or brown cheliceral appendage is somewhat long and fragile, straight or weakly curved inwards. The apical edge of the chelicere is armed with a small central and very blunt tubercle. The claw is almost cylindrical and bulged in its apical third.

Habitat: In moist habitats on grasses and shrubs; abundant near the sea shore in cane brakes and ferns.

Distribution: Regions of Belgorod and Tuapse. **In Georgia:** Sukhumi (Gulripshi, Spassky 1937), Poti, Gudauta, Tshakvi, Batumi Botanical Garden (Mcheidze 1954).

Taxonomy: Platnick (2013): *Tetragnatha nigrita* Lendl, 1886.

3. *Tetragnatha extensa* (Linnaeus, 1758)

Description: Female body length 7.5–10 mm; male 5–6.5 mm. The carapace is reddish yellow. The dark sternum bears a bright wedge-shaped mark. The cheliceral claw of the female is very long, reaching the last row of teeth. The chelicere of the male bears a chitinized branched dorsal appendage (Fig. 663).

The elongated abdomen is broadest in its anterior third; its dorsum is greenish, shining silvery and bears weakly developed brownish leaf-shaped markings. The dark venter bears two parallel yellow or silver bands (Fig. 667). Epigyne like Fig. 666. Male palpus like Fig. 665.

Ecology: This hygrophilous species lives near forests, rivers and other water bodies, where reed, sedge and moor-grass are abundant (e.g. in cane brakes and other grassy habitats). There, it constructs its vertical orb web between plants. It is abundant in lowland locations in a belt along the Black Sea Coast.

Distribution: Holarctic, everywhere in the former USSR. **In Georgia:** Batumi (Kulczyński 1895). Widely distributed in suitable habitats (Mcheidze 1938–1977).

Taxonomy: Platnick (2013): *Tetragnatha extensa* (Linnaeus, 1758). Mcheidze (1997) also lists the synonym *T. groenlandica* Thorell, 1872.

¹⁴⁰Mcheidze (1997) also lists the synonym *T. solandri* with author sic: 'Fick., 1874', lapsus.

4. *Tetragnatha pinicola* L. Koch, 1870

Description: Female body length 6–7 mm; male 3.5–4 mm. The carapace is yellowish. The sternum is brown. The female chelicerae are short and thick (Fig. 669). The thin and long chelicerae of the male bear a large tooth. The chitinized dorsal appendage is thick and curved inwards.

The dorsum is silvery white with a grayish longitudinal band and 2–3 pairs of lateral marks in its posterior half (Fig. 670). The black venter bears two longitudinal silver bands. Epigyne like Fig. 672. Male palpus like Fig. 671.

Habitat: Near water bodies on forest edges.

Distribution: Palearctic (except North Africa), in the Northern European part of the former USSR. **In Georgia:** Lagodekhi, Bakuriani (Mcheidze 1940). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tetragnatha pinicola* L. Koch, 1870. In Mcheidze (1997) author with brackets.

5. *Tetragnatha obtusa* C. L. Koch, 1837

Description: Female carapace length 2.6–2.8 mm, body length 7–8 mm. The yellow carapace bears a gray fringe. The gray-yellow cephalic region is separated from the thoracic region by sharp dark lines. The reddish brown thoracic region bears a dark brown fringe. The chelicerae are orange yellow, bearing 6–7 teeth, of which one tooth is distant from the others. One blunt tooth is situated near the claw base. The gnathocoxae are yellow. The dark brown labium bears a bright edge.

The abdominal markings include three lateral lobes on each side (Fig. 673).

Habitat: Abundant near water bodies, on bushes and in grass.

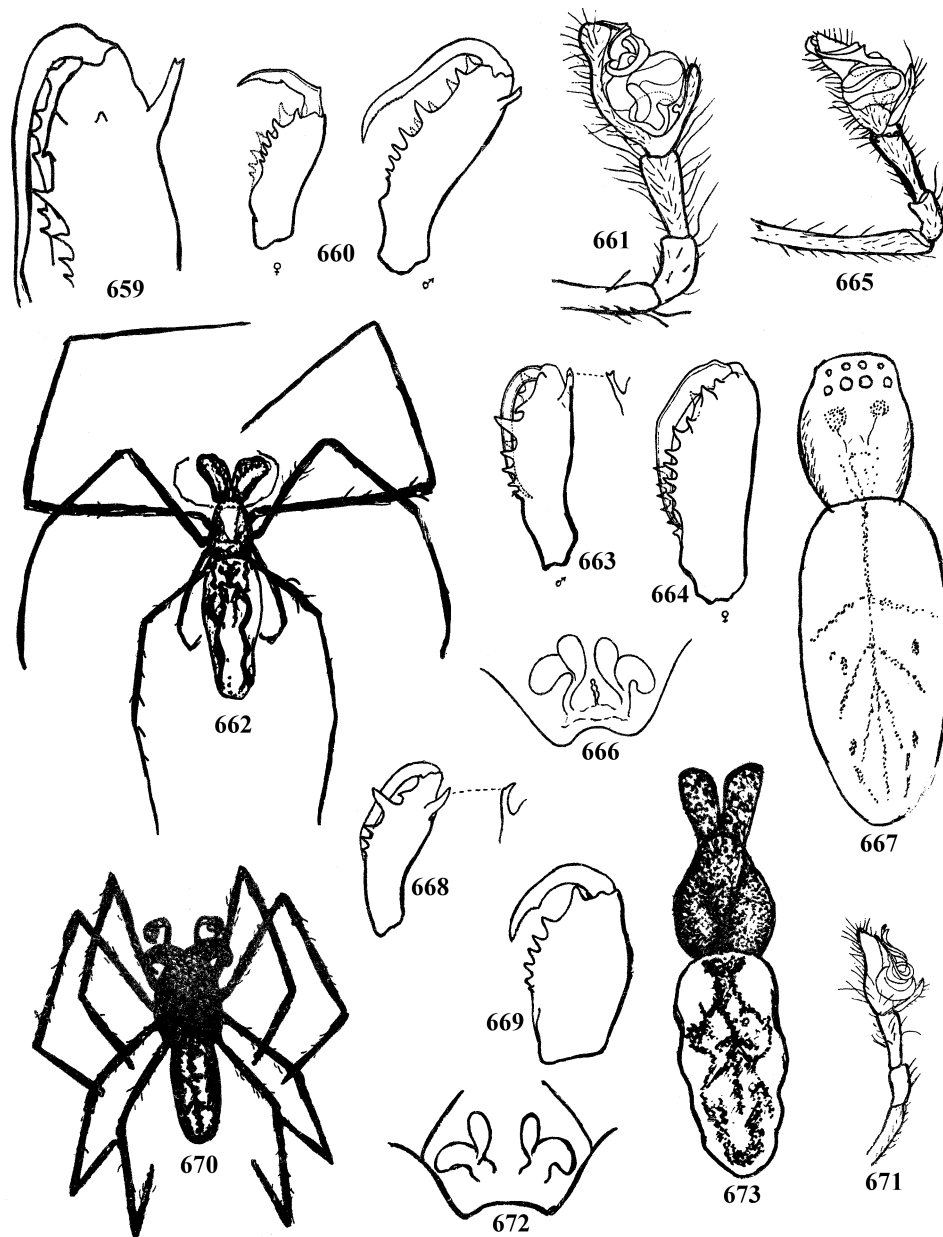
Distribution: European part of the former USSR. **In Georgia:** Kharagauli (Nunusi), Bakuriani, Sairme, Tqibuli, Poti, Sukhumi, Qvareli, Sioni, Lake Bazaleti (Mcheidze 1951–1961). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tetragnatha obtusa* C. L. Koch, 1837.

7.25 Nesticidae

The bright carapace bears a darkened fringe. The eight eyes are arranged in two rows, with the LE almost touching each other. The clypeus is broad. The edge of the cheliceral furrow is armed with thick teeth. The long palpi of the female bear thick curved claws. The basis of the male palpus cymbium bears a thick paracymbium; a prominent apophysis extends from the bulbus. The long and thin legs lack any spines; the claws bear three teeth.

The abdomen is high, sometimes spherical; its posterior end is narrowed. The epigyne is weakly chitinized. The three pairs of spinnerets are well



Figs. 659–673. **Tetragnathidae, *Tetragnatha*.** *T. montanta*: 659 – male outer cheliceral furrow; 660 – female and male chelicerae; 661 – male palpus. *T. nigrita*: 662 – female dorsal habitus. *T. extensa*: 663 – male chelicere; 664 – female chelicere, 665 – male palpus; 666 – epigyne; 667 – female dorsal habitus. *T. pinicola*: 668 – male chelicere; 669 – female chelicere; 670 – male dorsal habitus; 671 – male palpus; 672 – epigyne. *T. obtusa*: 673 – female dorsal habitus.

developed.

The species of the Nesticidae are hygrophilous; we find them in moist caves, cellars, hollows and rock crevices. Their web somewhat resembles the web of a theridiid spider. The round egg sac contains almost 100 eggs; in the case of true troglobiontic species the egg number per egg sac is lower. Sometimes the egg sac is carried around by the female, attached to the spinnerets.

The genus *Nesticus* is distributed mainly in Central and Southern Europe, USA, China, Japan, Seychelles, Western Africa, Mexico and Venezuela.

Within the four genera of the Nesticidae we know 500 species, of which seven species occur in the former USSR and six species in the Caucasus. Of these, *Nesticus borutzkyi* is also known from Turkmenistan (Wiehle 1963). Five species from one genus have been recorded from Georgia. Of these, three species are endemic to the Caucasus and one species (*N. zaitzevi*) is endemic to Georgia.

7.25.1 *Nesticus* Thorell, 1869

Key to species

- | | | |
|-------|--|----------------------------------|
| 1(12) | Males. | 2 |
| 2(11) | Lower paracymbium branch branched. | 3 |
| 3(4) | Upper paracymbium branch shaped like a thin lamella, its inner margin with 4–5 small teeth (Fig. 674). Carapace length 7.98 mm. Length of leg I 22.53 mm. | 1. <i>N. birsteini</i> (p. 365) |
| 4(3) | Upper paracymbium branch shaped like a thin lamella and bearing numerous fine teeth. | 5 |
| 5(8) | Structure of the copulation apparatus not like in the other species ¹⁴¹ | 6 |
| 6(7) | Upper paracymbium branch almost entirely of semilunar shape and with a blunt tip. Distal part of lower paracymbium branch smaller and pointed (Fig. 677). | 2. <i>N. borutzkyi</i> (p. 366) |
| 7(6) | Paracymbium not like this ¹⁴² | 8 |
| 8(5) | Structure of the copulation apparatus similar in these species ¹⁴³ | 9 |
| 9(10) | Upper paracymbium branch sickle-shaped and with an unfolded tip (Fig. 678, 678 a). | 3. <i>N. ponticus</i> (p. 366) |
| 10(9) | Upper paracymbium branch sickle-shaped but with a somewhat curved tip (681, 681 a). | 4. <i>N. caucasicus</i> (p. 367) |
| 11(2) | Lower paracymbium branch not branched. Palpus like Fig. 683. | 5. <i>N. zaitzevi</i> (p. 368) |

¹⁴¹Instances 5(8), 7(6) and 8(5) cannot clearly be resolved, possible lapsi.

¹⁴²See last footnote.

¹⁴³See last footnote.

- 12(1) Females. **13**
- 13(14) Carapace yellow, length 1.36–2.5 mm. Length of leg I 22.7 mm. Epigyne like Fig. 679. 3. *N. ponticus* (p. 366)
- 14(13) Carapace coloration not like this; carapace and legs longer. . . **15**
- 15(16) Carapace length 3.4 mm, unicolor pale yellow, sometimes with gray lateral band but never with a dark median band. Legs with or without dark rings. Length of leg I 31.5 mm. Epigyne like Fig. 682. 4. *N. caucasicus* (p. 367)
- 16(15) Carapace not unicolor, its length and length of leg I not like this. **17**
- 17(18) Distance between AME 1.5–2x as large as their diameter. Carapace length 1.6 mm. 2. *N. borutzkyi* (p. 366)
- 18(17) Distance between AME much larger than their diameter. . . . **19**
- 19(20) ALE and PLE touching each other. Distance between AME not much larger (0.02 mm) than their diameter. Epigyne trapezoid, its outer edge with a blackish brown line, the middle part of its posterior edge curved tongue-like, yellow-brown, sparsely covered with setae, which do not reach the posterior edge (Fig. 684). Reddish-brown marks of the sperm ducts are situated to the sides of the curved middle part. 5. *N. zaitzevi* (p. 368)
- 20(19) ALE and PLE touching each other. Distance between AME as large as their diameter. Carapace length 1.65 mm. Epigyne reddish-orange, its median plate raised behind a large transversal opening with two round tubercles in front of it (Fig. 676). These tubercles are situated in the anterior third of the sperm ducts. 1. *N. birsteini* (p. 365)

1. *Nesticus birsteini* Charitonov, 1947

Description: Female carapace length 1.65, width 1.5 mm; abdomen length 2.8 mm, width 1.75. Male abdomen length 3.5 mm.

♀ The main color of the the carapace is yellow; the thoracic region is outlined by a fine gray line. The cephalic region is somewhat darker than the thoracic region; with a longitudinal gray-black line extending from the AME to the posterior end of the carapace and two gray lines originating behind the PLE, which unite behind the cephalic region.

The clypeus is as high as the height of the ME trapezoid. The field of the AME is black; the eyes of the AER are curved backwards. The distance between the ME is about as long as their diameter. The LE touch each other. The chelicerae, labium and gnathocoxae are orange-yellow. The legs and the sternum are yellow.

The bright yellow abdomen bears gray lateral markings. The first and second transversal bands of the abdomen are more or less triangular. The venter is yellow. The epigyne is red-orange (Fig. 676).

♂ Carapace coloration and eye arrangement are similar to the female. The outer edge of the cheliceral furrow bears three large teeth; the inner edge bears nine small pointy teeth. The abdomen coloration is similar to the female. Copulation apparatus like Fig. 675.

Habitat: In caves.

Distribution: Khosta Wet Cave, in mines near Aguri, Akhuni, Beloskalskia, Voronzov Cave, in a cave near River Kamenka, in Krasnaya-Polyana Cave near Adler (North Caucasus, Krasnodar Region). **In Georgia:** Ratsha (Nikortsminda), in the riverbed of River Shareula (Mcheidze 1974).

Taxonomy: Platnick (2013): *Carpathonesticus birsteini* (Charitonov, 1947).

2. *Nesticus borutzkyi* Reimoser, 1930

Description: Female body length 5 mm; carapace length 1.6 mm. Male carapace and abdomen lengths 1.7 mm.

♂ The posterior end of the yellow carapace bears a triangular gray mark. The carapace is outlined by a gray line. The entire carapace is sparsely covered with fine reddish setae. About 15 long setae are situated in the posterior half of the cephalic region. The clypeus is higher than the height of the ME trapezoid. The ME are the smallest of all eyes; the LE are of similar size and touch each other.

Chelicerae, gnathocoxae and labium are reddish. Sternum, palpi and legs are yellow. The copulation apparatus is orange-red, partly black (Fig. 677).

The abdomen of both male and female is grayish white or rose, bearing gray markings consisting of pairwise distant bands on the dorsum near the anterior edge. These bands are broken near the posterior end of the abdomen. Two rhomboid or triangular transversal marks are situated behind these lines. Additionally, 3–5 pairs of transversal or somewhat diagonal bands are situated near the median band. These markings are especially well developed in juveniles and are weaker developed in adult specimens.

Habitat: In caves constructing small webs containing an egg sac (troglobiontic).

Distribution: Turkmenistan (Wiehle 1963). **In Georgia:** Rioni, Sataplia Cave, New Cave Tsqaltubo, White Cave near Tsqaltubo, Nikortsminda, in the riverbed of River Shareula. 20–25 m inside the caves at temperatures of 15 °C.

Taxonomy: Platnick (2013): *Carpathonesticus borutzkyi* (Reimoser, 1930).

3. *Nesticus ponticus* Spassky, 1932

Description: Female carapace length 1.36–2.5 mm, width 1.17–2.21 mm; abdomen length 2.4–3.9 mm, width 1.6–2.5 mm.

♀ The simple light yellow carapace has an evenly separated cephalic region with a well-developed median furrow. Its dorsal side is flat with very round sides and a narrowed anterior part. Three blackish lines and long setae are developed on the sides of the cephalic region, originating near the median furrow, extending towards the anterior edge and narrowing near the AE. The cephalic region bears one long seta behind the AME on the median line. The PE are almost uniform and arranged in a weakly curved line. The distance between the AME and the ALE is almost as large as their diameter but the distance between the AME is smaller.

The chelicerae are longer than the clypeus. The outer edge of the cheliceral furrow is armed with three teeth. The tips of the yellow and reddish gnathocoxae and labium are diagonally cut off. The yellow sternum bears black markings. The legs and palpi are yellow with partly black ventral sides.

The anterior part of the ash-gray abdomen is round; its posterior part is weakly pointed. It bears blackish marks and 7–8 uniform marks, of which the anterior marks are spaced distant from each other, whereas the remaining marks are arranged pairwise or irregularly; the marks on the sides are arranged irregularly. The unicolor venter bears two black marks.

♂ The males are smaller than the females. Copulation apparatus like Fig. 680.

Habitat: In dark wet caves and cellars.

Distribution: Khosta, Upper Mzimti (Adler–Krasnodar), Tarkiladze Cave (near Gudauta). Caucasian endemic species.

Taxonomy: Platnick (2013): *Aituaria pontica* (Spassky, 1932).

4. *Nesticus caucasicus* Charitonov, 1947

Description: Female carapace length 3.4 mm, width 2.8 mm; abdomen length 4.7 mm, width 2.6 mm. Male carapace length 3 mm, width 2.6 mm; abdomen length 4.2 mm, width 1.85 mm.

♀ The sides of the thoracic region on the whitish yellow carapace bear a thin light gray band; the posterior part of the gray-yellow cephalic region bears black-gray markings forming a triangular mark. Long prominent setae are arranged on the black markings of the cephalic region.

AER and PER are curved forward; the LE stand close to each other. A thin longitudinal median line originates behind the PME and stretches across the carapace to its posterior end. The sides of the carapace are sparsely covered with somewhat long gray setae. The opening of the poison gland is visible on the cheliceral claw of the brown-orange chelicere. The light gray sternum is covered with long silky-gray setae. The legs and palpi are yellow.

The yellowish white abdomen bears black markings, which form a somewhat curved mark in its anterior part and four transversal marks are directed towards the dorsal side. Two transversal marks merge in the anterior part and the sides bear longitudinal marks. The entire abdomen is covered with

long gray setae. The spinnerets are orange. The posterior part of the gray-yellow venter is yellow. The orange red epigynal plate is broad and triangular (Fig. 682).

♂ The body coloration is similar to the coloration of the female. The abdominal markings are more pronounced compared to the female but the lateral elongated marks are lacking and the anterior mark consists of thin short bands.

Habitat: In caves.

Distribution: Tshlakhe Cave (Krasnodar Region), Anishi (near Gudauta, 1943). Caucasian endemic species.

Taxonomy: Platnick (2013): *Carpathonesticus caucasicus* (Charitonov, 1947).

5. *Nesticus zaitzevi* Charitonov, 1939

Description: Female carapace length 1.9–2.55 mm, width 1.65–2.25 mm; abdomen length 3.7–5.5 mm, width 2.5–4.1 mm. Male carapace length 1.8–2.3 mm, width 1.6–2.8 mm; abdomen length 2.3–3.1 mm, width 1.6–2 mm.

♀ The orange-yellow carapace is covered with thin setae; the cephalic region is more shining than the thoracic region. The posterior triangular depression is situated between the cephalic and thoracic region. The lateral fringe of the carapace is darkened gray.

The AER is curved backward; the PER is weakly curved forward. Grayish lines originate behind the PLE and merge towards the posterior part; they are pubescent with long setae. A row of seven setae originates between the AME and extends towards the median furrow of the carapace. A diagonal row of 12–14 setae originates behind the LE.

The orange-yellow sternum is sparsely covered with long and short setae. The chelicerae bear three thick teeth with small teeth in between as well as up to 25 small teeth on the inner edge of the cheliceral furrow. The chelicerae also bear a row of 15 setae. The orange-yellow legs and palpi are covered with long setae and trichobothria.

The abdomen is weakly higher than broad and covered with gray setae. Sometimes the dorsum bears two diagonal triangular marks, sometimes it consists of five pairs of marks and sometimes dorsal markings are entirely lacking. In the latter case, the entire abdomen is unicolor gray or marmorated gray. The area near the spinnerets on the venter bears 1–2 dark marks. The epigyne is trapezoid (684).

♂ The coloration is similar to the coloration of the female. The dorsal abdominal markings are more pronounced in the male, e. g. the five pairs of diagonal triangular marks (especially in juveniles). Copulation apparatus like Fig. 683.

According to the classification of Kratochvili (1933) *N. zaitzevi* and *N. ponticus* both belong to the 'Transylvanian' group but *N. borutzkyi* belongs

to the 'Gertsch' group¹⁴⁴.

Ecology: Troglobiontic species in caves. These spiders suspend their egg sac (diameter 4–4.8 mm) containing few eggs in a brittle white web.

Distribution: Adzaba Cave, Kelasuri, near village Mikhailovski (Sukhumi region), Upper Andreevski 'Goova Atapa' (Otshamtshire), Psirtska 'Rodnik' at Venetian Bridge. **In Georgia:** Atoni¹⁴⁵, Tsebelda, Upper Bakuriani, characteristic for the Tsebelda-Otshamtshire region. Caucasian endemic species.

Taxonomy: Platnick (2013): *Carpathonesticus zaitzevi* (Charitonov, 1939). In Mcheidze (1997) sic: 'Charit., 1936', lapsus.

7.26 Linyphiidae

The eight eyes of these spiders are arranged in two rows. ALE and PLE stand close to one another; sometimes they touch each other. The PER is more or less curved. In troglobiontic species, the eyes are partly or entirely reduced. The outer and inner edges of the cheliceral furrow bear 2–6 teeth; the teeth of the outer edge are thicker than on the inner edge. The labium is wider than long. The carapace lacks a median fovea.

The leg segments, especially the metatarsus, are long and thin. Except for leg I, all legs are armed with spines. The male copulation apparatus is of complex structure with a well-developed paracymbium and a thick bulbus with numerous appendages. In some species the cephalic region of the carapace is raised or even prominent.

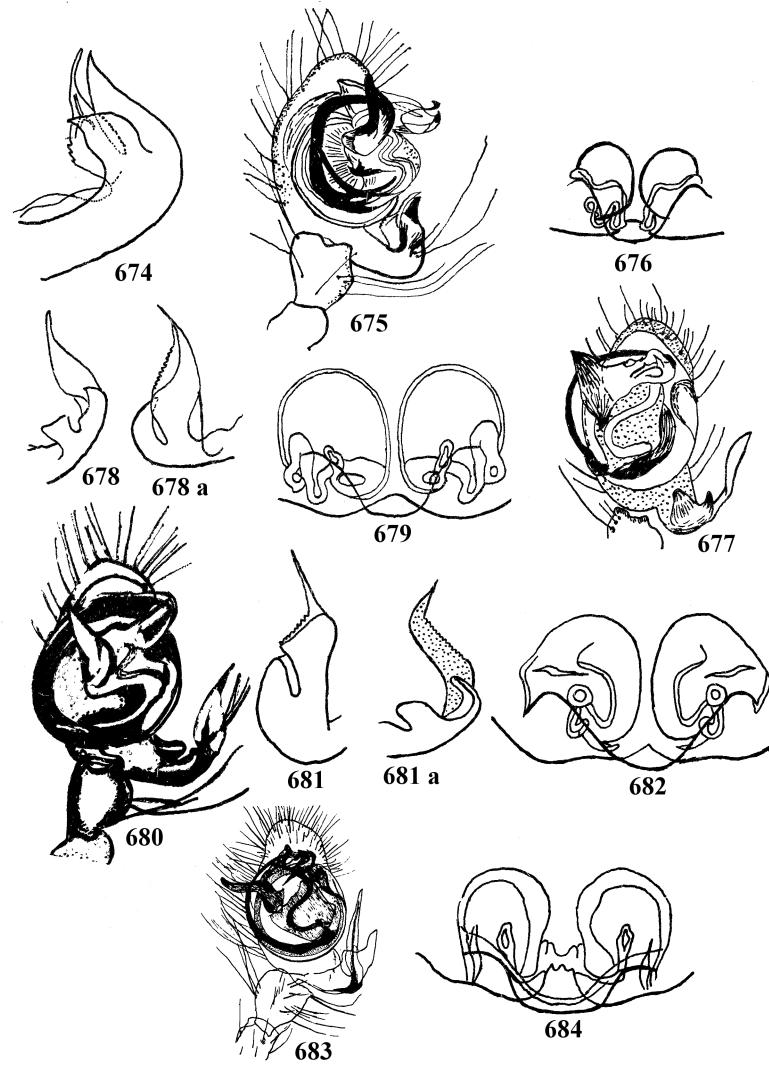
The elongated oval abdomen is always longer than high and with a gray, yellowish or white dorsum and often with dark markings. The venter is even darker. Usually, the epigyne is of simple structure, with a ⊥-shaped or triangular plate.

Linyphiid spiders construct inconspicuous webs directly above the ground, in grass, on shrubs or tree branches. The webs usually have a dome-like sheet on their underside, from which the spider hangs suspended upside-down. The small species of this family live in the field layer of forests, on the ground, in mosses and between mushrooms. Larger forms, like *Linyphia* or *Lepthyphantes*, live in grass, on shrubs and on branches.

Linyphiid spiders are mainly distributed in the Northern hemisphere; whereas they are much less abundant in tropical and subtropical regions and mostly absent from deserts. They are very abundant in the forest regions of the Palearctic. 86 linyphiid species are recorded in the former USSR, in Georgia 12 species from five genera.

¹⁴⁴Mcheidze (1997) sic: 'გერცენსკის ჯგუფში'

¹⁴⁵Probably referring to the location *Akhali Atoni* [SO].



Figs. 674–684. *Nesticidae*, *Nesticus*. *N. birsteini*: 674 – paracymbium; 675 – male palpus (ventral view); 676 – epigyne. *N. borutzkyi*: 677 – male palpus (ventral view). *N. ponticus*: 678, 678 a – paracymbium; 679 – epigyne; 680 – male palpus (ventral view). *N. caucasicus*: 681, 681 a: paracymbium; 682 – epigyne. *N. zaitzevi*: 683 – male palpus (ventral view); 684 – epigyne.

Key to genera

- 1(2) Carapace elongated near leg IV, forming a thin petiolus, giving the spider an ant-like appearance. 1. *Cresmatoneta* (p. 371)
- 2(1) Carapace without such petiolus, spider of the usual spider-like appearance. 3
- 3(4) AME diameter larger than clypeus height. Tibiae I and II without ventral spine. Cephalic region not raised. 2. *Tapinopa* (p. 372)
- 4(3) Eye diameter and clypeus height not like this. 5
- 5(6) ME quadrangle trapezoid. Distance between AME shorter than between PME. 3. *Linyphia* (p. 372)
- 6(5) ME quadrangle trapezoid. Distance between AME shorter than between PME.¹⁴⁶ 7
- 7(10) ME quadrangle very long. 8
- 8(9) Female cephalic region raised, males with a conically prolonged cephalic region. Tibia and metatarsus with numerous spines. Male palpus patella with very thick spines and small teeth. 4. *Bolyphantes* (p. 378)
- 9(8) Cephalic region not raised. Tibia and metatarsus with only few spines. Male palpus patella without such spines nor teeth, rarely with long thin spines. 10
- 10(7) Distance between PME shorter than between PME and PLE or of similar distance, then metatarsus I with fewer than four spines. 5. *Lepthyphantes* (p. 379)

7.26.1 *Cresmatoneta* Simon, 19291. *Cresmatoneta mutinensis* (Canestrini, 1868)

Description: Female carapace length 1.7 mm; male 2 mm. The thoracic region is somewhat broadened. Carapace and sternum are shagreen, yellowish or brown-red; sometimes the carapace is darker, brown-black. The long vertical chelicerae are covered with granules. The AER is somewhat curved; in females the PER is straight, in males weakly curved. The legs are yellow.

The venter and parts of the sides are dark, brown or black. The dorsum is partly black and bears three irregular white marks; the anterior part bears well-defined markings with dark longitudinal and transversal lines. The brown epigynal plate is semi-circular.

The male palpus is blackish, bearing a blunt bulbus with a chitinized apical part.

Habitat: In grass, on the forest floor.

¹⁴⁶Sic. Mcheidze (1997).

Distribution: Crimea, Khosta. **In Georgia:** Sukhumi (Spassky 1937), Poti (Mcheidze 1965).

Taxonomy: Platnick (2013): *Cresmatoneta mutinensis* (Canestrini, 1868)¹⁴⁷.

7.26.2 *Tapinopa* Westring, 1851

1. *Tapinopa longidens* (Wider, 1834)

Description: Female body length 3.5–5 mm; male 3.5–4 mm. The carapace of both males and females is dark brown-yellow. The cephalic region of the male is raised and bears three dark longitudinal lines and a black mark. In females, the PER is straight (in dorsal view); in contrast to the LE the ME are separated from each other.

The outer edge of the cheliceral furrow is armed with 6–7 thin teeth; the inner edge bears 5–6 uniform small teeth. The coxa, femur and tibia of the brown legs are black with fine apical rings (Fig. 685).

The large epigynal plate bears a transversal furrow. The venter is very brown.

Ecology: In lowland and mountainous regions in grass and on the forest floor. The large web of weakly elastic silk is suspended near the ground, under rocks and between plant roots. These spiders catch pest species of the forest.

Distribution: Iberian Peninsula, in the European part of the former USSR (only this one species). **In Georgia:** Batumi Botanical Garden, Poti (Mcheidze 1963). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Tapinopa longidens* (Wider, 1834). In Mcheidze (1997): sic: 'T. longidens (Wid. et Reuss., 1834)'.

7.26.3 *Linyphia* Latreille, 1804

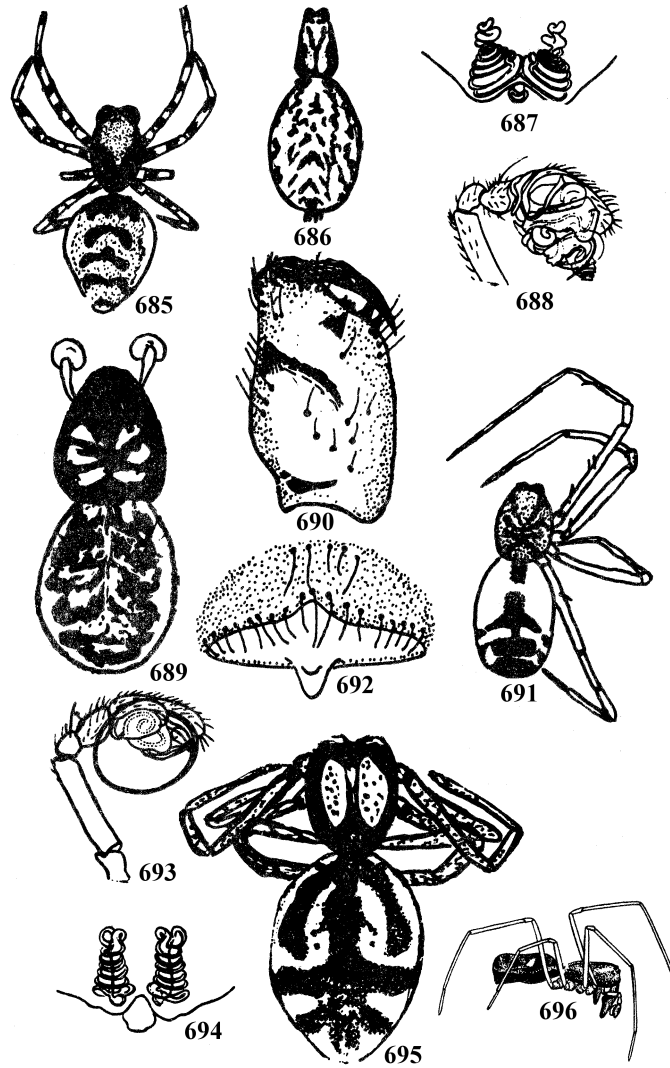
Key to species

- | | | |
|-------|---|---|
| 1(20) | All femora with a dorsal spine and femur I with additional lateral spine. | 2 |
| 2(5) | Femur I with 7–8 (rarely 9) lateral spines. | 3 |
| 3(4) | Carapace with median dark band with a forked anterior part (Fig. 686). Outer edge of cheliceral furrow with five teeth. Female body length 5–6.5 mm, male 5–7 mm. ... | 1. <i>L. triangularis</i> (p. 375) |
| 4(3) | Carapace without dark median band (Fig. 689). Outer edge of cheliceral furrow with three teeth. Male body length 5.5–6.5 mm, female 6–8 mm. | 2. <i>L. montana</i> (p. 375) |
| 5(2) | Femur I with 1–2 (rarely 3) lateral spines. | 6 |

¹⁴⁷In Mcheidze (1929) sic: 'Grematoneta mutinensis', lapsus.

- 6(7) Outer part of male chelicere with a well-developed tooth-like apophysis (Fig. 690). Male body length 5 mm. Anterior part of female abdomen with a thin dark median band (Fig. 691). Epigynal opening wide (much broader than long) and with a notch in its anterior edge (Fig. 692). Female body length 5–6 mm. 3. *L. emphana* (p. 375)
- 7(6) Outer part of male chelicere without tooth-like apophysis. Female abdomen with a broad median band. Epigynal opening narrow (hardly broader than long) or with two openings and an appendage in between. 8
- 8(13) Males. 9
- 9(10) Male copulation apparatus with a very long and thin embolus (Fig. 693). Carapace unicolor dark. Body length 4 mm. 4. *L. pusilla* (p. 376)
- 10(9) Male copulation apparatus very short, often without recognizable embolus. 11
- 11(12) Distance between PME longer than distance between PME and PLE. Body length 3–4 mm. 5. *L. peltata* (p. 376)
- 12(11) Distance between PME nearly as long as distance between PME and PLE. Body length 4–5 mm. 6. *L. hortensis* (p. 377)
- 13(8) Females. 14
- 14(15) Epigynal opening divided by a short apophysis in its anterior part, resulting in two openings. Epigyne like Fig. 697. Body length 4–5 mm. 6. *L. hortensis* (p. 377)
- 15(14) Epigynal opening not divided like this. 16
- 16(17) Anterior edge of epigyne deeply notched (Fig. 694). Abdomen like Fig. 695. Body length 4 mm. 4. *L. pusilla* (p. 376)
- 17(16) Anterior edge of epigyne uniformly rounded. 17
- 18(19) Distance between PME nearly as long as distance between PME and PLE. Body length 4–5 mm. 5. *L. peltata* (p. 376)
- 19(18) All eye distances of more or less similar lengths. 20
- 20(1) All femora lacking a dorsal spine. 21
- 21(22) Carapace with a bright broad lateral band, but metatarsi I and II with one spine. Abdominal markings like Fig. 699. Male copulation apparatus very short, embolus hardly recognizable (Fig. 700). Female body length 4.5–6 mm, male 4.5–5.5 mm. 7. *L. marginata* (p. 377)
- 22(21) Carapace without bright lateral band. Abdominal markings like Fig. 702. Tarsi I and II without spines¹⁴⁸. Male copulation apparatus with a very long embolus (Fig. 703). Female body length 5–6 mm, male 5 mm. 8. *L. frutetorum* (p. 378)

¹⁴⁸Sic Mcheidze (1997), possibly lapsus referring to the metatarsus instead.



Figs. 685–696. Linyphiidae (in part.), *Tapinopa*, *Linyphia* (in part.).
T. longidens: 685 – female habitus. *L. triangularis*: 686 – female habitus;
 687 – epigyne; 688 – male palpus. *L. montana*: 689 – male habitus. *L.*
emphana: 690 – chelicere; 691 – female habitus; 692 – epigyne. *L. pusilla*:
 693 – male palpus; 694 – epigyne; 695 – female habitus; 696 – male lateral
 habitus.

1. *Linyphia triangularis* (Clerck, 1757)

Description: Female body length 5.5–7 mm; male 4.5–6.5 mm. The brown carapace bears a dark longitudinal band. The sternum is black. The dorsum of the white abdomen bears a broad brown-gray dentate band and a triangular mark in its posterior part. The sides of the abdomen are gray with a white or brownish-gray mark (Fig. 686).

The epigynal plate is a large triangle with a spoon-shaped appendage (Fig. 687). The tip of the male bulbus bears a coiled-up chitinized spiral with a claw-shaped appendage (Fig. 688).

Habitat: In forests in a web suspended on shrubs and trees.

Distribution: Palearctic (except North Africa and Japan), widely distributed in the European part of the former USSR. **In Georgia:** Tbilisi, Gori (Ateni Valley), Gurdzhaani, Lagodekhi (Shromi Valley), Tusheti, Qvareli, Sighnaghi, Adigeni, Zekari Pass, Keda, Mestia, Sukhumi, Batumi (Mcheidze 1937–1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Linyphia triangularis* (Clerck, 1757).

2. *Linyphia montana* (Clerck, 1757)

Description: Female body length 5–7 mm; male 5–6 mm. The light or dark colored carapace has dark fringes and dark muscle foveae (Fig. 689). The brown chelicerae bear three teeth on the edge of the cheliceral furrow. The yellow legs have gray ventral rings.

The abdomen bears brown markings, which are darker on the sides. The blackish brown epigyne has a large opening.

Habitat: In grass and on bushes.

Distribution: Palearctic (except North Africa and China), widely distributed in the European part of the former USSR. **In Georgia:** Kodzhori, Tshiatura, Tqibuli, Vani (Mcheidze 1958–1961). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Nerienne montana* (Clerck, 1757).

3. *Linyphia emphana* Walckenaer, 1841

Description: Female body length 5–6 mm; male 5 mm. ♀ The brown carapace bears a thin median line. The chelicerae are reddish black. The legs have blackish green metatarsi and tarsi; all femora have a small basal spine.

The whitish yellow dorsum has a black anterior part bearing a thin line and a posterior part with a black band, which is broken by diagonal white lines in its posterior part (Fig. 691). The dark-brown to green venter bears whitish spots. The epigynal opening is wider than long, its triangle terminates in a broadened round part (Fig. 692).

♂ The carapace and chelerae are reddish brown; the outside of the chelicere bears a well-visible tooth-like apophysis (Fig. 690). The sternum is black. The legs are brown to dark green. The palpus has a brown tarsus and a black bulbus; the ventral part of the paracymbium is branched.

A narrow median band extends along the anterior half of the elongated oval abdomen.

Ecology: In forests. Adults appear in the summer. The webs are similar to the webs of *L. triangularis*.

Distribution: Palearctic, including China and Japan but not in North Africa. In the former USSR on Kola Peninsula, Belarus, Ukraine, Chuvashia and the regions of Moscow, Orlov, Kalinin and Sverdlovsk. **In Georgia:** Lagodekhi (Tshiauri Forest), Telavi (Dzhvarpatiosani), Tsivi, Qvareli, Shovi, Mestia, Ambrolauri (Khotevi, Tshrebulo), Kutaisi, Sairme, Adigeni (Mcheidze 1957–1966). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Neriene emphana* (Walckenaer, 1841). In Mcheidze (1997) with year '1842', lapsus.

4. *Linyphia pusilla* Sundevall, 1830

Description: Female body length 4.3–5.5 mm; male 4–5 mm.

♀ The venter is black, habitus like Fig. 695. The small epigyne bears a triangular notch, in which a scoopula-shaped scapus is situated (Fig. 694).

♂ The carapace, sternum and legs are brown. The white abdomen has dark dorsal markings and a broad and laterally curved black band in its anterior part as well as longitudinal bands, which in some places are developed as a number of marks. The bulbus is armed with a long flagellate embolus (Fig. 693).

The coloration of the male can be similar to the coloration of the female but often the abdomen is entirely black with two or four white marks (Fig. 696).

Habitat: Mostly in sunlit steppe habitats, rarely on the forest edge. They construct their webs near the ground between grass.

Distribution: Holarctic. **In Georgia:** Lagodekhi (Mt. Ninigori), Tusheti, Dusheti, Mestia, Lentekhi, Batumi (Tshakvistavi) (Mcheidze 1939, 1958, 1966). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Microlinyphia pusilla* (Sundevall, 1830). In Mcheidze (1997) with year '1829', lapsus.

5. *Linyphia peltata* Wider, 1834

Description: Female body length 4 mm; male 3–4 mm.

♀ The white abdomen bears a broad, longitudinal, dentate, brown band changing into black; its posterior part is broken by a diagonal white band. A longitudinal black or gray band extends along the sides of the abdomen.

The venter is brown or dark green; a white spot is situated in front of the spinnerets. The genital opening is small (Fig. 704).

♂ The brown chelicerae are unarmed. The palpus tibia is almost as long as the patella and as broad as long. The ventral part of the paracymbium is branched with a thin basal part. Its appendage terminates in a long fork with uniform ends.

Habitat: In grassy places and forests.

Distribution: Almost everywhere in the former USSR. **In Georgia:** Bakuriani, Lagodekhi (Mt. Ninigori) (Mcheidze 1940, 1949). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Neriene peltata* (Wider, 1834). Mcheidze (1997) author sic: 'Wid. et Reuss., 1834'.

6. *Linyphia hortensis* Sundevall, 1830

Description: Female carapace length 2–2.5 mm, abdomen 3–3.6 mm. Male carapace length 2–2.6 mm.

♀ The brown-red carapace bears a black marginal line and a dark median band. The broad, oval and bulged abdomen is black-violet or dark brown; bearing two longitudinal, more or less broad and often thin bands as well as a white lateral band (Fig. 698). The venter and spinnerets are black.

♂ The brown-red carapace is dark, thin and symmetrically shagreen; the cephalic region is especially long, broad and bulged. The clypeus is broad. The posterior part of the thoracic region is narrowed with a bluntly cut-off end. The PER is almost straight; the ME are somewhat larger, their distance from each other is in most cases more than three times as long as their diameter.

The brown-black sternum is symmetrically shagreen. The vertical chelicerae are very thick and bulged; the outside of their basal part is covered with granules. The legs have very long, thick and bright orange-red femora. The curved palpus is somewhat variable. The basis of the bulbus bears a long and thin apophysis.

Habitat: In grass and on shrubs.

Distribution: Belarus, Chuvashia, Moscow Region and Crimea. **In Georgia:** Lagodekhi (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Linyphia hortensis* Sundevall, 1830¹⁴⁹.

7. *Linyphia marginata* C. L. Koch, 1834

Description: Female body length 4.5–5.5 mm; male 4–5 mm.

♀ The black carapace bears a yellow fringe. The sternum is black. The legs are light brown. The white dorsum bears a broad black dentate band and separate marks on the posterior end. The black sides of the abdomen

¹⁴⁹Mcheidze (1997) author sic: '(Sund., 1829)', lapsus.

bear transversal white bands (Fig. 699). The venter is black. The round epigynal plate is cut off triangularly and bears a chitinized appendage (Fig. 701).

♂ The male is mainly black. The sides of the abdomen bear two white *L*-shaped marks. Juvenile males are of the same coloration as the females but with time become darker and darker. Male palpus like Fig. 700.

Habitat: In forests in a web on shrubs and grass.

Distribution: Europe, North America, Japan (Holarctic), in the entire European part of the former USSR. **In Georgia:** Lagodekhi, Kotshalo, Bakuriani, Bakhmaro, Vakidzhvari, Poti (Mcheidze 1940–1962). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Nerienne radiata* (Walckenaer, 1841).

8. *Linyphia frutetorum* C. L. Koch, 1834

Description: Female body length 5–6 mm; male 5 mm. Carapace in both males and females without a membranous fringe. Tibia I lacking a ventral spine or with one small submarginal spine on the outside.

The abdomen of the female is oval; its black dorsum is broad and somewhat dentate. Its posterior slope is broken by thin white bands (Fig. 702). The venter is entirely black and lacking a fringe. The epigynal opening is almost entirely covered by a plate. Male palpus like Fig. 703.

Habitat: In grass on the forest edge on leaves and twigs.

Distribution: Palearctic (except Japan). **In Georgia:** Sukhumi (Spassky 1937), Kobuleti, Tsikhisdziri, Sukhumi, Gulripshi, Abasha, Tshokhatauri, Bakhmaro, Ambrolauri, Shovi, Mamisoni Pass, Tshiora, Keda, Mestia, Akhaltsikhe, Adigeni, Baghdati, Kharagauli, Tqibuli, Telavi, Tsinandali, Qvareli, Gurdzhaani, Gremi, Tbilisi (Mcheidze 1937, 1941, 1951, 1979).

Taxonomy: Platnick (2013): *Frontinellina frutetorum* (C. L. Koch, 1834).

7.26.4 *Bolyphantes* C. L. Koch, 1837

1. *Bolyphantes alticeps* (Sundevall, 1833)

Description: Female body length 3.5–5 mm; male 4 mm. The thin carapace bears a black fringe and a longitudinal median band, which does not reach the clypeus. The cephalic region is bulged; its posterior end is tapering. Sternum and legs are yellow to brown. The PER is strongly curved backwards. The ME are small and narrowly spaced on a black background. The small PE are uniform and curved forward.

The abdomen is elongated oval, weakly bulged and with gray white marks; in the posterior half these marks are indistinct. Male habitus like Fig. 705. The epigynal plate bears two deep openings and a spoon-shaped appendage in between (Fig. 706). One half of the patella of the male palpus bears thick black spines (Fig. 707).

Habitat: In forests in a web near the ground on plant stems and between leaves.

Distribution: Central Asia and Northern Europe, in the former USSR in the regions of St. Petersburg and Moscow, near Tomsk, Southern Urals and Kamchatka, widely distributed in the forest zone of the European part of the former USSR. **In Georgia:** Lagodekhi (Mcheidze 1939). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Bolyphantes alticeps* (Sundevall, 1833).

7.26.5 *Lepthyphantes* Menge, 1866

1. *Lepthyphantes lagodechiensis* Mcheidze, 1997

Description Female: Carapace length 1 mm, abdomen length 1.5 mm. The brownish yellow carapace bears gray marks. A black-gray mark and lateral lines are visible on the thoracic region. The AME are the smallest of all eyes. The AE are of almost uniform size; the distance between them is almost twice as long as the median-eye diameter. The chelicerae and the gnathocoxae are of the same color as the carapace. The sternum and labium are dark brown. The palpus and legs are yellow.

The dorsum is grayish white and bears five pairs of longitudinally arranged long dark marks. Each side bears longitudinally arranged white oval marks, of which the anterior marks are the most elongated and narrow; the posterior marks are short and broad. Epigyne like Fig. 709.

Leg Armament: **Leg I:** femur: 1a in the distal half; patella: 1d apical (in the other legs 1d proximal short spine and 1d apical long spine); tibia: 1.1d, 1a, 1p; metatarsus: 1d in the proximal half. **Leg II:** tibia: 1.1d 1p in the distal half; metatarsus: 1d in the proximal half. **Leg III:** tibia: 1.1d, 1p in the distal half; metatarsus 1d in the proximal half. **Leg IV:** tibia: 1d in the proximal half.

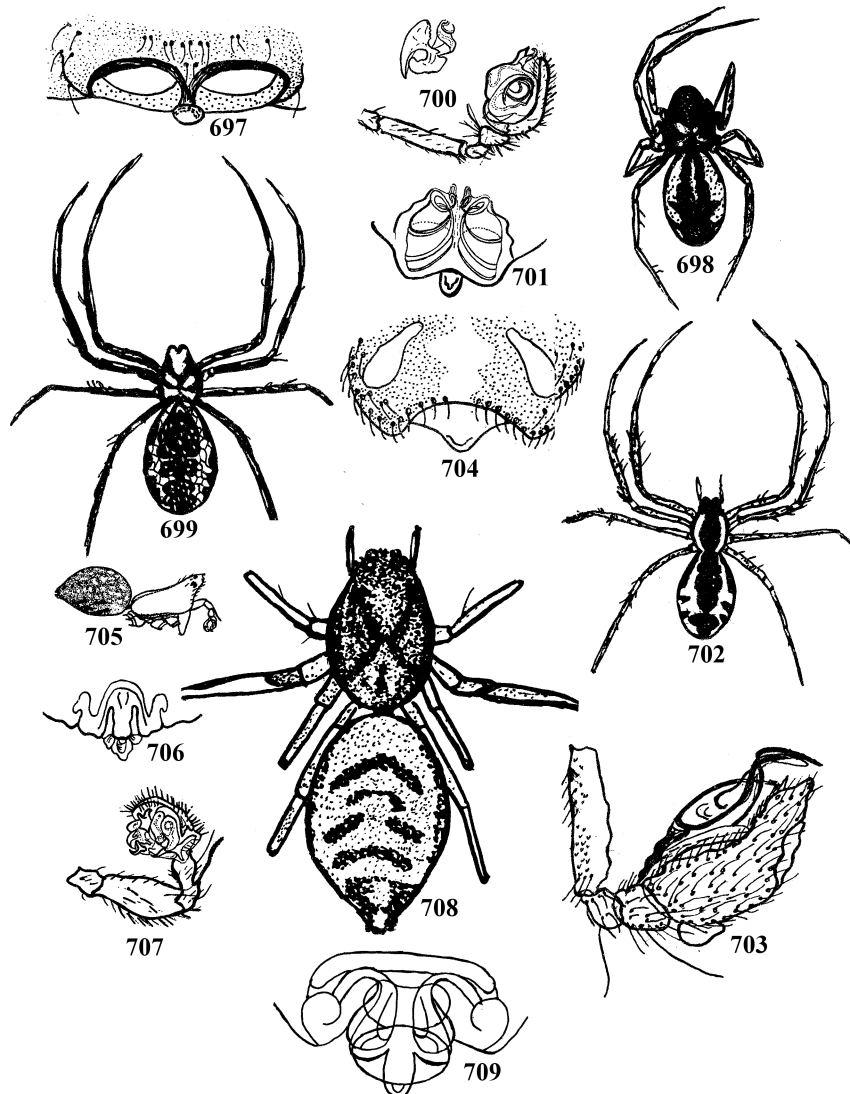
L. lagodechiensis is closely related to *L. mengei* Kulczyński, 1887 and *L. gallicus* Simon, 1929 but differs from them in epigyne structure and leg armament. The male is unknown.

Material: 2 ♀, 1940 in Lagodekhi.

Taxonomy: Platnick (2013): *Tenuiphantes contortus* (Tanasevitch, 1986).

7.27 Micryphantidae

These very small spiders are usually colored gray, black, brown, rarely red or orange. They strongly resemble spiders of the family Linyphiidae. Usually they do not have conspicuous markings. The eight eyes are arranged in two rows. The spinnerets are small. The epigyne is more or less of primitive structure, whereas the male copulation organs are very complex. Especially



Figs. 697–709. *Linyphiidae*, *Linyphia* (in part.), *Bolyphantes*, *Lepthyphantes*. *L. hortensis*: 697 – epigyne; 698 – habitus. *L. marginata*: 699 – habitus; 700 – male palpus; 701 – epigyne. *L. frutetorum*: 702 – female habitus; 703 – male palpus. *L. peltata*: 704 – epigyne. *B. alticeps*: 705 – male lateral habitus; 706 – epigyne; 707 – male palpus. *Lepthyphantes lagodechiensis*: 708 – female habitus; 709 – epigyne.

in males a scutum is developed on the abdomen. The body length is usually between 1 and 2 mm, sometimes up to 3 mm. Usually the males are somewhat smaller than the females but a sexual dimorphism is not well developed.

The sexes differ in the shape of the carapace, which in males often carries an appendage of varying shape in the cephalic region. This appendage sharply separates the cephalic region from the thoracic region. It plays an important role during copulation, when the female inserts its cheliceral claws into this appendage¹⁵⁰. Often males differ from the females by armed chelicerae, especially in the genus *Erigone*. The legs do not differ much between the sexes. The copulation apparatus of the males sometimes bears additional appendages on the femur and tibia (*Erigone*). The embolus is long, sometimes suspended or not recognizable at all.

Besides the structure of the copulation apparatus as a systematic criterion in this family other criteria, such as the number and arrangement of trichobothria and spines on the metatarsus and the arrangement of spines on the tibia, are widely utilized for the classification of species. The assessment of these characters using a dissecting microscope is necessary for species determination.

Just as in the Linyphiidae, the Micryphantidae are very abundant in the temperate zones but are hardly present in deserts. A number of species inhabit tropical regions, but the majority of species is abundant in the forest zone, forest tundra and tundra of the Palearctic. They are a characteristic group of the North, dominating the araneofauna of these regions. Many species are reported from Greenland and Novaya Zemlya. We also find micryphantid spiders in the mountains at 3000 m a.s.l., e.g. *Erigone* species on Mamisoni Pass in the alpine zone, in Mestia, Lagodekhi (on Mt. Ninigori at 2400 m a.s.l.).

Most species of this family are hygrophilous, inhabiting mires, the shores of water bodies, mosses in moist habitats or the forest floor. In our regions, the Micryphantidae develop 1–2 generation in one year. Their egg sac is of simple structure, containing 5–7 eggs; the first of the five molts takes part within the egg sac (like in the Linyphiidae). They construct a horizontal web, catching mostly springtails, aphids and other small insects.

Erigone dentipalpis and *E. longipalpis* are distributed near the sea and on the shores of large water bodies, feeding on small-sized crustaceans and pupae and eggs of midges. Many species disperse in spring and winter via ballooning, including both juveniles and adults and mostly both sexes, in some species only the females.

Many species exist in this family, but are not well-studied, especially in the former USSR. It can be guessed, that 300–350 species exist in this family; 72 species are recorded from the European part of the former USSR,

¹⁵⁰Here Mcheidze (1997) refers to a Fig. 749, which does not exist. Lapsus.

in Georgia four genera with six species.

Key to species

- 1(2) Males. **2**
 2(3) Carapace with long thick setae between the cephalic and thoracic regions (Fig. 710). Pedipalpus patella longer than tibia.
 1. *Gnathonarium* (p. 382)
 3(2) Area between cephalic and thoracic regions lacking any setae. Pedipalpus patella not longer than tibia. **4**
 4(5) Protuberance of the carapace terminating in front of PME.
 2. *Cornicularia* (p. 383)
 5(4) Carapace without protuberance. **6**
 6(7) Cephalic region considerably raised. 3. *Pelecopsis* (p. 383)
 7(6) Cephalic region not considerably raised. **8**
 8(9) Chelicerae with thick teeth and small tubercles; the last tubercle with short spines. Pedipalpi long, its patella with a long apophysis. 4. *Erigone* (p. 384)
 9(8) Number of cheliceral teeth and tubercles and pedipalpus length not like this. **10**
 10(1) Females. **11**
 11(12) Tarsus claws of leg I with 1–6 teeth. Radial carapace furrows developed with a few imprinted long spots reaching the carapace edge. 2. *Cornicularia* (p. 383)
 12(11) Tarsus claws of leg I with 4–5 teeth. Radial carapace furrows short and without imprinted spots. **13**
 13(14) Carapace edge with numerous small teeth. . 4. *Erigone* (p. 384)
 14(13) Carapace edge without teeth. **15**
 15(16) Dorsum with a conspicuous reddish brown scutum.
 3. *Pelecopsis* (p. 383)
 16(15) Dorsum not like this.¹⁵¹ **17**

7.27.1 *Gnathonarium* Karsch, 1881

1. *Gnathonarium dentatum* (Wider, 1834)

Description: Female and male body length 2.2–2.6 mm. The posterior part of the cephalic region is bulged, with a curved furrow and decorated with a broad band consisting of fine granulate setae (Fig. 710). The patella is strongly elongated, longer than the tibia; the tarsus is somewhat thick and long.

¹⁵¹Key ends here in Mcheidze (1997).

The brown epigynal plate is rough and with a simple brown terminal plate. The ventral part of the bulbus is outlined black and bears a bulged sail-like lamella.

Habitat: In moist grassy places.

Distribution: Regions of Moscow, Voronezh and Vitebsk. **In Georgia:** Sukhumi (Spassky 1937).

Taxonomy: Platnick (2013): *Gnathonarium dentatum* (Wider, 1834)¹⁵².

7.27.2 *Cornicularia* Menge, 1869

1. *Cornicularia vigilax* (Blackwall, 1853)

Description: Female body length 2.4–2.7 mm; male 2–2.2 mm. The cephalic region bears no protuberance. The sternum surface is smooth, lacking spots (rarely with spots in the middle). In females the legs are dark yellow or brown; in males the legs are yellow or brown; the metatarsus and often the patella are olive colored. The coxa and femur of leg I bear fine black lines on the ventral side.

The epigynal plate is almost circular, bulged, black and somewhat narrowed. The upper apophysis of the male tibia is of simple structure, thick and broadened in its basal half, which is diagonally directed forward.

Habitat: In moist places on the ground.

Distribution: Estonia, Chuvashia, Moscow, Crimea. **In Georgia:** Sukhumi (Spassky 1937), Poti (Mcheidze). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Walckenaeria vigilax* (Blackwall, 1853)¹⁵³.

7.27.3 *Pelecopsis* Simon, 1864¹⁵⁴.

1. *Pelecopsis odontophorum* (Kulczyński, 1895)

Description: Male carapace length 0.73 mm, width 0.60 mm. The grime-colored brown carapace is almost as long as broad. The cephalic region of the reddish carapace bears a somewhat colorless hump and gnathocoxae; in dorsal view this hump is somewhat thick and outlined by a broad black band in its posterior part. Its anterior part is narrowed, shining and its sides are weakly furrowed.

A hump is developed in the cephalic region; which is weakly higher than broad. The darker thoracic part bears numerous spotted furrows. The usual central fovea is not developed. The AME and PME form a trapezoid. The gnathocoxae are strongly curved; the labium is short and broad. The legs and palpi are bright yellow to reddish.

¹⁵²In Mcheidze (1997) sic: 'G. dentatum (Wid. et. Reuss., 1834)', lapsus.

¹⁵³In Mcheidze (1997) sic: 'C. vidilax', lapsus.

¹⁵⁴Mcheidze (1997) also cites the synonym *Lophocarenum* Menge, 1868, sic: 'Lophacarenum', lapsus.

The auburn ellipsoid flat abdomen is densely covered with bulged spots. The sickle-shaped flat paracymbium has a blunt tip. The basal part of the bulbus consists of two arches; the inside of its apical part forms a horn and its outside bears a thin black spine.

Habitat: In grassy places.

Distribution: Tbilisi (Kulczyński 1895). Georgian endemic species.

Taxonomy: Platnick (2013): *Pelecopsis odontophora* (Kulczyński, 1895)¹⁵⁵.

7.27.4 *Erigone* Audouin, 1826¹⁵⁶

Key to species

- 1(2) ♀ Epigynal opening round (Fig. 712). Body length 2–2.6 mm.
♂ Palpus tibia with one dorsal and one ventral apophysis, but lacking a lateral apophysis (Fig. 711). Body length 2.2–2.4 mm. 1. *E. dentipalpis* (p. 384)
- 2(1) ♀ Epigyne like Fig. 714. Body length 2.5–3.5 mm.
♂ Teeth of the palpus tibia crossing each other (Fig. 713). Body length 2.5–3.5 mm. 2. *E. longipalpis* (p. 385)
- 3(3) ♀ Epigynal opening oval (Fig. 717).
♂ Palpus tibia with one short and one broad apophysis, which are situated between the dorsal and ventral apophyses (Fig. 716). 3. *E. atra* (p. 385)

1. *Erigone dentipalpis* (Wider, 1834)

Description: Female body length 2–2.5 mm; male 2.5 mm. The carapace is of simple structure; its coloration is similar to the coloration of the male. The shagreen chelicerae are not armed but large specimens bear a row of granules on the outside of the chelicerae. The epigyne lacks a furrowed plate with a transversal opening and it bears a transversal posterior fringe (Fig. 712).

♂ The carapace is dark brown-red, almost black. The cephalic region is bulged. The thoracic region is covered with granules, which are arranged as radiating lines. The first two thirds of the legs bear tapering teeth at varying distances. The shining sternum is weakly furrowed; its sides bear spots. The chelicerae are shagreen; their outside bears a row of six thick teeth. The legs are shining reddish brown, especially the femora. The palpus is dark red (Fig. 711).

Ecology: In high mountainous places on the ground and on the forest edge

¹⁵⁵In Mcheidze (1997) sic: 'P. odontophorüm (Külcz., 1895)', lapsi.

¹⁵⁶In Mcheidze (1997) author sic: 'SAV. ET AUD., 1825', lapsus.

in leaf litter and grass. Near Satshkhere we found specimens in rolled-up vine leaves, feeding on spider mites (*Eotetranychus pruni*¹⁵⁷).

Distribution: North-Western Africa, Europe, Asia, Himalayas, in the entire European part of the former USSR. **In Georgia:** Sukhumi (Spassky 1937), Zestaponi (Qvirila) (Kulczyński 1895), Satshkhere, Baghdati, Mamisoni Pass, Poti, Lagodekhi (Mcheidze 1939–1962).

Taxonomy: Platnick (2013): *Erigone dentipalpis* (Wider, 1834). In Mcheidze (1997) author sic: '(Wid. et Reuss., 1834)'.

2. *Erigone longipalpis* (Sundevall, 1830)

Description: Female body length 3–4 mm; male 2 mm.

♀ The simple dark brown to reddish carapace has a flat cephalic part. The weakly furrowed outside of the finely shagreen chelicerae bears a row of five small teeth, of which the basal teeth are the smallest. The thin palpus tibia is almost twice as long as the patella.

The large furrowed epigyne has a transversal plate with a small opening in its posterior part (Fig. 714).

♂ The anterior part of the dark brown simple carapace is reddish. The cephalic region is raised. The thoracic region bears fine granules between the radial lines. The teeth on the sides are not pointy or uniform; the teeth in the posterior third are elongated, whereas the others become continuously smaller with greater distances between them (Fig. 715).

The sternum is simple. The outside of the strongly shagreen chelicerae bears 5–6 small sharp and uniform teeth. The reddish brown legs are somewhat long. The patella of the brown red palpus is very long, thin and cylindrical. Its long tibia becomes continuously broader near the base. The small tarsus is somewhat shorter than the tibia (Fig. 713).

Habitat: In moist places in grass and among leaves.

Distribution: Lagodekhi, Poti, Shovi, Mamisoni Pass (Mcheidze 1939–1973). First record in the Transcaucasus.

Taxonomy: Platnick (2013): *Erigone longipalpis* (Sundevall, 1830)¹⁵⁸.

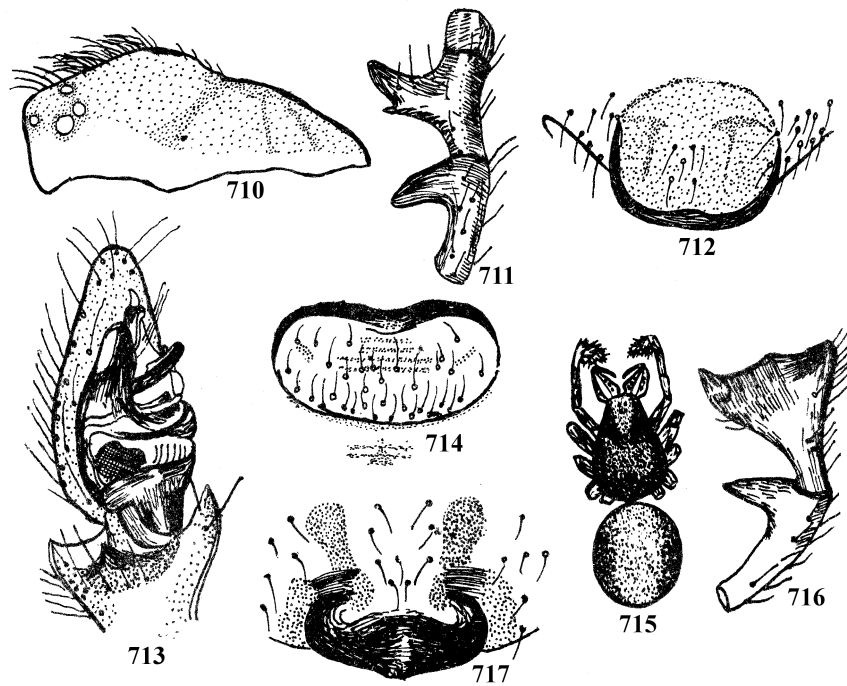
3. *Erigone atra* Blackwall, 1833

Description: Male body length 2.5 mm. The dark carapace is similar to the carapace of *E. dentipalpis*. The ME are larger than the other eyes; their distance is larger than their diameter. The line of the ME is strongly curved. The sternum, chelicerae and legs are developed as in *E. dentipalpis*.

The palpus is dark reddish with a brown tip. The inside of the femur has a row of very small teeth; the ventral side has two rows of thick teeth. The patella is similar to the patella of *E. dentipalpis*; the tibia is somewhat

¹⁵⁷Mcheidze (1997) sic: '*Schizotetranychus pruni*', lapsus.

¹⁵⁸In Mcheidze (1997) author sic: '(Sund., 1829)', lapsus.



Figs. 710–717. *Micryphantidae*, *Gnathonarium*, *Erigone*. *G. dentatum*: 710 – lateral carapace. *E. dentipalpis*: 711 – male palpus tibia apophysis; 712 – epigyne. *E. longipalpis*: 713 – male palpus; 714 – epigyne; 715 – male habitus. *E. atra*: 716 – male palpus tibia apophysis; 717 – epigyne.

smaller than the patella, terminally broadened and as long as high (Fig. 716). The segments of the gnathocoxa are thicker than femur I.

Epigyne like Fig. 717.

Habitat: In mountainous regions in moist habitats.

Distribution: North America, Afghanistan, in the European part of the former USSR (Novaya Zemlya), Tajikistan, Siberia, Kamchatka. **In Georgia:** Mestia, Lentekhi, Kazbegi (Mcheidze 1939, 1940). First record in Georgia.

Taxonomy: Platnick (2013): *Erigone atra* Blackwall, 1833.

Chapter 8

Conclusions

1. Based on both literature data and material, 362 species and forms of spiders from 116 genera and 27 families have so far been recorded in Georgia (Tab. 8.1).

2. Of the 362 species, we recorded 226 species and forms for the first time in Georgia and 128 as second records after their having been recorded for the first time by other authors. Eight species are known from Georgia only from the literature, 119 species are first records in the Transcaucasus; the genus *Harpactocrates* (Dysderidae) and nine species are first records for the former USSR. 34 species as well as three subspecies are new to science.

3. According to our material the species number of the following families is outstanding: Thomisidae (62 species), Araneidae (49), Lycosidae (46), Theridiidae (30¹), Salticidae (30), Dysderidae (27), Gnaphosidae (20²), Clubionidae (17) and Agelenidae (13) (Tab. 8.1).

4. In respect to the vertical distribution of spiders, it was analyzed that the highest number of species can be found in the Colchis lowland with 236 species (65.2 % of all species) and 65 species in the zone of the montane forests (18 %) or the steppe and semidesert zone and the subalpine and alpine zones (68–80 %, 18.9–22.2 %).

5. According to their ecology, the spiders of Georgia can be divided into three groups: I. eurybiontic species from the families Thomisidae, Lycosidae, Gnaphosidae, Theridiidae, Araneidae, Agelenidae, II. stenobiontic species of the Filistatidae, Sparassidae, Anyphaenidae, Pisauridae, Oxyopidae, Eresidae, Mimetidae and III. mesophilic species within groups I and II: Tetragnathidae, Thomisidae (e.g. *Tibellus maritimus*, *T. oblongus*, *Misumena va-*

¹In Mcheidze (1997) sic: '36', lapsus.

²Possibly counting 19 species plus one subspecies, cf. Table 8.1.

tia, *Xysticus* spp.), Araneidae (*Araneus quadratus*, *Singa hamata*) and the Linyphiidae.

6. According to their habitats, the following groups can be distinguished: I. 38 transzonal eurybiontic species found in many habitats, II. 24 transzonal stenobiontic species found in a limited number of habitats, III. 50 species of the forest zone, IV. 23 species of arid habitats, V. six species of underground hollows, VI. 12 cave species, VII. 21 hygrophilous species, VIII. one species of water spider and IX. five synanthropic species.

7. Our studies confirm the information from literature that – together with a reduction of the total number of species – the number of specialist species and endemic species rises with the altitudinal zones (Charitonov, 1953; Saveleva, 1972). Of the 236 species in the lowlands of the Colchis, for instance, we know only 37 specialist species (15.6 %), whereas of the 99 species in the montane forest zone we know 33 specialist species (33.8 %). Of the 80 steppe species, 19 are specialists 23.8%; of the 68 species in the subalpine and alpine zones 22 are specialists (32.3 %) and among the 65 species in the mountain steppes we know 20 specialist species (30.7 %).

8. The spider fauna of Georgia is characterized by characteristic species of the Palearctic and its Mediterranean subregion, whereas species of the Euro-Siberian subregion can be found in Northern Georgia. Additionally we find Central Asian species in large numbers in the South-Eastern part of the country and in moderate abundances in all zones across the country. Holarctic species can be found as well (e. g. in the Araneidae).

9. According to our material, it is possible to distinguish the following species groups: five cosmopolitan species (1.4 %) and 63 endemic forms (17.4 %): among them 47 species endemic to Georgia (74.6 %), 12 species endemic to the Caucasus (19 %) and four species endemic to the Transcaucasus (6.3 %).

The following families are characterized by an extraordinarily high percentage of endemic species: Dipluridae (4 species, 100 %), Nesticidae (4, 80 %), Dysderidae (18, 66.7 %), Lycosidae (9, 19.6 %), Thomisidae (12, 19.4 %) and Dysderidae.

The family Dysderidae contains a high number of endemic species because they existed since the Tertiary period (Oligocene). Additionally, *Dysdera punctata* and *D. crocata* are well adapted to various habitats in Georgia and have thus developed a number of local forms.

This is comparable to the species of the family Dipluridae, the oldest and most primitive group of the spiders, of which impression fossils in sediments are known, dating from the Devon. All species within the family Nesticidae in Georgia are troglobiontic species.

10. The principle of *habitat shift* (Bei-Bienko, 1930, 1959³) can also be observed in spiders. A species can only be found in a habitat which suits its habitat requirements, e. g. *Steatoda bipunctata*, a species categorized as semi-synanthropic in Russia, lives in Georgia in coniferous forests feeding on pest insects (bark beetles). *Alopecosa radiata* lives in grass near the coast line of the Black Sea in Georgia and in forests, under rocks or in small hollows. *Araneus diadematus* constructs its orb web on bushes and shrubs in the Colchic lowlands as well as in more protected places in rock crevices and openings. *Meta merianae* lives in forests as well as in caves.

11. Our data verify the data of other authors, that some species of the Agelenidae, Gnaphosidae and Thomsidae could be utilized in fighting pest insects. This can be emphasized in relation to the reduction of pest insects in tea, citrus and forests plantations. The silk threads of some species (*Araneus diadematus*, *A. grossus*) are used in telescopes, microscopes and theodolites.

Additionally, spiders are excellent model organisms in zoogeographic analyses. The faunistic composition is typical in a number of geographic regions (Lange, 1969⁴), but for the characterisation of cave faunas spiders are weaker indications than insects (Charitonov 1939).

12. The most poisonous species among the spiders in Georgia is the karakurt (black widow, *Latrodectus tredecimguttatus*) because its poison is lethal to both humans and farm animals; it was first recorded in Georgia in 1949. Toxicity is also attributed to the large wolf spiders (*Lycosa singoriensis*, *L. vultuosa*); their poison is lethal to small birds and insects.

³In Mcheidze (1997) sic: '1953', lapsus

⁴This publication is not listed in the references section.

Table 8.1: Number of genera and species.

	Families	Genera	Species	Subspecies
1	Dipluridae	1	3	–
2	Oecobiidae	1	1	–
3	Eresidae	1	2	–
4	Filistatidae	1	1	–
5	Amaurobiidae	2	4	–
6	Dictynidae	1	5	–
7	Uloboridae	2	5	–
8	Mimetidae	2	2	–
9	Pholcidae	2	4	–
10	Sicariidae	1	1	–
11	Dysderidae	4	27	–
12	Salticidae	19	30	–
13	Gnaphosidae	7	19	1
14	Anyphaenidae	1	2	–
15	Sparassidae	1	1	5
16	Thomisidae	14	62	–
17	Clubionidae	5	17	–
18	Theridiidae	12	30	–
19	Oxyopidae	1	3	–
20	Agelenidae	5	13	–
21	Lycosidae	7	46	1
22	Pisauridae	2	3	–
23	Araneidae	11	49	2
24	Tetragnathidae	3	9	–
25	Nesticidae	1	5	–
26	Linyphiidae	5	12	–
27	Micryphantidae	4	6	–
	Total:	116	353	9

Chapter 9

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¹In Mcheidze (1997) sic: 'Allicatu', lapsus.

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Part III

Supplementary Information
to the Translation of
Tamara Mcheidze's Book
Georgian Spiders

—

(Stefan Otto)

Locations

All locations in Georgia listed in the descriptive part are given with the number used in the map (Fig. 718), the original Georgian spelling as well as with coordinates and their GeoNamesID (GeoNames Team, 2013). Some locations are listed with larger locations or under the currently used name (e. g. Adigeni, Aspindza, Gori, Lagodekhi, Tbilisi, Vashlovani Reserve, Zestaponi).

You can find the GeoNamesID behind the coordinates. For example, the resource for Abasha (GeoNamesID: 616020) can be accessed like this: 'http://www.geonames.org/616020'.

Abasha (43, აბაშა, 42.19389° N, 42.22379° E, /616020), **Abastumani** (75, აბასთუმანი, 41.71282° N, 42.84825° E, /584502), **Adigeni** (65, ადიგენი, Utqisi, 41.68465° N, 42.70815° E, /615973), **Adzaba Cave** (9, აძაბა მღვიმე, 43.03240° N, 40.94040° E, /8378796), **Agara** (118, აგარა, 42.03483° N, 43.83413° E, /615945), **Agudzera** (12, აგუძერა, 42.92221° N, 41.10023° E, /615931), **Akhaldaba** (108, ახალდაბა, 41.92258° N, 43.48373° E, /615919), **Akhali Atoni** (6, ახალი ათონი, 43.08643° N, 40.81544° E, /7053271), **Akhalkalaki** (109, ახალქალაქი, 41.40523° N, 43.48728° E, /615893), **Akhalshehi Mt.** (25, ახალშენი მთა, 41.60184° N, 41.74682° E, /615884), **Akhalsikhe** (81, ახალციხე, 41.63863° N, 42.97735° E, /615860), **Akhmeta** (166, ახმეტა, 42.03118° N, 45.20639° E, /615844), **Akhtala** (182, ახტალა, 41.74562° N, 45.78569° E, /615835), **Alazani Valley** (191, ალაზნის ველი, 41.64402° N, 46.22341° E, /613342), **Alvani** (168, ალვანი, 42.04315° N, 45.31397° E, /610991), **Ambrolauri** (89, ამბროლაური, 42.52023° N, 43.15018° E, /7667686), **Armazi** (129, არმაზი, 42.16933° N, 44.37675° E, /615683), **Askana** (41, ასკანა, 41.95290° N, 42.16996° E, /615665), **Aspindza** (95, ასპინძა, Ota, 41.57392° N, 43.25129° E, /615660), **Ateni Valley** (124, ატენის ხეობა, 41.86830° N, 43.98320° E, /8349476), **Atsquri** (91, აწყური, 41.72577° N, 43.16521° E, /615644), **Avadkhara** (5, ავადხარა, 43.51340° N, 40.65000° E, /874508), **Avtshala** (156, ავჭალა, 41.80651° N, 44.79554° E, /610988), **Baghdati** (73, ბაღდათი, 42.08231° N, 42.82593° E, /615607), **Bakhmaro** (48, ბახმარო, 41.84696° N, 42.32840° E, /615591), **Bakuriani** (111, ბაკურიანი, 41.74874° N, 43.52776° E, /615583), **Baniskhevi** (99, ბანისხევი, 41.87360° N, 43.34680° E, /7519287), **Barisakho** (160, ბარისახო, 42.47261° N, 44.92818° E, /615550), **Batumi** (19, ბათუმი, 41.63923° N, 41.63246° E, /615532), **Bazaleti Lake** (141, ბაზალეთის ტბა, 42.03715° N, 44.68693° E, /615516), **Bebesiri Lake** (17, ბებესირის ტბა, 42.68500° N, 41.58600° E, /615514), **Betania** (140, ბეთანია, 41.69182° N, 44.64658° E, /8379188), **Betsho Pass** (56, ბეშო, 43.17664° N, 42.56504° E, /578375), **Borjomi-Kharagauli National Park** (94, ბორჯომი, 41.85627° N, 43.24745° E, /615399), **Breti** (120, ბრეთი, 42.08532° N, 43.90388° E, /615384), **Devdorak Glacier** (133,

დედოქარის მყინვარი, 42.72123° N, 44.54565° E, /614988), **Dighomi** (150, დილომი, 41.78733° N, 44.74272° E, /614909), **Dmanisi** (128, დმანისი, 41.33289° N, 44.34158° E, /614891), **Dranda** (13, დრანდა, 42.87160° N, 41.15339° E, /614863), **Dusheti** (144, დუშეთი, 42.08455° N, 44.69041° E, /614843), **Dzevrula Cave** (79, ძვერულას მღვიმე, 42.21460° N, 42.93584° E, /8378854), **Dzhapana** (42, ჯაპანა, 42.09599° N, 42.19607° E, /614801), **Dzhava** (121, ჯავა, 42.39038° N, 43.92324° E, /614217), **Dzhvarpatiosani** (173, ჯვარპატიოსანი, 41.89640° N, 45.47978° E, /8378756), **El-dari** (195, ელდარი, 41.28833° N, 46.46306° E, /825057), **Eshera** (8, ეშერა, 43.03044° N, 40.92826° E, /614666), **Gagra** (1, გაგრა, 43.31684° N, 40.28772° E, /614622), **Gardabani** (164, გარდაბანი, 41.45477° N, 45.09319° E, /614575), **Garedzhi Steppe** (170, გარეჯი ველი, 41.48215° N, 45.35418° E, /824973), **Gariqula** (127, გარიყულა, 41.87583° N, 44.33556° E, /614567), **Gelati** (71, გელათი, 42.29890° N, 42.76403° E, /614546), **Georgian Military Highway** (143, საქართველოს სამხედრო გზა, 42.08455° N, 44.69041° E, /613668), **Gergeti** (138, გერგეთი, 42.66274° N, 44.63028° E, /614536), **Ghordzhomi** (51, ლორჯომი, 41.71617° N, 42.37657° E, /7895282), **Gogoleti Cave** (78, გოგოლეთის მღვიმე, 42.52171° N, 42.89669° E, /614499), **Gori** (125, გორი, Kvernaki, 41.98323° N, 44.11623° E, /614455), **Green Cape** (22, მწვანე კონცხი, 41.69608° N, 41.71385° E, /613762), **Gremi** (179, გრემი, 42.01036° N, 45.67309° E, /614435), **Gudauta** (3, გუდაუთა, 43.10421° N, 40.62576° E, /614409), **Gurdzhaani** (183, გურჯაანი, 41.74075° N, 45.80083° E, /614351), **Ipari** (45, იპარი, 42.97539° N, 42.29013° E, /7530571), **Kakhaberi** (18, კახაბერი, 41.62446° N, 41.61466° E, /614194), **Kareli** (119, ქარელი, 42.02044° N, 43.89735° E, /7669163), **Kaspi** (132, კასპი, 41.91761° N, 44.42848° E, /614104), **Kasristqali** (196, კასრის წყალი, 41.28761° N, 46.46983° E, /614102), **Kazbegi** (139, ყაზბეგი, =Stepantsminda, 42.65599° N, 44.64528° E, /614087), **Keda** (36, ქედა, 41.55409° N, 41.99106° E, /614080), **Kelasuri** (11, კელასური, 42.97345° N, 41.06789° E, /865372), **Kharagauli** (92, ხარაგაული, 42.00543° N, 43.20488° E, /7667751), **Khashuri** (112, ხაშური, 41.99777° N, 43.60638° E, /613988), **Kheta** (16, ხეთა, 42.36127° N, 41.58474° E, /613962), **Khizabavra** (96, ხიზაბავრა, 41.52247° N, 43.28916° E, /613922), **Khobi** (33, ხობი, 42.32654° N, 41.89758° E, /613918), **Khobi-Urta Mt.** (30, ხობი-ურთას მთა, 42.39319° N, 41.83720° E, /613918), **Khotevi** (90, ხოტევი, 42.46812° N, 43.15125° E, /613884), **Khulo** (46, ხულო, 41.64191° N, 42.31730° E, /613870), **Kiketi** (134, კიკეთი, 41.65360° N, 44.56490° E, /613843), **Kobuleti** (27, ქობულეთი, 41.81574° N, 41.77619° E, /613762), **Kodzhori** (146, კოჯორი, 41.66000° N, 44.69593° E, /613742), **Kortskheli Cave** (35, კორცხელი მღვიმე, 42.55030° N, 41.92780° E, /874258), **Kotshalo Mt.** (194, ქოჩალო მთა, 41.93050° N, 46.40159° E, /6779093), **Ksani** (135, ქსანი, 41.86275° N, 44.57047° E, /613662), **Kutaisi** (64, ქუთაისი, 42.26959° N, 42.70692° E, /613607), **Lagodekhi National Park** (192, ლაგოდეხი, Matsimi Valley, Shromi Valley, Khala-Kheri Lake, 41.81226° N, 46.30976° E, /613340), **Latali** (61, ლატალი, 43.00452° N, 42.63209° E, /613336), **Lentekhi** (67, ლენტეხი, 42.78705° N, 42.72128° E, /613226), **Magharo** (186, მაღარო, 41.56152° N, 45.83965° E, /613442), **Makhindzhauri** (21, მახინჯაური, 41.67994° N, 41.69926° E, /613125), **Mamisoni Pass** (117, მამისონის გადასახველი, 42.69120° N, 43.77845° E, /529669), **Manglisi** (130, მანგლისი, 41.69974° N, 44.37825° E, /613093), **Martqopi** (161, მარტყოფი, 41.77416° N, 45.02184° E, /613071), **Martvili** (50, მარტვილი, 42.41569° N, 42.37463° E, /613065), **Medzhvriskhevi** (126, მეჯვრისხევი, 42.13063° N, 44.21129° E, /614933), **Mestia** (68, მესტია, 43.05234° N, 42.72912° E, /612987), **Mtirala National Park** (31, მტირალა, 41.67926° N, 41.86588° E, /8347648), **Mtskheta** (149, მცხეთა, 41.84199° N, 44.72521° E, /612890), **Mukhrani** (136, მუხრანი,

41.93233° N, 44.57492° E, /612869), **Nakerala Mts.** (85, ნაქერალა, 42.37942° N, 43.03259° E, /612790), **Natanebi** (28, ნატანები, 41.93162° N, 41.80358° E, /7866874), **Nikortsminda** (86, ნიკორწმინდა, 42.46537° N, 43.03857° E, /612696), **Nine-Springs Pass** (110, ცხრა-წყარო გადასახვეული, 41.68899° N, 43.51969° E, /611393), **Nukriani** (187, ნუკრიანი, 41.60738° N, 45.88717° E, /612657), **Nunisi** (100, ნუნისი, 41.94990° N, 43.41664° E, /612655), **Obudzhi** (38, ობუჯი, 42.55264° N, 42.03110° E, /612653), **Okroqana** (153, ოქროყანა, 41.68352° N, 44.76699° E, /612623), **Omalo** (178, ომალო, 42.37841° N, 45.63375° E, /612600), **Omanishara** (29, ომანიშარა, 43.11000° N, 41.83000° E, /612598), **Oni** (102, ონი, 42.57701° N, 43.44520° E, /612592), **Ortatshala** (157, ორთაჭალა, 41.67510° N, 44.80590° E, /611717), **Otshamtshire** (15, ოტამშირე, 42.71419° N, 41.47460° E, /612652), **Ozurgeti** (37, ოზურგეთი, 41.92266° N, 42.02409° E, /612536), **Paliastomi Lake** (23, პალიასტომის ტბა, 42.12216° N, 41.72605° E, /612366), **Pasanauri** (142, ფასანაური, 42.34951° N, 44.68964° E, /612502), **Poti** (20, ფოთი, 42.14778° N, 41.67541° E, /612366), **Pshaveli** (171, ფშაველი, 42.08142° N, 45.44309° E, /612352), **Pshavi** (159, ფშავი, 42.36298° N, 44.91558° E, /612351), **Psirtskha** (7, ფსირცხა, 43.09180° N, 40.81610° E, /612346), **Quro** (148, ყურო, 42.68596° N, 44.71517° E, /612592), **Qvareli** (184, ყვარელი, 41.96076° N, 45.80145° E, /612338), **Rioni River** (58, რიონი მდინარე, 42.10913° N, 42.60892° E, /612312), **Ritsa Lake** (2, რიჭის ტბა, 43.45925° N, 40.54024° E, /612309), **Rkinis Dzhvari** (88, რკინის ჯვარი, = Iron Cross, 41.90074° N, 43.13770° E, /612306), **Rokiti** (72, როკითი, 42.12408° N, 42.79339° E, /612300), **Sagaredzho** (169, საგარეჯო, 41.73375° N, 45.32661° E, /612230), **Sairme** (69, საირმე, 41.90524° N, 42.75088° E, /612214), **Sakao-Tshiora** (103, საკაო-ჩიორა, 42.63181° N, 43.44918° E, /612209), **Sakotshavi** (105, საკოტავი, 41.76376° N, 43.46601° E, /612179), **Samtredia** (49, სამტრედია, 42.15587° N, 42.34-425° E, /612126), **Sartitshala** (165, ხართიჭალა, 41.70797° N, 45.17259° E, /612092), **Sataplia Cave** (63, სათაფლია მღვიმე, 42.32113° N, 42.67158° E, /8379184), **Satsalike Mt.** (93, საწალიქეს მთა, 42.41408° N, 43.21501° E, /612073), **Satshkhere** (101, საჩხერე, 42.34434° N, 43.41931° E, /612256), **Senaki** (40, სენაკი, 42.27005° N, 42.07742° E, /612053), **Shakriani** (176, შაქრიანი, 42.01742° N, 45.58173° E, /612032), **Sharaula River** (54, შარეული მდინარე, =Shareula River, 42.91799° N, 42.50880° E, /612019), **Shavnabada** (115, შავნაბადა, 41.62417° N, 43.70459° E, /612008), **Shikhra** (59, შიხრა, 43.07027° N, 42.61269° E, /8394247), **Shiraki Steppe** (193, შირაკი ველი, 41.32526° N, 46.34116° E, /611979), **Shovi** (114, შოვი, 42.70190° N, 43.67250° E, /611960), **Shua Surebi** (52, შუა ხურები, 41.97710° N, 42.40428° E, /611921), **Sighnaghi** (188, სიღნაღი, 41.61577° N, 45.91437° E, /611902), **Sioni** (137, სიონი, 42.60749° N, 44.58645° E, /611888), **Sukhumi** (10, სოხუმი, 42.99890° N, 41.01410° E, /611847), **Surami Pass** (107, სურამის გადასახვეული, 42.01772° N, 43.48139° E, /8351450), **Svaneti** (53, სვანეთი, 43.05000° N, 42.50000° E, /611804), **Tabakhmela** (151, ტაბახმელა, 41.65227° N, 44.75261° E, /611786), **Tabatsquri Lake** (113, ტაბაწყურის ტბა, 41.66365° N, 43.62030° E, /611781), **Tago** (47, თავო, 41.62169° N, 42.32005° E, /611774), **Tarkiladze Cave** (4, ტარკილაძის მღვიმე, 43.10415° N, 40.62654° E, /8378639), **Tatanisi** (83, ტატანისი, 41.69994° N, 42.98319° E, /611734), **Tbilisi** (155, თბილისი, Didube, Lake Kus, Lake Lisi, Samgori, Vera Park, 41.72978° N, 44.78735° E, /611717), **Telavi** (172, თელავი, 41.91890° N, 45.47978° E, /611694), **Terdzholi** (82, თერჯოლა, 42.17921° N, 42.97-786° E, /611682), **Terek Valley** (131, თერგის ხეობა, 42.61678° N, 44.39408° E, /8347644), **Tqibuli** (84, ტყიბული, 42.34233° N, 42.98397° E, /611584), **Tsageri** (70, ცაგერი, 42.64450° N, 42.76367° E, /611566), **Tsaghveri** (106, წალკერი, 41.80350° N,

43.48135° E, /611564), **Tsalendzhikha** (39, წალენჯიხა, 42.60790° N, 42.06945° E, /611551), **Tsebelda** (14, წებელდა, 43.02365° N, 41.26571° E, /611532), **Tsemi** (104, ცემი, 41.80030° N, 43.46267° E, /611526), **Tshakvi** (24, ჩაკვი, 41.72762° N, 41.73608° E, /615297), **Tshargali** (158, ჩარგალი, 42.32447° N, 44.89368° E, /615245), **Tshiatura** (97, ჭიათურა, 42.29780° N, 43.29971° E, /615211), **Tshiauri** (162, ჭიაური, 42.16455° N, 45.04169° E, /8378627), **Tshigho** (177, ჩილო, 42.43624° N, 45.62796° E, /615201), **Tshokhatauri** (44, ჩოხატაური, 42.01580° N, 42.25311° E, /615118), **Tshumlaqi** (181, ჩუმლაყი, 41.76250° N, 45.76500° E, /615084), **Tshvinta** (80, ჭვინტა, 41.70980° N, 42.96350° E, /615067), **Tsikhisdziri** (26, ციხისძირი, 41.76363° N, 41.75458° E, /611512), **Tsinandali** (174, წინანდალი, 41.89711° N, 45.56917° E, /611492), **Tsiteli Khidi** (163, წითელი ხიდი, =Red Bridge, 41.33220° N, 45.06900° E, /8394338), **Tsivi Mt.** (167, ცივი, 41.87880° N, 45.26590° E, /611432), **Tskhinvali** (123, ცხინვალი, 42.22578° N, 43.97310° E, /611403), **Tsnori** (190, წნორი, 41.61383° N, 45.96988° E, /611373), **Tsqaltsitela River** (77, ცყალწითელა მდინარე, 42.33764° N, 42.87159° E, /8349475), **Tsqaltubo** (57, წყალთუბო, 42.33870° N, 42.59568° E, /824288), **Tsqneti** (145, წყნეთი, 41.69269° N, 44.69480° E, /611398), **Tusheti** (175, თუშეთი, 42.44638° N, 45.57607° E, /8349454), **Udzo** (147, უძო, 41.66000° N, 44.69593° E, /8378746), **Ushba Mt.** (60, უშბა მთა, 43.11964° N, 42.61982° E, /611259), **Vakiri** (189, ვაკირი, 41.64062° N, 45.92973° E, /611233), **Vani** (55, ვანი, 42.08427° N, 42.51549° E, /611219), **Vardzia** (98, ვარძია, 41.40794° N, 43.30774° E, /611203), **Varkhani** (74, ვარხანი, 41.69766° N, 42.84773° E, /611199), **Vartsikhe** (66, ვარციხე, 42.14378° N, 42.71875° E, /611195), **Vashlovani Reserve** (197, ვაშლოვანის ნაკრძალი, Pantishara Valley, 41.09464° N, 46.55294° E, /611184), **Vedzhini** (185, ვეჯინი, 41.70840° N, 45.82880° E, /611172), **Velistsikhe** (180, ველისციხე, 41.81054° N, 45.75459° E, /611163), **Zarzma Monastery** (62, ზარზმის მონასტერი, 41.67810° N, 42.65359° E, /611069), **Zedazeni Monasteri** (152, ზედაზნის მონასტერი, 41.87130° N, 44.76592° E, /8629393), **Zekari Pass** (76, ზეკარის გადასახველი, 41.82250° N, 42.86293° E, /611002), **Zemo Khviti** (122, ზემო ხვითი, 42.18290° N, 43.95619° E, /610943), **Zendidi** (34, ზენდიდი, 41.64667° N, 41.90786° E, /610877), **Zestaponi** (87, ზესტაპონი, Qvirila, 42.11002° N, 43.05016° E, /7667756), **Zhinvali** (154, ჯინვალი, 42.11324° N, 44.77318° E, /610849), **Znauri** (116, ზნაური, 42.19934° N, 43.77022° E, /610838), **Zugdidi** (32, ზუგდიდი, 42.51074° N, 41.87785° E, /610824).

All locations are plotted in Fig. 10.1 using the following numbers: 1. Gagra 2. Ritsa Lake 3. Gudauta 4. Tarkiladze Cave 5. Avadkhara 6. Akhali Atoni 7. Psirtskha 8. Eshera 9. Adzaba Cave 10. Sukhumi 11. Kelasuri 12. Agudzera 13. Dranda 14. Tsebelda 15. Otshamtshire 16. Kheta 17. Bebesiri Lake 18. Kakhaveri 19. Batumi 20. Poti 21. Makhindzhauri 22. Green Cape 23. Paliastomi Lake 24. Tshakvi 25. Akhalsheni Mt. 26. Tsikhisdziri 27. Kobuleti 28. Natanebi 29. Omanishara 30. Khobi-Urta Mt. 31. Mtirala National Park 32. Zugdidi 33. Khobi 34. Zendidi 35. Kortskheli Cave 36. Keda 37. Ozurgeti 38. Obudzhi 39. Tsalendzhikha 40. Senaki 41. Askana 42. Dzhapana 43. Abasha 44. Tshokhatauri 45. Ipari 46. Khulo 47. Tago 48. Bakhmaro 49. Samtredia 50. Martvili 51. Ghordzhomi 52. Shua Surebi 53. Svaneti 54. Sharaula River 55. Vani 56. Betsho Pass 57. Tsqaltubo 58. Rioni River 59. Shikhra 60. Ushba Mt. 61. Latali 62. Zarzma Monastery 63. Sataplia Cave 64. Kutaisi 65. Adigeni 66. Vartsikhe 67. Lentekhi 68. Mestia 69. Sairme 70. Tsageri 71. Gelati 72. Rokiti 73. Baghdati 74. Varkhani 75. Abastumani 76. Zekari Pass 77. Tsqaltsitela River 78. Gogoleti Cave 79. Dzevrula Cave 80.

Tshvinta 81. Akhaltsikhe 82. Terdzhola 83. Tatanisi 84. Tqibuli 85. Nakerala Mts. 86. Nikortsminda 87. Zestaponi 88. Rkinis Dzhvari 89. Ambrolauri 90. Khotevi 91. Atsquri 92. Kharagauli 93. Satsalike Mt. 94. Borjomi-Kharagauli National Park 95. Aspindza 96. Khizabavra 97. Tshiatura 98. Vardzia 99. Baniskhevi 100. Nunisi 101. Satshkhere 102. Oni 103. Sakao-Tshiora 104. Tsemi 105. Sakotshavi 106. Tsaghveri 107. Surami Pass 108. Akhaldaba 109. Akhalkalaki 110. Nine-Springs Pass 111. Bakuriani 112. Khashuri 113. Tabatsquri Lake 114. Shovi 115. Shav nabada 116. Znauri 117. Mamisoni Pass 118. Agara 119. Kareli 120. Breti 121. Dzhava 122. Zemo Khviti 123. Tskhinvali 124. Ateni Valley 125. Gori 126. Medzhvriskevi 127. Gariqula 128. Dmanisi 129. Armazi 130. Manglisi 131. Terek Valley 132. Kaspi 133. Devdorak Glacier 134. Kiketi 135. Ksani 136. Mukhrani 137. Sioni 138. Gergeti 139. Kazbegi 140. Betania 141. Bazaleti Lake 142. Pasanauri 143. Georgian Military Highway 144. Dusheti 145. Tsqneti 146. Kodzori 147. Udzo 148. Quro 149. Mtskheta 150. Dighomi 151. Tabakhmela 152. Zedazeni Monasteri 153. Okroqana 154. Zhinvali 155. Tbilisi 156. Avtshala 157. Ortatshala 158. Tshargali 159. Pshavi 160. Barisakho 161. Martqopi 162. Tshiauri 163. Tsiteli Khidi 164. Gardabani 165. Sartitshala 166. Akhmeta 167. Tsivi Mt. 168. Alvani 169. Sagaredzho 170. Garedzhi Steppe 171. Pshaveli 172. Telavi 173. Dzhvarpatiosani 174. Tsinandali 175. Tusheti 176. Shakriani 177. Tshigho 178. Omalo 179. Gremi 180. Velistsikhe 181. Tshumlaqi 182. Akhtala 183. Gurdzhaani 184. Qvareli 185. Vedzhini 186. Magharo 187. Nukriani 188. Signaghi 189. Vakiri 190. Tsnori 191. Alazani Valley 192. Lagodekhi National Park 193. Shiraki Steppe 194. Kotshalo Mt. 195. Eldari 196. Kasristqali 197. Vashlovani Reserve.

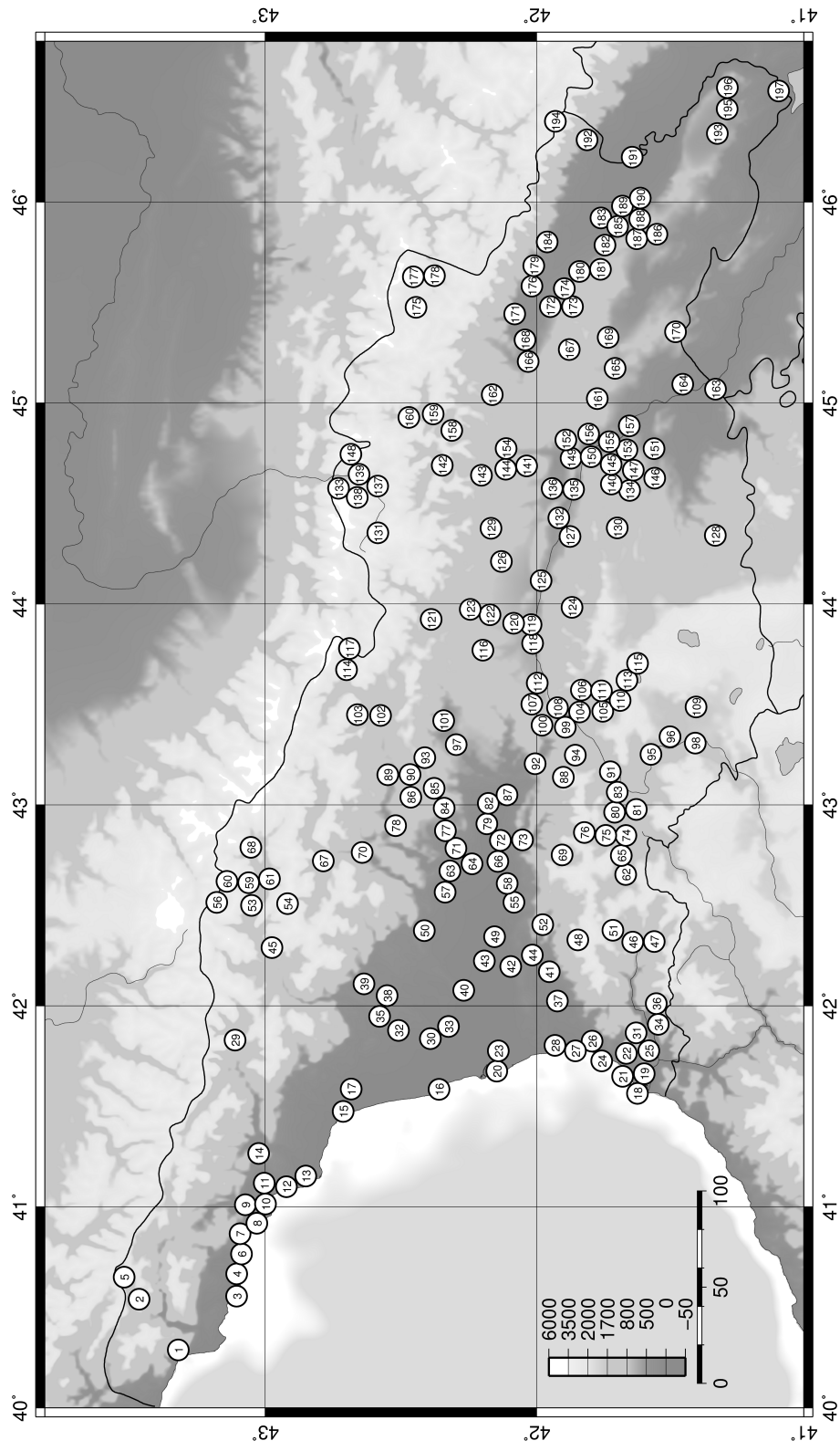


Fig. 718. Map of Georgia with all locations listed on the previous pages. The map was created using GMT Software (Wessel & Smith 1998) using SRTM 1 radar data (Amante & Eakins 2009). Altitude in meters a.s.l. and scale bar in kilometers.

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