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A revision of the spider genus *Anemesia* (Araneae, Cyrtaucheniidae)

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Abstract. The Central Asian spider genus *Anemesia* Pocock, 1895 is rediagnosed and revised. The genus was found to contain 14 species: ♂♀ *A. andreevae* sp. nov. (Uzbekistan, Tajikistan); ♂♀ *A. birulai* (Spassky, 1937) (Turkmenistan); ♂♀ *A. castanea* sp. nov.; ♂♀ *A. incana* Zonstein, 2001, ♂♀ *A. infumata* sp. nov.; ♂♀ *A. infuscata* sp. nov.; ♂♀ *A. karatauvi* (Andreeva, 1968) (all Tajikistan); ♂ *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (Iran); ♂♀ *A. oxiana* sp. nov.; ♂♀ *A. pallida* sp. nov.; ♂ *A. parvula* sp. nov. (all Tajikistan); ♂♀ *A. pococki* sp. nov. (Turkmenistan); ♂♀ *A. sogdiana* sp. nov. (Uzbekistan, Tajikistan) and ♂♀ *A. tubifex* (Pocock, 1889), the type species (Afghanistan, Turkmenistan). Nine species are newly described; others are redescribed from types and/or conspecific material. Males of *A. tubifex* and females of *A. birulai*, hitherto unknown, are described for the first time. Data on the variability, relationships, distribution, and ecology of all considered species are provided.

Keywords. Taxonomy, burrowing spiders, Mygalomorphae, new species, ecology, Central Asia.

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Introduction

The genus *Anemesia* was established by Pocock (1895) as a monotypic taxon comprising the single species, *Nemesia tubifex* which he had described a few years earlier (1889) from zoological material of the British Afghan delimitation commission. When establishing the new genus, Pocock used as a distinguishing character the fact that the burrow of the only collected female had an open entrance, whereas all then known Mediterranean representatives of *Nemesia* Audouin, 1826 were considered to build burrows with a trapdoor. The genus was originally placed in the family Ctenizidae Thorell, 1887. Simon (1903) assigned *Anemesia* to the ctenizid genera of the tribe Nemesiidae Simon, 1889.

For several decades, *Anemesia* was known only from the holotype of *N. tubifex* which had also been heavily damaged prior to the description, presumably when collected. Denis (1958) erroneously (see below) assigned a few female mygalomorphs collected in Afghanistan to this species. He noted that these spiders were considerably larger than the holotype. Most generic features, including the shape of the spinneret group, configuration of the female spermathecae and all male characters, were unknown until 2001. For almost a century the definitive characters of *Anemesia* were unclear. Raven (1985), who first elevated Simon's Nemesiidae to family rank, placed the monotypic *Anemesia* in synonymy with *Nemesia* in the absence of reliable data that could indicate a group, rather than an individual character.

Zonstein (1987) considered two of seven Central Asian species described in *Brachythele* Ausserer, 1871 (treated in a very broad sense until 1985) as belonging to *Anemesia*, however without providing a formal transfer and using the new combinations. These species, *B. birulai* and *B. karatauvi*, described by Spassky (1937) and Andreeva (1968) from Turkmenistan and Tajikistan, respectively, were first listed by Mikhailov (1996) as members of the nemesiid *Anemesia*. Later, the finding of adult male congeners enabled a redefinition of the generic diagnosis; *Anemesia* was assigned to the genera of the Cyrtaucheniidae Simon, 1889; an additional species, *A. incana*, was described concurrently (Zonstein 2001). The fifth known member of the genus, *A. koponeni* Marusik, Zamani & Mirshamsi, 2014, was very recently described from Iran (Marusik *et al.* 2014). Furthermore, several undescribed species of *Anemesia* were found in the spider material collected in the period 1986–1993 (with some further

additions) in Tajikistan, Turkmenistan and Uzbekistan, and new data on the distribution, biology and relationships within *Anemesia* were obtained. All this new information is presented here.

Material and methods

Depositories

- AMNH = American Museum of Natural History, New York, USA
CAS = California Academy of Sciences, Berkley, USA
MCSN = Museo civico di Storia naturale, Genova, Italy
MHNG = Muséum d'Histoire naturelle, Genève, Switzerland
MIZW = Muzeum i Instytut Zoologii Polskiej Akademii Nauk, Warsaw, Poland
MMUM = Manchester Museum, University of Manchester, UK
MNHL = Museum of Natural History, London, UK
MNHN = Muséum national d'Histoire naturelle, Paris, France
MRAC = Royal Museum for Central Africa, Tervuren, Belgium
NCA = National Collection of Arachnida, ARC-Plant Protection Research Institute, Pretoria, South Africa
NHMD = Natural History Museum of Denmark, Copenhagen, Denmark
PSU = Department of Zoology, Perm State University, Russia
SMF = Senckenberg Museum, Frankfurt-am-Main, Germany
SMNH = Steinhardt Museum of Natural History, Tel Aviv, Israel
ZISP = Zoological Institute, Russian Academy of Sciences, St.-Petersburg, Russia
ZMMU = Zoological Museum of Moscow University, Moscow, Russia
ZMUT = Zoological Museum, Turku University, Finland

Comparative material examined

Ctenizidae

Cyrtocarenum cunicularium (Olivier, 1811): TURKEY: 2 ♀♀, Marmara Region, environs of Bursa, 22 Sep. 2010, S. Zonstein leg. (SMNH).

Cyrtaucheniidae

Acontius kiriba Zonstein, 2018: BURUNDI: 1 ♀, Rwegura, 10 Nov. 2008, B. Nzigidahera leg. (MRAC 226868); 1 ♂, same collection data as for preceding but 10 Jan. 2009 (MRAC 226884).

Acontius nimba Zonstein, 2018: GUINEA: 1 ♂, 1 ♀, Nimba Mts, Mount Nimba Nature Reserve, Dec. 1957, M. Lamotte (SMF).

Amblyocarenum walckenaeri (Lucas, 1846): SPAIN: 1 ♂, Tarragona Province, L'Aldea, 23 Jul. 2001, E. Gros leg. (MNHN N/A).

Ancylotrypa elongata Purcell, 1908: BOTSWANA: 2 ♂♂, 2 ♀♀, Kalahari Desert, Lotlhake Pan, 19–28 Jul. 1973, R. Hakanen leg. (ZMUT).

Ancylotrypa pretoriae (Hewitt, 1913): SOUTH AFRICA: 1 ♂, Gauteng Province, Roodepoort, 16 Nov. 2003, M. Forsyth leg. (NCA 2007/72); 1 ♀, Mpumalanga Province, Two Rivers platinum site, 25 Apr. 2008, P. Hawkes leg. (NCA 2009/1358).

Ancylotrypa sp. aff. *zebra* (Simon, 1892): MOZAMBIQUE: 1 ♂, Inhaka Isle (Maputo Bay), Inhaka, 8–22 Jan. 1994, T. Steyn leg. (MRAC 209467); 1 ♀, same collection data as for preceding but 30 Apr.–14 May 1994 (MRAC 209755).

Angka hexops Raven & Schwendinger, 1995: THAILAND: 1 ♀, Mt Inthanon, 28 Oct. 2000, P.J. Schwendinger leg. (MNHG); 1 ♂, same collection data as for preceding but 30 Apr. 2000, P. Dankittipakul leg. (MNHG).

Cyртаuchenius maculatus (Simon, 1889): ALGERIA: 1 ♂, 2 ♀♀, Oran, no other data labelled (MNHN AR7076).

Cyртаuchenius terricola (Lucas, 1846): ALGERIA: 4 ♂♂, 2 ♀♀, Oran, no other data labelled (MNHN AR4296).

Homostola zebrina Purcell, 1902: SOUTH AFRICA: 1 ♀, Mpumalanga Province, 30 km N Graskop, 8 Mar. 2004, S. Maarlens leg. (NCA 2005/380).

Euctenizidae

Myrmekiaphila torreyae Gertsch & Wallace, 1936: USA: 2 ♀♀, Florida, Liberty County, Torreya Ravine, 31 Mar. 1964, F.A. Coyle leg. (SMNH, donated by F.A. Coyle).

Nemesiidae

Atmetochilus lehtineni Zonstein & Marusik, 2016: INDONESIA: holotype, ♂, Sumatra, Sumalumgun, Pisarani (ca 2°58'N, 99°16'E, 100–200 m), 22 Sep. 1978, P. Lehtinen leg. (ZMUT); paratypes, 2 ♀♀, 1 ♀ subad., 2 juvs, same data as for the holotype (ZMUT).

Entypesa sp. M (undescribed species): MAGADASCAR: 2 ♀♀, Fianarantsoa Province, Ranomafana National Park, Talatakely, 21°14.9' S, 47°25.6' E, 5–18 Apr. 1998, C.E. Griswold, D.H. Kavanaugh, N.D. Penny, M.J. Raheirilalao, J.S. Ranorianarisoa, I. Schweikert and D. Ubick leg. (CAS 9059432).

Iberesia barbara (Lucas, 1946): ALGERIA: 8 ♀♀, El Bayadh Province, El Kheiter, May 1883, E. Simon leg. (MNHN AR4481).

Nemesia ? *ibiza* Decae, 2005: SPAIN: 1 ♀, Ibiza Isle, Puig de Perella, 21 Dec. 1981, J. Murphy and F. Murphy leg. (MMUM G7572.3263). Misidentified and presented as *N. macrocephala* Ausserer, 1871 in Murphy & Roberts (2015: 208, pl. 11, additionally, the correct position of symbols ♂ and ♀ in the header on the noted page was reversed).

Nemesia sp. aff. *africana* (C.L. Koch, 1838): ALGERIA: 3 ♂♂, 15 ♀♀, Blida, no date labelled (probably, 1882 or 1883), E. Simon leg. (MNHN AR4304).

Nemesia sp. aff. *pannonica* Herman, 1879: TURKEY: 1 ♂, 5 ♀♀, Bursa Province, Oylat, 23 Sep. 2010, K.B. Kunt, E.A. Yağmur and S. Zonstein leg. (SMNH).

Pionothele capensis Zonstein, 2016: SOUTH AFRICA: holotype, ♂, Western Cape Province, Cape Peninsula, dunes north of Muizenberg, 34°06' S, 18°27' E, 21 Apr.–5 May 1991, R. Legg leg. (MRAC 173693); paratypes, 1 ♂, 2 ♀♀, same collection data as for preceding but 2–16 May 1991 (MRAC 173745).

Raveniola concolor Zonstein, 2000: INDIA: holotype ♂, northwestern Himalayas, Shimsha Karboo, 2900 m, 15 Apr. 1929, L. Caporiacco leg. (MCSN A.R.17); paratype, ♀, same region, Apis, 2800 m, 16 Apr. 1929, L. Caporiacco leg. (MCSN A.R.19).

Raveniola ferghanensis (Zonstein, 1984): KYRGYZSTAN: paratype, ♀ of *Brachythele ferghanensis*, surroundings of Djalal-Abad, 950 m, 8 Apr. 1982, S. Zonstein leg. (SMNH).

Spiroctenus sp.: SOUTH AFRICA: 1 ♂, KwaZulu-Natal Province, Sani Pass, Sep. 2007, D. Prentice leg. (NCA 2008/3423).

Structure

Structure, sectioning, and headers follow Schwendinger (2009), Schwendinger & Zonstein (2011) and Zonstein *et al.* (2018). To maintain the uniformity of species descriptions, males are described first, even in cases where the holotype is female.

Terminology

The terminology and descriptive format follows Raven (1981, 1985), with a few exceptions. The term *megaspines* was first used by Raven (1981) to designate thickened and curved thornlike spines located on anterior leg tibiae in male mygalomorphs that form the mating spurs. The terms *intercheliceral tumescence* and *preening combs* correspond to a ‘pallid and soft area at the lower basal interface of the chelicerae [...] of some male mygalomorphs’ (Raven 1985: 8) and to the apical combs of bristles located in some mygalomorphs on the metatarsi, respectively. The nomenclature of the spigot types is given according to Murphy & Roberts (2015).

Illustrations

Photographs were taken using a Canon 500D digital camera with a 100 mm Canon macro lens (majority of the totals) and a Zeiss Discovery V20 stereo microscope with a Canon PowerShot G9 digital camera attached to it, and prepared using the Helicon Focus ver. 6.3.2 Pro software (<http://www.heliconsoft.com/>). Field photographs showing the biotopes, live spiders, burrows and their aggregations were taken mainly with a Canon PowerShot G1 X Mark II camera. Scanning electron micrographs were made using a JEOL JSM-5200 scanning microscope at the Zoological Museum, University of Turku, Finland. Distribution maps were drawn using ©Adobe Illustrator CS5. Photographs and other figures were processed, grouped and arranged using ©Adobe Photoshop CS5. Female genitalia were dissected under a Leica M80 stereo microscope. Illustrations of the spermathecae were made following the maceration of the dissected female genital area in a 10% potassium hydroxide aqueous solution, cleaning in 85% lactic acid and exposure for a few minutes in a 70% alcohol solution of Chlorazol Black. Upon becoming transparent and gently stained, these structures were then placed in a dish with 85% lactic acid and fixed on a glass microsphere layer for image-making. Following examination, the preparations were removed, cleaned and then transferred to small microvials and placed together with the studied specimens.

Measurements

Measurements were taken through a Zeiss Discovery V20 stereo microscope to an accuracy to 0.01 mm. All measurements are given in millimetres. The total body length includes the chelicerae, but not the spinnerets. The sternum length was measured along a straight line between the posterior tip of the sternum and the hindmost part of the labium. The lengths of leg and palp segments were measured on the dorsal side, and the lengths of spinneret segments on the ventral side, from midpoint of anterior margin to midpoint of posterior margin. The diameter of the AME is usually given as the diameter of a sharply edged AME circle (the ‘pupil’). When the AME cornea was well-separated and elevated, and its diameter could be measured, the corresponding data follow in brackets. Any eye interdistances incorporating this parameter are also given in brackets.

Geographical and ecological data

The altitude is shown in meters above sea level. Coordinates are given for material collected after 1994–1995 according to the GPS data; and before this date according to the corresponding former Soviet military maps of 1:100000 or 1:200000 scale. When used without brackets, the coordinates refer to the collecting place(s). The coordinates in brackets refer to the indicated nearest locality and follow it. When necessary, the earlier obtained data were checked, specified and improved, using Google Earth 4.2™. Names and limits of orographic and biogeographic units are given according to Kryzhanovsky (2002) and Nikolaev (2002). Some of the dug spider burrows were studied and measured, and fragments

of the prey consumed by spiders were obtained. The prey remains were identified by Y.S. Tarbinsky and S.V. Ovchinnikov (Institute of Biology, Kyrgyz Academy of Sciences).

Abbreviations

AC	=	aciniform gland spigot(s)
ALE	=	anterior lateral eyes
AME	=	anterior median eyes
CL	=	carapace length
CW	=	carapace width
d	=	dorsal
LL	=	labium length
LW	=	labium width
m	=	megaspine
MAC	=	modified aciniform gland spigot(s)
p	=	prolateral
pd	=	prodorsal
PLE	=	posterior lateral eyes
PLS	=	posterior lateral spinnerets
PME	=	posterior median eyes
PMS	=	posterior median spinnerets
PTC	=	paired tarsal claws of legs I–IV
pv	=	proventral
r	=	retrolateral
rd	=	retrodorsal
rv	=	retroventral
SL	=	sternum length
SLW	=	sternum width
TBL	=	total body length
TO	=	tarsal organ
v	=	ventral

Results

Taxonomic descriptions

Class Arachnida Cuvier, 1812
Order Araneae Clerck, 1757
Family Cyrtaucheniidae Simon, 1889

Anemesia Pocock, 1895

Anemesia Pocock 1895: 194.

Anemesia – Simon 1903: 90. — Roewer 1942: 177. — Bonnet 1955: 322. — Zonstein 2001: 11; 2004: 358, fig. 22. — Marusik *et al.* 2014: 2.

Type species

Nemesia tubifex Pocock, 1889, by monotypy.

Emended diagnosis

The genus differs from other known cyrtaucheniids in the following unique combination of characters: (a) a relatively broad carapace which is weakly if at all constricted posteriorly; (b) a fairly short and straight thoracic fovea; (c) a protruding triangular clypeus; (d) a long and narrow posterior pair of the sternal sigilla; (e) among types of the spigots only AC can be identified, while MAC are absent. Although these features can occur individually in other genera of the Cyrtaucheniidae, such a combination has no analogs within the family.

Redescription

HABITUS. *Anemesia* includes mostly small or medium-sized mygalomorph spiders (body length 8–30 mm).

PROSOMA. Carapace broadly oval, mostly hirsute in males, glabrous to slightly hirsute in females. Clypeus triangular. Thoracic fovea transverse, straight or weakly procurved. Eye tubercle, normally carrying eight eyes (posterior eyes sometimes reduced), low to very low in females, more developed in conspecific males, mound carrying AMEs always distinct. Chelicerae with rastellum composed of numerous spikes on dorsodistal cheliceral edge. Cheliceral furrow with large promarginal teeth and with smaller retromarginal teeth, minute to medium-sized in females, but reduced in size in conspecific males. Fang without serration. Male intercheliceral tumescence absent. Labium moderately long, trapezoidal to subquadrate, without cuspules. Sternum domed, narrowed anteriorly. Sternal sigilla mostly distant from sternal margin, elongate, sometimes poorly developed (in *A. infumata* sp. nov. and *A. pallida* sp. nov.). Posterior sternal sigilla generally long and narrowly oval. Maxillae broadly trapezoidal. Few to numerous maxillary cuspules confined to probasal edge of maxillae. Sexual dimorphism in size of cuspules absent. Serrula not evident.

STRUCTURES OF LEGS I–IV. Leg formula: 4123 or 1423. Femur I usually longer than femur IV. Legs equal in width or legs III and IV slightly stouter (in females of *A. andreevae* sp. nov.). Male tibia I with one retroventral megaspine. Metatarsal preening combs absent. Tarsi entire. Most species of *Anemesia* have spines on tarsi III–IV (females of *A. pococki* sp. nov. and *A. tubifex* possess spines only on tarsus III; in females of *A. andreevae* sp. nov. all tarsi are aspinose; in males of *A. castanea* sp. nov. and *A. parvula* sp. nov. in addition to spinose tarsi III–IV, spines are located also on tarsus II). Scopula thin, moderately long and dense; entire and distal on metatarsi I and II; entire or narrowly divided on tarsi I and II, and on female palpal tarsus; widely divided, mixed with setae or reduced to absent on tarsi III and IV in males; usually absent on tarsi III and IV in females. Trichobothria arranged in two converging rows on tibiae, one straight row on metatarsi and one relatively narrow zigzag row on tarsi. Trichobothrial bases with longitudinal ridges. Tarsal organ low, lingulate, with weak concentric ridges. Female palp with tarsal claw possessing few teeth located prolaterally. Paired claws on tarsi I and II biserially dentate with numerous teeth, on tarsi III and IV usually with fewer teeth, in females inner teeth row may be reduced completely. Unpaired tarsal claw small, curved.

MALE PALP. Tibia moderately long to very long, slightly to distinctly swollen or cylindrical, with no, few, or numerous spines. Cymbium asymmetrical with retrolateral lobe extended, with or without spines. Male palpal bulb pyriform or asymmetrically shaped. Embolus tapering and curved, in *A. incana* and related species with small subapical process.

SPERMATHECAE. Spermathecae may be multilobate, divided, or entire.

SPINNERETS. Two pairs of spinnerets. PMS medium-sized to small with functional spigots confined to apex only. Apical segment of PLS mostly triangular in females but usually longer (may be shortly digitiform) in conspecific males. Spigots: MAC not evident, only AC type present.

Species grouping

To assist with identifications, the species treated here are assigned to six species groups. These assignments are preliminary, because females in some species are unknown and they are not based on a phylogenetic grouping, though these groups may indeed reflect phylogenetic relationships.

Species included

Anemesia currently includes 14 species (listed below according to their assignment to the corresponding species groups): *A. birulai* (Spassky, 1937), *A. kaponeni* Marusik, Zamani & Mirshamsi, 2014, *A. pococki* sp. nov., *A. tubifex* (Pocock, 1889), *A. andreevae* sp. nov., *A. oxiana* sp. nov., *A. sogdiana* sp. nov., *A. castanea* sp. nov., *A. karatauvi* (Andreeva, 1968), *A. pallida* sp. nov., *A. parvula* sp. nov., *A. incana* Zonstein, 2001, *A. infumata* sp. nov. and *A. infuscata* sp. nov.

Distribution

Central Asia: Afghanistan, Iran, Tajikistan, Turkmenistan and Uzbekistan.

Key to species of *Anemesia*

Males

1. Palpal tibia distinctly swollen and mostly aspinose (Figs 173–176, 178–179) 2
– Palpal tibia subcylindrical or cylindrical, and generally with numerous spines and thick bristles (Figs 177, 180–187) 7
2. Embolus shorter and widely tapering (Figs 188–196) 3
– Embolus longer and narrowly tapering (Figs 199–205) 6
3. Distance AME–AME subequal to diameter of AME (Figs 48–50) 4
– Distance AME–AME considerably larger than diameter of AME (Fig. 51)
..... *A. tubifex* (Pocock, 1889)
4. Carapace and legs light to medium brown; abdomen with distinct dorsal pattern (Figs 1, 3–4) 5
– Carapace and legs dark brown; abdominal pattern indistinct (Fig. 2)
..... *A. kaponeni* Marusik, Zamani & Mirshamsi, 2014
5. Carapace and legs paler, light brown (Fig. 3); embolus longer (Figs 193–194) .. *A. pococki* sp. nov.
– Carapace and legs darker, medium brown (Fig. 1); embolus shorter (Figs 188–190)
..... *A. birulai* (Spassky, 1937)
6. Palpal tibia aspinose (Fig. 179). Embolus gradually tapering and uniformly curved (Figs 203–205) *A. sogdiana* sp. nov.
– Palpal tibia with numerous spines (Fig. 178). Distal part of embolus more sharply tapering and curved than its proximal part (Figs 199–202) *A. oxiana* sp. nov.
7. Cymbium and/or palpal tibia with spines (Figs 180–187). Embolus long to very long, with slightly curved and gradually tapering distal part (Figs 206–223) 8
– Palpal tibia and cymbium aspinose (Fig. 177). Embolus relatively short and bent medially, with very thin and narrow distal part (Figs 197–198) *A. andreevae* sp. nov.
8. Cymbium with numerous dorsal and few lateral spines (Figs 180–183). Subapical embolic keel very small and gradually elevated (Figs 206, 208, 210, 213–214). PMS small and slender (Figs 279–280, 282–284) 9
– Cymbium without lateral spines (Figs 184–187). Subapical embolic keel larger and noticeably dilated (Figs 147–150, 215, 218, 220). PMS stouter (Figs 285, 289) 12

9. Carapace and legs paler, light brownish (Figs 10–11). Palpal tibia shorter: 3.0–3.2 times as long as wide (Figs 182–183). Tarsus IV with numerous (5–20) spines 10
 – Carapace and legs darker, chestnut brown (Figs 8–9). Palpal tibia longer: 4.3–4.6 times as long as wide (Figs 180–181). Tarsus IV with few (1–4) spines 11
10. Legs longer: tibia I 4.9–5.0 times as long as wide (Fig. 127). Palpal organ pegtop-shaped, with certainly bulging anterior lobe (Figs 211–212). Dorsal abdominal pattern as in Fig. 10 *A. pallida* sp. nov.
 – Legs shorter: tibia I 4.2 times as long as wide (Fig. 128). Palpal organ comma-shaped, with weakly convex anterior lobe (Figs 213–214). Dorsal abdominal pattern as in Fig. 11 *A. parvula* sp. nov.
11. Legs longer: tibia I 5.7–5.9 times as long as wide (Fig. 125). Palpal organ with strongly bulging anterior lobe (Fig. 208) *A. castanea* sp. nov.
 – Legs shorter: tibia I 5.1–5.2 times as long as wide (Fig. 126). Palpal organ with weakly convex anterior lobe (Fig. 210) *A. karatauvi* (Andreeva, 1968)
12. Palpal bulb noticeably (1.3–1.4 times) wider than long (Fig. 215). Clypeus wide, about 2 times exceeding diameter of ALE (Fig. 59). Posterior sigilla long, oval, and located closer to sternal margin (Fig. 101) *A. incana* Zonstein, 2001
 – Palpal bulb as wider as long, or very moderately (1.1–1.2 times) wider than long (Figs 218, 220). Clypeus considerably narrower, shorter than diameter of ALE, or only slightly exceeding it (Figs 60–62). Posterior sigilla smaller, rounded or irregular, and located more distantly from sternal margin (Figs 102–103) 13
13. Legs longer: tibia I 4.8–4.9 times as long as wide (Fig. 130). Embolus more tapering, with base located closer to retrolateral side of palpal organ (Figs 217–219). Apical segment of PLS longer (Fig. 287) *A. infumata* sp. nov.
 – Legs shorter: tibia I 4.0–4.3 times as long as wide (Figs 131–132). Embolus less tapering, with base located closer to prolateral side of palpal organ (Figs 220–223). Apical segment of PLS shorter (Fig. 289) *A. infuscata* sp. nov.

Females

Females of *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 and *A. parvula* sp. nov. are unknown.

1. Spermathecae 2–3 branched (Figs 224–234)..... 2
 – Spermathecae entire (Figs 235–249, 251–265) or divided (Fig. 250) 5
2. Spermathecae strictly 3-branched, with long stalks and well sclerotised receptacles (Figs 233–234). Habitus as in Fig. 18 *A. andreevae* sp. nov.
 – Spermathecae mostly 2-branched, with shorter stalks and poorly sclerotised receptacles (Figs 224–232). Habitus differs (Figs 15–17) 3
3. Distance AME–AME considerably larger than diameter of AME (Fig. 65). Spermathecae as in Figs 230–232. Habitus as in Fig. 17 *A. tubifex* (Pocock, 1889)
 – Distance AME–AME subequal to diameter of AME (Figs 63–64). Habitus and spermathecae differ (Figs 15–16, 224–229) 4
4. Carapace and legs paler, light brown (Fig. 16). Spermathecae as in Figs 228–229 *A. pococki* sp. nov.
 – Carapace and legs darker, medium brown (Fig. 15). Spermathecae as in Figs 224–227 *A. birulai* (Spassky, 1937)

5. Spermathecae divided (Fig. 250). Dorsal abdominal pattern reduced to longitudinal median band. Habitus as in Fig. 23 *A. pallida* sp. nov.
 - Spermathecae entire (Figs 235–249, 251–265). Habitus, including more developed dorsal abdominal pattern, differs (Figs 19–22, 24–26) 6
6. Carapace light yellowish brown to medium chestnut brown, chelicerae darker coloured (Figs 19–22). Spermathecae with relatively long and narrow stalks (Figs 235–249) 7
 - Carapace and chelicerae uniformly dark brown (Figs 24–26). Spermathecae with relatively short and wide stalks (Figs 251–265) 10
7. Carapace and legs paler, light yellowish brown (Fig. 20). Maxillae with 10–20 cuspules each. Spermathecae with moderately long stalks (Figs 235–240) *A. sogdiana* sp. nov.
 - Carapace and legs darker, foxy to chestnut brown (Figs 19, 21–22). Maxillae with 28–85 cuspules each. Spermathecae with long to very long stalks (Figs 241–249) 8
8. Habitus as in Figs 19, 29. Dorsal abdominal pattern with dark longitudinal median spot having two large lateral extensions. Spermathecae with more narrowly spaced bases and conical stalks (Figs 241–244). Apical segment of PLS triangular (Fig. 276) *A. oxiana* sp. nov.
 - Habitus as in Figs 21–22. Dorsal abdominal pattern with smaller lateral extensions. Spermathecae with more broadly spaced bases and cylindrical stalks (Figs 245–249). Apical segment of PLS shortly digitiform (as in Fig. 281) 9
9. Clypeus broader, AME and ALE relatively smaller (Fig. 70). Maxillae with 65–70 cuspules each. Spermathecae with narrower spaced, stronger inclined and more tapering receptacles (Fig. 245) *A. castanea* sp. nov.
 - Clypeus narrower, AME and ALE relatively larger (Fig. 71). Maxillae with 40–55 cuspules each. Spermathecae with broader spaced, lesser inclined and less tapering receptacles (Figs 246–249) *A. karatauvi* (Andreeva, 1968)
10. Clypeus wide, about 2 times exceeding diameter of ALE (Fig. 73). Posterior sigilla long, oval, and located closer to sternal margin (Fig. 113). Spermathecae with widened bases and oblate receptacles (Figs 251–254) *A. incana* Zonstein, 2001
 - Clypeus considerably narrower, shorter than diameter of ALE, or only slightly exceeding it (Figs 74–77). Posterior sigilla smaller, rounded or irregular, and located more distantly from sternal margin (Figs 114–116). Spermathecae differ (Figs 255–265) 11
11. Tarsus IV with 3–4 spines. Spermathecae shorter, cap-like, with poorly defined receptacles (Figs 255–257) *A. infumata* sp. nov.
 - Tarsus IV with 7–10 spines. Spermathecae longer, mushroom-like, with dilated receptacles (Figs 258–265) *A. infuscata* sp. nov.

Anemesia tubifex species group

Diagnostic characters

Males differ from other male congeners in possessing a distinctly swollen palpal tibia, almost or completely lacking spines (Figs 173–176), combined with a moderately long and broadly tapering embolus (Figs 188–196). Females have two or three branches in the spermathecae and relatively short stalks and weakly sclerotised receptacles (Figs 224–232).

Species included

Anemesia birulai (Spassky, 1937), *A. koponeni* Marusik, Zamani & Mirshamsi, 2014, *A. pococki* sp. nov. and *A. tubifex* (Pocock, 1889).

Anemesia birulai (Spassky, 1937)

Figs 1, 15, 48, 63, 90, 104, 117, 173, 188–190, 224–227, 266–267, 306–309, 369

Brachythele birulai Spassky, 1937: 364, fig. 2 (♂).

Brachythele birulai – Spassky & Minenkova 1940: 138. — Roewer 1942: 196 (♂). — Charitonov 1948: 301. — Spassky 1952: 193, 194. — Bonnet 1955: 911 (♂). — Ivanov 1965: 245. — Brignoli 1972: 412 (♂). — Ovcharenko & Fet 1980: 443 (♂). — Fet 1984: 40 (♂). — Zonstein 1985: 158 (♂); 1987: 1013. — Kuznetsov & Fet 1986: 50.

Sterrhochrotus ferghanensis – Vlasov & Sytshevskaja, 1937: 249 (♀). Misidentification, not *Cteniza ferghanensis* Kroneberg, 1875: 27, pl. 3, fig. 18 (♀).

Nemesia birulai – Mikhailov & Fet 1994: 502.

Anemesia birulai – Mikhailov 1996: 77; 1997: 20. — Zonstein 2001: 11. — Marusik *et al.* 2014: 3, fig. 11 (♂).

Diagnosis

Anemesia birulai is closest in habitus to *A. pococki* sp. nov. and *A. tubifex*; however, it differs by darker colouration from the former, and by AMEs spaced closer from the latter. Males can be also distinguished from *A. pococki* sp. nov. by the spinose cymbium, and from *A. tubifex* by a shorter and more swollen palpal tibia and by a shorter embolus (Figs 173, 188–190, cf. Figs 175–176, 193–196). Females of *A. birulai* possess the multilobate spermathecae with the characteristic long and slender individual receptacles (Figs 224–227).

Material examined

Holotype

TURKMENISTAN: ♂, Badhyz Plateau, Akarcheshme well, 27 Apr. 1936, L. Freiberg leg. (ZISP).

Additional material (8 ♂♂, 10 ♀♀, 2 ♀♀ subad.)

TURKMENISTAN: 2 ♀♀ subad., surroundings of Ashgabat, 13 Apr. 1931, V. Vlasov leg., (ZMMU); 1 ♀, western part of Badhyz Plateau, Akarcheshme well, 850 m, 35°47' N, 61°28' E, 15 Apr. 1985, S. Zonstein leg. (SMNH); 1 ♂, central part of Badhyz Plateau, Kepele well, 700 m, 35°48' N, 61°33' E, 15–30 Mar. 1980, R.E. Zlotin leg. (SMNH); 2 ♀♀, same locality, 13 Apr. 1985, S. Zonstein leg. (SMNH); 2 ♀♀, Morgunovka 5 km E Kushka, 700 m, 35°17' N, 62°24' E, 11 Apr. 1993, S. Zonstein leg. (SMNH); 1 ♂, 1 ♀, Zulfagar Mts, surroundings of Nardenvaly spring, 800–1000 m, 35°47' N, 61°21' E, 13 Apr. 1993, S. Zonstein leg. (SMNH); 4 ♀♀, Eroylanduz depression S of Badhyz Plateau, 18 Mar. 1978, 450 m, V. Fet leg. (SMNH); 1 ♂, Kopetdag Mts, foothills, Meana-Chaacha, 400 m, 22 Apr. 1978, G.T. Kuznetsov leg. (SMNH); 1 ♂, Bikrava 9–10 km SW Ashgabat, 350 m, 28 Mar. 1977, G.T. Kuznetsov leg. (SMNH); 3 ♂♂, Berzengi 5–6 km S Ashgabat, 400–500 m, Mar.–Apr. 1980, G.T. Kuznetsov leg. (SMNH); 1 ♂, Gyaurs 30 km ESE Ashgabat, 250–400 m, 11 Apr. 1980, O. Soyunov leg. (SMNH).

Description

Male (holotype)

HABITUS. See Fig. 1).

MEASUREMENTS. TBL 11.20, CL 4.93, CW 4.12, LL 0.65, LW 1.07, SL 2.62, CW 2.44.

COLOUR. Carapace and legs reddish brown, carapace with slightly darkened clypeus and eye tubercle brownish black; chelicerae dark reddish brown; sternum, labium and maxillae light reddish brown; cymbium brown; sternal sigillae brown; abdomen dorsally light brown with darker standard pattern

consisting of broad median spot and six pairs short chevron-like lateral spots inclined backward; dorsal abdominal surface and spinnerets yellowish brown.

PROSOMA. Clypeus and eye tubercle as shown in Fig 48. In holotype specimen right ALE and PLE fused. Eye diameters and interdistances: AME 0.16(0.20), ALE 0.25, PLE 0.20, PME 0.14, AME–AME 0.15(0.11), ALE–AME 0.10(0.08), ALE–PLE 0.04, PLE–PME 0.03, PME–PME 0.43. Cheliceral rastellum with 13–15 spikes located in front of fang base. Each cheliceral furrow with 7 promarginal teeth and 3–4 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 90. Maxillae with 21–23 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 117. Scopula: distal $\frac{1}{3}$ on metatarsi I–II, entire on tarsi I–II, elsewhere absent. Trichobothria: 2 rows of 8–9 each on tibiae, 7–10 on metatarsi, 11–13 on tarsi. PTC I–III: outer and inner margins with 5–6 teeth. PTC IV: 5–6 teeth on outer, 3–4 teeth on inner margin.

SPINATION. Palp: femur d3, pd2; patella pd1; tibia p2; tarsus d8–9. Leg I: femur d4, pd3, rd12–3; patella pd1; tibia p3, r1, v5+m; metatarsus p3, v5. Leg II: femur d4, pd3, rd3; patella pd1; tibia p3, v6–7; metatarsus p3, v5. Leg III: femur d4, pd3, rd3; patella p3; tibia d1, p2–3, r3, v7; metatarsus d1, pd2; p3, r3, v6; tarsus p1; Leg IV: femur d4, pd2–3, rd2–3; tibia p1, r3, v8; metatarsus pd2, p3, r3, v8; tarsus p1. Patella IV, and tarsi I and II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 173, 188–190. Palpal tibia swollen (Fig. 173). Embolus tapering slightly curved (Figs 188–190).

SPINNERETS. See Fig. 266. PMS: length 0.36, diameter 0.17. PLS: maximal diameter 0.47; length of basal, medial and apical segments 0.80, 0.65, 0.42; total length 1.87; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.97 (4.47)	1.53 (2.18)	2.43 (3.11)	–	1.03 (2.57)	7.96 (12.23)
Leg I	4.92 (6.25)	2.18 (3.32)	3.55 (4.28)	3.93 (3.67)	2.39 (2.45)	16.97 (19.97)
Leg II	4.45 (5.66)	2.13 (3.25)	3.32 (3.77)	3.37 (3.63)	2.35 (2.41)	15.62 (18.72)
Leg III	3.70 (4.27)	1.53 (2.62)	2.31 (2.43)	3.03 (3.43)	2.16 (2.38)	12.73 (15.13)
Leg IV	4.62 (5.96)	2.07 (3.12)	3.40 (4.56)	3.98 (4.54)	2.37 (2.71)	16.94 (20.89)

Female (from Kepele; described for the first time)

HABITUS. See Fig. 15.

MEASUREMENTS. TBL 23.90, CL 7.53, CW 6.35, LL 0.83, LW 1.33, SL 3.77, SW 3.30.

COLOUR. Differs in some details from that of male holotype: carapace and legs ferruginous-brown; anterior half of carapace darker, anterior edge and lateral margins of carapace as well as femora, patellae and tibiae of legs I and II are even darker, brown-coloured; eye tubercle with brownish-black spots around AMEs and lateral eyes; sternum, labium, maxillae, coxae ventrally, metatarsi and tarsi III and IV yellowish-brown; abdomen light greyish-yellow with mid-brown pattern consisting of moderately narrow median stripe and six paired chevrons; spinnerets even paler greyish-yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 63. Eye diameters and interdistances: AME 0.18(0.23), ALE 0.29, PLE 0.23, PME 0.16, AME–AME 0.23(0.18), ALE–AME 0.20(0.18), ALE–PLE 0.18, PLE–PME 0.03, PME–PME 0.69. Cheliceral rastellum with 30–35 stout spikes in front of fang base. Each cheliceral furrow with 6–7 promarginal teeth and 3–6 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 104. Maxillae with 16–15 cuspules each.

LEGS. Scopula: entire on metatarsi I and II, palpal tarsus and tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 7–9 each on tibiae, 12–14 on metatarsi, 11–13 on leg tarsi, 6–7 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–II with 5–6 teeth on each margin. PTC III with 5–6 teeth on outer, 3–4 teeth on inner margins. PTC IV with 4–5 teeth on outer, 1 tooth on inner margins.

SPINATION. Palp: femur pd1; patella p3; tibia p2–3, v12–13; tarsus v1. Leg I: femur pd2; patella p2; tibia p3, v5–6; metatarsus v5. Leg II: pd3; patella p2; tibia p2, v5–7; metatarsus pd1, v6–7. Leg III: pd2–3, rd3; patella r3; tibia d1, p2, r2, v7; metatarsus d1, p2–3, r3, v5–6; tarsus p2, v2; Leg IV: rd2; tibia r2, v7; metatarsus p4, r2, v9; tarsus p2–3, v2. Palpal femur and femora I–IV with 3–7 thick dorsal bristles; patella IV, and tarsi I and II aspinose.

SPERMATHECAE. Two or three branched, as shown in Fig. 224.

SPINNERETS. See Fig. 267. PMS: length 0.86, diameter 0.40. PLS: maximal diameter 0.87; length of basal, medial and apical segments 1.92, 1.13, 0.80; total length 3.85; apical segment triangular.

Variation

The length of the carapace varies from 4.65 to 5.30 in males and in females from 6.00 to 7.85. The coloration weakly varies across specimens from Badkhyz Plateau; however, spiders collected in the surroundings of Ashgabat at a lower altitude (200–400 m vs 600–1100 m) look somewhat paler. The number of the maxillary cuspules ranges from 15 to 23 in males and from 13 to 21 in females. The variability in structure of the male palpal organ and the spermathecae is shown in Figs 188–190 and 224–227, respectively.

Habitat

The species occurs in foothill and low mountain steppes, often with shrubs or open park forest composed mainly of *Pistacia vera* L. The vicinity of the Kepele well, with hillsides inhabited by these spiders, is shown in Figs 307–308.

Distribution

South Turkmenistan. See Fig. 369.

Notes

Vlasov & Sytshevskaya (1937) listed “*Sterrhochrotus ferghanensis* Croneb.” among spider species collected from the burrows in surroundings of Ashgabat. The re-examination of two females deposited in ZMMU, herewith identified and labelled, revealed they are *Anemesia*. Since both these females are immature, they are provisionally assigned here to *A. birulai*, the only congener known in the neighbourhood; their studied characters do not contradict such assignment.

Charitonov (1969) indicated this species as also distributed in Uzbekistan. A re-examination of the material used in his study (PSU), revealed that he dealt with representatives of an undescribed species (see description of *A. sogdiana* sp. nov.). The corresponding reference is thus excluded from the synonymy list of *A. birulai*.

Anemesia kopyneni Marusik, Zamani & Mirshamsi, 2014

Figs 2, 49, 91, 118, 174, 191–192, 268, 369

Anemesia kopyneni Marusik *et al.* 2014: 2, figs 1–8 (♂).

Material examined

Holotype

IRAN: ♂, Khorāsān-e Jonoubi Province, Qāen County, Kārīzan (33°53' N, 59°49' E), 1 May 2012, O. Mirshamsi leg. (SMF).

Diagnosis

By structure of the palp with a moderately swollen tibia and a widely tapering embolus, the relatively large male holotype of *Anemesia koponeni* resembles the large males of *A. tubifex*. However, it differs from them by the almost uniformly dark brown coloured body and legs (vs the lighter and more contrastingly coloured body and legs in *A. tubifex*; Fig. 2, cf. Fig. 4), as well as by a narrower eye group and by the closer spaced AMEs (Fig. 49, cf. Fig. 51).

Description

Male (holotype)

HABITUS. See Fig. 2.

MEASUREMENTS. TBL 15.20, CL 6.01, CW 5.20, LL 0.56, LW 0.97, SL 3.16, CW 2.52.

COLOUR. Carapace, palps and most part of legs reddish brown; eye tubercle brownish black; clypeus, chelicerae, femora I–II dorsally dark reddish brown; sternum, labium, maxillae, palps and legs ventrally yellowish brown; abdomen dorsally with almost indistinct pattern consisting of short median stripe and few pairs of interrupted transverse fasciae, metatarsi III–IV, tarsi I–IV, ventral abdominal surface and spinnerets light yellowish brown.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 49. Eye diameters and interdistances: AME 0.17 (0.24), ALE 0.25, PLE 0.20, PME: 0.12, AME–AME 0.19(0.12), ALE–AME 0.15(0.12), ALE–PLE 0.10, PLE–PME 0.03, PME–PME 0.52. Cheliceral rastellum with 20–25 spikes in front of fang base. Each cheliceral furrow with 7 promarginal teeth and 6–7 smaller retrolateral teeth. Sternum, labium and maxillae as shown in Fig. 91. Maxillae with ca 15 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 118. Scopula distal and entire on metatarsi I–II, entire on tarsi I–II, divided on tarsus III, absent on tarsus IV. PTC I–IV with 6–7 teeth on each margin. Trichobothria: 2 rows of 7–9 each on tibiae, 14–17 on metatarsi, 17–21 on tarsus I, 12–17 on tarsi II–IV, 8 on cymbium.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.56	2.04	3.30	–	1.14	10.04
Leg I	6.96	3.07	4.97	5.51	3.22	23.73
Leg II	6.45	2.96	4.43	5.22	3.14	22.20
Leg III	5.18	2.29	3.36	4.98	2.81	18.62
Leg IV	6.72	2.71	5.53	6.37	3.14	24.47

SPINATION. Palp: femur d3, pd2; patella 1, tibia v1–2; tarsus d ca 10 small. Leg I: femur d4, pd3, rd3; patella p1–2; tibia p3, r2–3, v6–8; metatarsus d1, p1, r1, v3–4+m. Leg II: femur d4, pd3, rd3; patella p2; tibia p3, r1–2, v9; metatarsus d2, p3, r1, v5–7. Leg III: femur d3–4, pd3, rd3; patella p2, r1; tibia d1, p3, r3, v6; metatarsus p3, r4, v7; tarsus pv2, rv2. Leg IV: femur d3, pd3, rd3; tibia d1, p1, r3, v6; metatarsus d1, p2, r5, v7–8; tarsus pv1–4, rv1–2. Patella IV, and tarsi I and II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 174, 191–192. Palpal tibia swollen (Fig. 174). Palpal organ with embolus tapering and noticeably curved (Figs 191–192).

SPINNERETS. See Fig. 268. PMS: length 0.53; diameter 0.27. PLS: maximal diameter 0.51; length of basal, medial and apical segments 0.98, 0.75, 0.52; total length 2.25; apical segment triangular.

Female

Unknown.

Habitat

No data.

Distribution

The species is known from the type locality only (see Fig. 369).

Anemesia pococki sp. nov.

[urn:lsid:zoobank.org:act:0A90722E-CDDE-4595-A948-8E2E014C2153](https://zoobank.org/urn:lsid:zoobank.org:act:0A90722E-CDDE-4595-A948-8E2E014C2153)
Figs 3, 16, 27, 50, 64, 78, 92, 105, 119, 143–144, 158–160, 175, 193–194,
228–229, 269–270, 291, 306–307, 369

Diagnosis

Anemesia pococki sp. nov. generally resembles a paler coloured version of *A. birulai*. However, it differs from the latter species by the aspinose cymbium and a less tapering embolus in males (Figs 175, 193–194; cf Figs 173, 188–190), as well as by less sclerotised and more diverged receptacles in females (Figs 228–229; cf Figs 224–227).

Etymology

The specific name is a patronym in honor of Dr Reginald I. Pocock, the noted British arachnologist (1863–1947), who provided and published many studies on the Mygalomorphae; he described, in particular, both the genus *Anemesia* in 1895 and its type species a few years earlier (1889).

Material examined

Holotype

TURKMENISTAN: ♂, surroundings of Nardevanly spring, Zulfagar Mts, 900 m, 35°47' N, 61°21' E, 16 Apr. 1993, S. Zonstein leg. (SMNH).

Paratypes

TURKMENISTAN: 4 ♂♂, 7 ♀♀, same collection data as for holotype but 600–1000 m, 16–17 Apr. 1993 (SMNH).

Description

Male (holotype)

HABITUS. See Fig. 3.

MEASUREMENTS. TBL 13.10, CL 5.63, CW 4.73, LL 0.63, LW 1.05, SL 2.77, SW 2.53.

COLOUR. Carapace light brownish orange with anterior edge darker and thoracic part lighter, chelicerae light orange; palps and legs dorsally less intensive orange; sternum, labium, maxillae and legs ventrally pale brownish yellow; eye tubercle blackened; abdomen dorsally pale yellowish grey with brown pattern

consisting of moderately wide median lanceolate spot and six paired transverse and slightly inclined short stripes, ventral part of abdomen pale yellow, spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 50. Eye diameters and interdistances: AME 0.16(0.20), ALE 0.27, PLE 0.21, PME 0.10, AME–AME 0.15(0.11), ALE–AME 0.09(0.07), ALE–PLE 0.12, PLE–PME 0.03, PME–PME 0.44. Thoracic fovea short and nearly pit-like, with anterior edge slightly recurved. Cheliceral rastellum composed of about 25 spikes grouped both in one transverse row in front of fang base and irregularly on low mound. Each cheliceral furrow with nine promarginal teeth and seven to eight smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 92. Maxillae with 30–32 cuspules each.

SPINATION. Palp: femur d3, pd2; patella pd1; tibia p1, r1, v1. Leg I: femur d5, pd3, rd2–3; patella p1; tibia p2, v5+m; metatarsus d1, pd2, v6. Leg II: femur d5, pd3, rd1; patella p1; tibia p3, v8; metatarsus p3, v7. Leg III: femur d4, pd3, rd3; patella p3, r2; tibia d1, p3, r3, v8; metatarsus pd4, p3, r2, v9; tarsus pv3. Leg IV: femur d5, p3, r3; tibia d1, p3, r3, v8; metatarsus pd2, p3, r7, v7; tarsus p2. Cymbium, patella IV and tarsi I and II aspinose.

LEGS. Tibia and metatarsus I as shown in Fig. 119. Scopula: distal on metatarsi I–II, entire on tarsi I and II, divided on tarsi III, vestigial on tarsi IV. Trichobothria: 2 rows of 8 each on tibiae, 12–14 on metatarsi, 12–13 on tarsi. PTC I–III with 9–10 teeth on both outer and inner margin, PTC IV with 8 and 5–7 teeth respectively.

PALP. Tibia, cymbium and palpal organ as shown in Figs 175, 193–194. Tibia swollen, with few spines and numerous ventral thick bristles (Fig. 175). Embolus tapering slightly curved (Figs 193–194).

SPINNERETS. See Fig. 269. PMS: length 0.38, diameter 0.20. PLS: maximal diameter 0.57; length of basal, medial and apical segments 0.92, 0.67, 0.33; total length 1.92; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.29 (3.53)	1.67 (1.84)	2.76 (2.37)	–	0.95 (2.10)	8.27 (9.84)
Leg I	5.87 (4.45)	2.78 (2.76)	4.55 (3.47)	4.64 (3.01)	2.69 (1.93)	20.53 (15.62)
Leg II	5.43 (4.06)	2.71 (2.57)	4.22 (2.83)	4.40 (2.76)	2.67 (1.87)	19.43 (14.07)
Leg III	4.52 (3.44)	2.13 (2.08)	3.13 (1.97)	4.26 (2.54)	2.81 (1.80)	16.85 (11.83)
Leg IV	5.77 (4.82)	2.32 (2.55)	5.02 (3.63)	5.33 (3.51)	2.85 (2.13)	21.29 (16.64)

Female (paratype)

HABITUS. As shown in Figs 16, 27.

MEASUREMENTS. TBL 18.90, CL 6.03, CW 4.74, LL 0.67, LW 1.18, SL 2.95, SW 2.62.

COLOUR. Similar to that of male, but slightly paler.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 64. Eye diameters and interdistances: AME 0.16(0.22), ALE 0.33, PLE 0.22, PME 0.12, AME–AME 0.20(0.14), ALE–AME 0.14(0.11), ALE–PLE 0.13, PLE–PME 0.03, PME–PME 0.54. Cheliceral rastellum consists of 20–25 spikes located in front of fang base and on low mound (as in Figs 143–144). Each cheliceral furrow with 7 promarginal teeth and 5–6 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 92. Maxillae with 21–26 cuspules each.

LEGS. Scopula: entire on metatarsus I, distal on metatarsus II, entire on palpal tarsus and tarsus I, narrowly divided on tarsus II, elsewhere absent. Trichobothria: 2 rows of 6–8 each on tibiae, 10–14 on metatarsi, 11–13 on tarsi, 8–9 on palpal tarsus. Trichobothrial bases and tarsal organ of leg I as shown in Figs 158–159 and 160, respectively. Palpal claw with 4 promarginal teeth. PTC I–II with 5–6 teeth on each margin; PTC III with 4–5 teeth on outer, 2–3 teeth on inner margins; PTC IV with 4 and 0–2 teeth, respectively.

SPINATION. Palp: femur pd1; patella pd3, pv1; tibia pd3, p3, v9–10; tarsus v4–5. Leg I: femur pd1; patella p1; tibia p2, v4; metatarsus v5. Leg II: femur pd1; patella p1; tibia p3, v4; metatarsus p1, v7. Leg III: patella p3; tibia d1, p2–3, r1–2, v4; metatarsus d1, pd4, rd3, v7; tarsus p1, v1. Leg IV: tibia v6; metatarsus pd1, rd2, v9. All femora with dorsal median row of 6–8 long slender bristles; patella IV and tarsi I, II and IV aspinose.

SPERMATHECAE. Multilobate with 2–3 receptacles set on common base (as in Fig. 228).

SPINNERETS. See Fig. 270. PMS: length 0.52, diameter 0.25. PLS: maximal diameter 0.60; length of basal, medial and apical segments 1.10, 0.67, 0.45; total length 2.22; apical segment triangular. Spigots as shown in Fig. 291.

Variation

The length of the carapace varies from 5.26 to 5.70 in males and from 5.15 to 6.37 in females. The colouration varies very narrowly throughout the specimens. In females the number of retromarginal cheliceral teeth ranges from 5 to 8 (as in Fig. 78). Variants in the shape of the spermathecae are shown in Figs 228–229.

Habitat

Montane cereal steppe on a stony substrate, with dominating *Hordeum bulbosum* L. and *Andropogon* sp. (Fig. 307).

Distribution

The species is known only from the type locality (see Fig. 369).

Anemesia tubifex (Pocock, 1889)

Figs 4, 17, 51, 65, 79, 93, 106, 120, 161–162, 176, 195–196, 230–232, 271–272, 306–307, 369

Nemesia tubifex Pocock, 1889: 112 (♀).

Nemesia tubifex – Simon 1892: 113, 116.

Anemesia tubifex – Pocock 1895: 195, pl. V, fig. 4 (♀). — Simon 1903: 907 (♀). — Reimoser 1919: 188. — Roewer 1942: 177 (♀). — Bonnet 1955: 322 (♀). — Zonstein 2001: 11. — Marusik *et al.* 2014: 3.

Diagnosis

Anemesia tubifex can be distinguished from all other members of the same group by an unusually wide eye group with AMEs broader spaced from each other (Figs 51, 65; cf. Figs 48–50, 63–64). Males of *A. tubifex* differ from those of other species in the *A. tubifex* group by a less swollen and moderately spinose palpal tibia (Fig. 176; cf. Figs 173–175). The conspecific females possess the characteristic bipartite spermathecae with stalks slightly shorter than in other species of this group (Figs 230–232; cf. Figs 224–229).

Material examined

Holotype

AFGHANISTAN: ♀, north foothills of Paropamisus Mts, Gulran (750 m, 35°06' N, 61°41' E), Mar. 1885, J.E.T. Aitchison leg. (MNHL). The current poor condition of the holotype makes the examination of many characters (the spinnerets, etc.) impossible.

Additional material (2 ♂♂, 5 ♀♀)

TURKMENISTAN: 1 ♀, Karabil Mts, surroundings of Takhta-Bazar (400 m, 35°56' N, 62°57' E), 21 Mar. 1980, G.T. Kuznetsov leg. (SMNH); 2 ♂♂, 1 ♀, Kushka river valley, 5 km N of Kalaimor, 450 m, 35°42' N, 62°37' E, 19 Apr. 1993, S. Zonstein leg. (SMNH); 2 ♀♀, southwestern edge of Badhyz Plateau, Zulfagar Mts, surroundings of Nardenvaly spring, 800–1000 m, 35°47' N, 61°21' E, 13 Apr. 1993, S. Zonstein leg. (SMNH); 1 ♀, 12 km SSE Gyangaly (235 m, 36°55'51' N, 60°50'22' E), 3 Apr. 2002, A.V. Gromov leg. (ZMMU).

Description

Male (from Kalaimor)

HABITUS. See Fig. 4.

MEASUREMENTS. TBL 14.80, CL 6.55, CW 5.67, LL 0.42, LW 1.06, SL 3.10, CW 2.68.

COLOUR. Carapace brownish orange with eye tubercle brownish black; chelicerae, all femora, palpal patella, cymbium, patellae and tibiae I–II dark foxy brown; patellae and tibiae III–IV, metatarsi and tarsi I–IV, sternum, labium and maxillae light foxy brown; sternal sigilla brown; abdomen dorsally light brownish grey with brownish black pattern consisting of median lanceolate spot intersected with wide transverse fascia in basal third and five pairs of short chevron-like lateral spots inclined backward; dorsal abdominal surface and spinnerets pale yellowish brown.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 51. Eye diameters and interdistances: AME 0.15(0.22), ALE 0.30, PLE 0.26, PME 0.15, AME–AME 23(16), ALE–AME 0.16(0.13), ALE–PLE 0.10, PLE–PME 0.06, PME–PME 0.55. Cheliceral rastellum composed of 15–20 spikes located in front of claw base and on low mound. Each cheliceral furrow with 6–7 promarginal teeth and 5 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 93. Maxillae with 14–15 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 120. Scopula: distal $\frac{2}{5}$ on metatarsus I, distal $\frac{1}{6}$ on metatarsus II, entire on tarsi I–II, absent on tarsi III–IV. Trichobothria: 2 rows of 7–9 each on tibiae, 13–17 on metatarsi, 15–17 on tarsi, 9 on cymbium. Trichobothrial bases and tarsal organ of leg I as shown in Figs 161 and 162, respectively. PTC I–III with 8 teeth on each margin; PTC IV with 5 teeth on outer and 7–8 teeth on inner margins.

SPINATION. Palp: femur d3, pd3; patella pd1; tibia p2–3, pv1, r1–2, rv1; tarsus d6. Leg I: femur d4, pd3, rd3; patella pd2; tibia p3, r3, v7+m; metatarsus p3, r1, v2–4. Leg II: femur d4, pd3, rd3; patella pd2; tibia p3, r1, v8–9; metatarsus p3, r1, v7. Leg III: femur d4, pd3, rd3; patella d1, p1, r3; tibia d1, p3, r3, v7; metatarsus d2, p3, rd3, v7; tarsus p1; Leg IV: femur d4, p3, r2–3; tibia d1, p3, r2–3, v8; metatarsus d2, pd2, p3, r3, v8–10; tarsus p1. Patella IV, and tarsi I and II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 176, 195–196. Tibia moderately long and weakly swollen (Fig. 176). Palpal organ with embolus tapering and noticeably curved (Figs 195–196).

SPINNERETS. See Fig. 271. PMS: length 0.65, diameter 0.22. PLS: maximal diameter 0.52; length of basal, medial and apical segments 1.10, 0.75, 0.73; total length 2.50; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.31 (4.55)	2.16 (2.08)	3.37 (2.94)	–	1.43 (2.51)	11.27 (12.08)
Leg I	7.02 (5.98)	3.26 (3.47)	5.03 (3.89)	5.04 (3.46)	3.18 (2.22)	23.53 (19.02)
Leg II	6.58 (5.23)	2.95 (2.88)	4.73 (3.23)	5.04 (3.07)	3.15 (2.16)	22.45 (16.57)
Leg III	5.54 (4.07)	2.43 (2.46)	3.27 (2.33)	5.76 (3.06)	2.97 (2.07)	19.97 (13.99)
Leg IV	6.62 (5.54)	2.96 (2.87)	5.57 (4.22)	6.03 (4.16)	3.16 (2.29)	24.34 (18.98)

Female (from Kalaimor)

HABITUS. See Fig. 17.

MEASUREMENTS. TBL 20.20, CL 8.63, CW 6.37, LL 0.77, LW 1.28, SL 4.75, SW 3.97.

COLOUR IN ALCOHOL. Similar to that of male, but carapace and legs are paler, as well as dorsal abdominal pattern is paler and less contrasted.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 65. Eye diameters and interdistances: AME 0.20(0.30), ALE 0.42, PLE 0.26, PME 0.19, AME–AME 0.25(0.18), ALE–AME 0.23(0.19), ALE–PLE 0.18, PLE–PME 0.04 (left) to 0.06 (right), PME–PME 0.80. Cheliceral rastellum well developed and consists of about 10 spikes in front of fang base and ca 20 spikes on mound. Each cheliceral furrow with 6 promarginal teeth and 9 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 106. Maxillae with 16–17 cuspules each.

LEGS. Scopula: distal on metatarsi I and II, entire on palpal tarsus and tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 7–8 each on tibiae, 10–12 on metatarsi, 12–14 on tarsi. Palpal claw with 6 promarginal teeth. PTC I–II with 5–6 teeth on each margin; PTC III with 5–6 teeth on outer, 1–2 teeth on inner margins; PTC IV with 4 and 0 teeth, respectively.

SPINATION. Palp: femur d1, pd1; patella p2; tibia p4, v9–10; tarsus v3–4. Leg I: tibia v5–6; metatarsus v5–6. Leg II: tibia p2, v4; metatarsus v5. Leg III: patella p1; tibia d2, p2, v4; metatarsus d1, p4, v6; tarsus p1. Leg IV: tibia dr2, v4; metatarsus p3, rd2, v8. All femora with dorsal median row of 4–5 long bristles; femora III and IV also with 3 prodorsal and 3 retrodorsal bristles; patellae I, II and IV, and tarsi I, II and IV aspinose.

SPERMATHECAE. Bipartite, as shown in Figs 230–232.

SPINNERETS. See Fig. 272. PMS: length 0.65, diameter 0.35. PLS: maximal diameter 0.85; length of basal, medial and apical segments 1.50, 0.63, 0.73; total length 2.86; apical segment triangular.

Variation

The length of the carapace varies from 6.50 to 6.55 in males and from 7.52 to 8.63 in females; the number of the maxillary cuspules ranges between 11 and 17; both the colouration and the leg spination range very narrowly.

Habitat

The species was found to inhabit at least two types of habitats, in piedmont and montane areas of the Badhyz Plateau, respectively. The only visited piedmont habitat, located in the surroundings of

Kalaimor, is typical for the region: a true sand desert occupying the upper terrace on the left bank of Kushka River, 1–1.5 km from the floodplain. A sandy substrate features sparse herb vegetation dominated by the ephemeral desert sedge, *Carex physodes* M.Bueb. The visited montane habitats, confined to a relatively high south-western edging of the uplands, represent mountainous wormwood and cereal steppe on a rocky substrate, with sparse trees and shrubs (see Fig. 307).

Distribution

Northern Afghanistan and the far southern Turkmenistan (Fig. 369).

Notes

Although the holotype is in poor condition (a result of careless sampling rather than bad preservation), the identification of other specimens belonging to *Anemesia tubifex* is not problematic. Among all members of the considered species group, only *Anemesia tubifex* has such a broadly extended eye group and such broadly spaced AMEs. Within females of *Anemesia*, the somewhat comparable eye group can be observed only in the geographically distant *A. andreevae* sp. nov., *A. castanea* sp. nov. and *A. karatauvi* (see Figs 66, 70–71). However, females of *A. andreevae* sp. nov. have legs III–IV barely stouter than legs I–II (vs evenly slender legs I–IV in *A. tubifex*), whereas females of *A. castanea* sp. nov. and *A. karatauvi* possess more numerous maxillary cuspules (40–70 vs 14–18 cuspules in *A. tubifex*).

Examination of the spider material used by Denis (1958) for his work on the spider fauna of Afghanistan, revealed that he listed a new record of *A. tubifex* erroneously, since the latter was based on misidentified material (see page 48). The corresponding reference is therefore excluded from the synonymy list of this species.

Anemesia andreevae species group

Diagnostic characters

The distinguishing characters of this group are: 1) the specific form of the embolus which is relatively short and bent medially, possessing a very thin and narrow distal part; 2) the unique shape of 3-branched spermathecae, provided with strictly sclerotised receptacles.

Species included

Only one species, *A. andreevae* sp. nov.

Anemesia andreevae sp. nov.

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Figs 5, 18, 52, 66, 80, 94, 107, 121, 163–164, 177, 197–198, 233–234, 273–274, 310–311, 330, 370

Diagnosis

Anemesia andreevae sp. nov. is largely similar in habitus to *A. pallida* sp. nov. and especially to *A. sogdiana* sp. nov., but differs from them by the long cylindrical palpal tibia and a shorter embolus in males (Figs 177, 197–198; cf. Figs 179, 182, 203–205, 211–212) as well as by the unique branched receptacles in females (Figs 233–234; cf. Figs 235–240, 250).

Etymology

The specific name is a matronym in honour of the late Central Asian and Polish arachnologist Dr Ekaterina Andreeva (Dr Katarzyna Andrejeva-Prószyńska; 1941–2008), who made a very significant contribution to the study of the spider fauna of Tajikistan; in the course of her numerous taxonomic

studies she described many regional spider taxa, including *Brachythele karatauvi* Andreeva, 1968 assigned later to *Anemesia*.

Material examined

Holotype

UZBEKISTAN: ♂, Babatag Mts, north-eastern slope of Mt Zarkassa, 1.5 km NNE of the summit, 2100 m, 38°01'02" N, 68°10'53" E, 5 May 1990, S. Zonstein leg. (SMNH).

Paratypes (17 ♀♀)

UZBEKISTAN: 2 ♀♀, same collection data as for the holotype (SMNH).

TAJKISTAN: 4 ♀♀, foothills of Hissar Mts, 8 km N of Dushanbe, Varzob canyon, 1100 m, 38°40' N, 68°47' E, 18 Oct. 1987, S. Zonstein leg. (SMNH); 10 ♀♀, same collection data as for preceding but 13 Apr. 1988 (SMNH); 1 ♀, same collection data as for preceding but 22 Apr. 1990 (SMNH).

Description

Male (holotype)

HABITUS. See Fig. 5.

MEASUREMENTS. TBL 8.26, CL 4.03, CW 3.05, LL 0.35, LW 0.63, SL 2.27, CW 1.56.

COLOUR. Carapace light yellowish brown with anterior edge darker and thoracic part lighter; chelicerae, most part of palps and legs light yellowish brown; sternum, labium, maxillae and leg tarsi paler; eye tubercle blackened; abdomen dorsally pale yellowish brown with brown pattern consisting of moderately wide median lanceolate spot and few paired transverse and slightly inclined short stripes, ventral part of abdomen pale yellowish grey, spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 52. Eye diameters and interdistances: AME 0.14, ALE 0.17, PLE 0.13, PME 0.07, AME–AME 0.14, ALE–AME 0.05, ALE–PLE 0.09, PLE–PME 0.02, PME–PME 0.35. Cheliceral rastellum composed of 15–20 spikes located in front of fang base. Each cheliceral furrow only with 6 promarginal teeth. Sternum labium and maxillae as shown in Fig. 94. Sternal sigilla small and weakly developed. Maxillae with 2 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 121. Scopula: distal 0.4 on metatarsus I, entire on tarsus I, narrowly divided on tarsus II, elsewhere absent. Trichobothria: 2 rows of 6–7 each on tibiae, 10–12 on metatarsi, 9–12 on tarsi, 6 on cymbium. PTC: outer and inner margins with 6–7 teeth each on tarsi I–II, 5–6 and 4 on tarsus III, 5 and 2–3 on tarsus IV, respectively.

SPINATION. Palp: femur pd1. Leg I: femur d5, pd1; tibia p2, v4+m; metatarsus p1–2, v2. Leg II: femur d5, pd1; tibia p2, v5; metatarsus p2, v1–2. Leg III: femur d5, rd1; patella p1, r1; tibia d1, p2, r3, v5; metatarsus d2, pd2, p3, r3, v5. Leg IV: femur d5, rd1; tibia p3, r2, v7; metatarsus p2, r3, v7. Palpal femur with 5 dorsal bristles instead of true spines; palpal patella, tibia and cymbium, patellae I, II and IV, and tarsi I–IV spinose.

PALP. Tibia, cymbium and palpal organ as in Figs 177, 197–198. Palpal tibia long and slender (Fig. 177). Embolus relatively short, curved, and bent, with very thin distal part (Figs 197–198).

SPINNERETS. See Fig. 273. PMS: length 0.23, diameter 0.10. PLS: maximal diameter 0.30; length of basal, medial and apical segments 0.43, 0.37, 0.35; total length 1.15; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.07 (3.14)	1.65 (1.53)	2.50 (2.08)	–	1.07 (1.87)	8.29 (8.62)
Leg I	5.15 (3.97)	2.57 (2.26)	3.75 (2.83)	4.10 (2.42)	2.53 (1.78)	18.10 (13.26)
Leg II	4.83 (3.46)	2.33 (2.21)	3.30 (2.23)	3.83 (2.07)	2.55 (1.74)	16.84 (11.71)
Leg III	3.75 (2.54)	1.73 (1.72)	2.35 (1.37)	3.57 (1.67)	2.47 (1.52)	13.87 (8.82)
Leg IV	4.81 (3.62)	2.27 (2.27)	3.77 (2.93)	4.36 (2.54)	2.55 (1.61)	17.86 (12.97)

Female (paratype from Babatag Mts)

HABITUS. As in Fig. 18.

MEASUREMENTS. TBL 20.10, CL 5.65, CW 4.32, LL 0.85, LW 1.63, SL 3.05, CW 2.52.

COLOUR. Darker than that in male: carapace and legs dorsally ferruginous yellow; carapace with caput slightly darker and anterior edge including clypeus mid-brown; eye tubercle with blackish brown spots around AMEs and lateral eyes widely spaced; chelicerae reddish brown; sternum, legs ventrally, genital area and spinnerets light brownish yellow; labium, maxillae and palps with similar but slightly darker colouration; abdomen light ferruginous grey, dorsally with diffuse brownish pattern consisting of rather narrow median stripe and five pairs of lateral chevrons.

PROSOMA. Clypeus and low though distinct eye tubercle as shown in Fig. 66. Eye diameters and interdistances: AME 0.15(0.24), ALE 0.24, PLE 0.14, PME 0.12, AME–AME 0.21(0.13), ALE–AME 0.18(0.14), ALE–PLE 0.23, PLE–PME 0.06, PME–PME 0.55. Cheliceral rastellum composed of 25–30 spikes located in front of fang base and on low mound. Each cheliceral furrow with 6 uniform large promarginal teeth and 2–5 smaller retromarginal teeth. Sternum labium and maxillae as shown in Fig. 107. Maxillae broad, with 9–11 cuspules each.

LEGS. Scopula: distal on metatarsi I–II, entire on palpal tarsus and tarsi I–II, elsewhere absent. Trichobothria: 2 rows of 7–9 each on tibiae, 12–14 on metatarsi, 17–18 on tarsi I and II, 12–14 on tarsi III and IV, 9–10 on palpal tarsus. Trichobothrial bases and tarsal organ of leg I as shown in Figs 163 and 164, respectively. Palpal claw with 4 promarginal teeth. PTC I–II: outer and inner margins with 5–6 teeth. PTC III with 3 teeth on outer, 1 tooth on inner margins. PTC IV with 3 teeth on outer, 0(1) teeth on inner margins.

SPINATION. Palp: femur pd1, patella p1, tibia p5, v8–9; tarsus v2. Leg I: tibia p1–2, v5; metatarsus v5–6. Leg II: tibia p1–2, v5; metatarsus p1, v6–7. Leg III: patella p2–3; tibia d1, p1, r2, v3–4; metatarsus d2, p3, r2, v7. Leg IV: tibia r1, v6–7; metatarsus r1, v7–8. All femora with dorsal row of 5–7 long and thick bristles and with 1–3 lesser developed setae pro- and retrodorsally; patellae I, II and IV, and tarsi I–IV aspinose.

SPERMATHECAE. Three-branched with thin stalks and well-sclerotised receptacles (Fig. 233).

SPINNERETS. See Fig. 274. PMS: length 0.49, diameter 0.20. PLS: maximal diameter 0.70; length of basal, medial and apical segments 0.93, 0.48, 0.45; total length 1.86; apical segment triangular.

Variation

The length of the carapace varies from 4.30 to 5.53 in females and the number of maxillary cuspules ranges from 8 to 19. In females from Tajikistan (Varzob Canyon), the number of promarginal and retromarginal teeth may reach 8 and 6, respectively (see Fig. 80). The structure of the spermathecae appears to be almost the same in females collected from the different localities (Figs 233–234).

Habitat

The species occurs in the foothills covered with deciduous shrub with *Prunus* spp. and *Pistacia vera* L. (Fig. 310), and in the middle mountain belt. In the latter case the spiders were found inhabiting open forest biotopes dominated by *Juniperus seravschanica* Kom. and *Acer* spp. (Fig. 311).

Distribution

Southeastern Uzbekistan and western Tajikistan (Fig. 370).

Anemesia sogdiana* species group*Diagnostic characters**

Males in the *A. sogdiana* group resemble males of the *A. tubifex* species group in possessing a visibly swollen palpal tibia. However, they differ from the members of the latter group in having a noticeably longer and narrowly tapering embolus. Females can be distinguished in having the specific shape of undivided spermathecae with relatively long stalks narrowed apically.

Species included

Two species: *A. oxiana* sp. nov. and *A. sogdiana* sp. nov.

Anemesia oxiana sp. nov.

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Figs 6, 19, 28–29, 53, 67, 81, 95, 108, 122–123, 151–153, 178, 199–202, 241–244, 275–276, 292–294, 312–313, 318–321, 331, 357, 370

Diagnosis

Males and females of *Anemesia oxiana* sp. nov. differ from all known congeners by their contrasting dorsal abdominal pattern with the unusually large and wide anterior transverse stripe (Figs 6 and 19). Males of *A. oxiana* sp. nov. can be also distinguished from other *Anemesia* males by a short and broad palpal bulb provided with a long, thin and slightly curved embolus (Figs 199–202); the conspecific females possess the characteristic long and stout entire spermathecae (Figs 241–244).

Etymology

Oxiana (ancient Greek ‘Ὠξιάνη’) is the name of an historical area in Central Asia that existed in the antiquity and is applied to the territory located alongside the Oxus (i.e., the recent Amu-Darya River and its main component Panj River, forming the Afghanistan–Tajikistan border) which corresponds to the known range of this species. This specific epithet is a noun in apposition to the genus name, the gender is feminine.

Material examined**Holotype**

TAJIKISTAN: ♂, foothills of Aruktau Mts, surroundings of Ganjina, 750–1000 m (37°58' N, 68°32' E), 13–19 Apr. 1986, S. Zonstein leg. (SMNH).

Paratypes (32 ♂♂, 25 ♀♀)

TAJIKISTAN: 1 ♂, 5 ♀♀, same collection data as for the holotype (SMNH); 1 ♂, 5 ♀♀, same collection data as for preceding but 13 Apr. 1988 (SMNH); 2 ♂♂, 2 ♀♀, same collection data as for preceding but 20 Apr 1989 (SMNH); 1 ♂, same collection data as for preceding but 18 Apr. 1992 (SMNH); 7 ♀♀, Aruktau Mts, foothills, Garavuti, 450 m, Mar. 1967, A. Kononenko leg. (SMNH); 1 ♂, Rangentau

Mts, 2 km NNW Fahrabad Pass, 1220 m, 38°20.5' N, 68°43' E, 27 Apr. 2002, S. Zonstein leg. (SMNH); 4 ♂♂, 3 ♀♀, Vahsh Karatau Mts, SW slope, 2–3 km W of Mt Hojamaston, 700–1700 m, 38°00'–38°02' N, 68°56'–68°59' S, 21 Apr. 1989, S. Zonstein leg. (SMNH); 8 ♂♂, Sanglok Mts, above Sharshar Pass, 2000–2200 m, 38°15' N, 69°13' E, 2–5 May 1990, S. Zonstein leg. (SMNH); 5 ♂♂, same locality, 7 May 1991, S. Zonstein and S. Ovchinnikov leg. (SMNH); 7 ♂♂, 1 ♀, Panj Karatau Mts, Mt Astana, 1500–1650 m, 38°15' N, 69°13' E, 23 Apr. 1991, S. Zonstein and S. Ovchinnikov leg. (SMNH); 2 ♂♂, 2 ♀♀, Hazratisho Mts, Sangdara, 1600 m, 38°22' N, 70°09' E, 17 May 2002, S. Zonstein leg. (SMNH).

Additional material (9 ♀♀, 4 juvs)

TAJIKISTAN: 4 ♀♀, surroundings of Dahana-Kiik, 900–1000 m (38°12' N, 68°39' E), 10–20 Mar. 1967, E. Blagovechshenskaya leg. (MIZW); 1 ♀, same collection data as for preceding but 800 m (MIZW); 4 juvs, Beshkent Valley, 20–23 Apr. 1967, E. Andreeva leg. (MIZW); 2 ♀♀, Lower Vahsh Valley, Tigrovaya Balka (Tiger Gorge) Reserve, sands, 350–400 m, 25 Jul. 1968, E. Andreeva leg. (MIZW); 1 ♀, Aruktau Mts, Ganjina, 24 Jun. 1969, E. Andreeva leg. (MIZW); 1 ♀, same locality, in burrow (depth 32 cm), 2 Nov. 1969, E. Andreeva leg. (MIZW).

Description

Male (holotype)

HABITUS. See Fig. 6.

MEASUREMENTS. TBL 18.70, CL 7.97, CW 6.82, LL 0.70, LW 1.27, SL 3.70, SW 3.32.

COLOUR. Carapace intensely foxy brown with darker rufous brown caput; eye tubercle brownish black; chelicerae, all femora, palpal patella, cymbium, patellae and tibiae I and II dark foxy brown; palpal tibia, patellae and tibiae III and IV, metatarsi and tarsi I–IV, sternum, labium and maxillae light yellowish brown; sternal sigillae dark brown; abdomen dorsally light brownish grey with darker brown pattern consisting of median longitudinal spot intersected with wide transverse fascia in basal third and five pairs short chevron-like lateral spots inclined backward; dorsal abdominal surface and spinnerets pale yellowish brown.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 53. Eye diameters and interdistances: AME 0.21(0.30), ALE 0.42, PLE 0.23, PME 0.15, AME–AME 0.22(0.14), ALE–AME 0.15(0.11), ALE–PLE 0.17, PLE–PME 0.07, PME–PME 0.62. Cheliceral rastellum composed of 20–25 spikes located in front of fang base. Each cheliceral furrow with 9–10 promarginal teeth and 3–9 small and acute teeth confined to basal retromargin. Sternum, labium and maxillae as shown in Fig. 95. Sternal sigilla distant from sternum edge; posterior pair long oval or comma-shaped. Maxillae with 49–50 cuspules (forming wide and laterally extended cuspular area) each.

LEGS. Tibia and metatarsus I as shown in Fig. 122. Scopula: distal $\frac{1}{3}$ on metatarsi I and II, distal $\frac{1}{5}$ on metatarsus III, entire on tarsi I and II, widely divided on tarsus III, vestigial on tarsus IV. Trichobothria: two rows of 9–11 each on tibiae, 13–15 on metatarsi, 14–17 on tarsi, 10–11 on cymbium. PTC I–III with 7–8 teeth on each margin. PTC IV with 5–6 teeth on outer, and 6–7 teeth on inner margins.

SPINATION. Palp: femur d4–5, pd1, rd1; patella pd2; tibia d1, pd1, p3, r1, v6; tarsus d11–13. Leg I: femur d5–6, pd3, rd1; patella pd1; tibia p4, r3, v8+m; metatarsus p3, r1, v5. Leg II: femur d5–6, pd3, rd3; patella pd1; tibia p3, r2–3, v10; metatarsus p3, v7. Leg III: femur d5–6, pd3, rd3; patella p3, r1; tibia d2, p3, r3, v8–9; metatarsus d2, p3, rd3, v9; tarsus p1. Leg IV: femur d6–9, p3–4, r3; patella p2, r1; tibia d1, p3, r2–3, v10; metatarsus rd1–4, p4, r3, v11–13; tarsus p1, r1. Tarsi I and II lack spines.

PALP. Tibia, cymbium and palpal organ as shown in Figs 178 and 199–200. Palpal tibia moderately long, slightly swollen and spinose; cymbium with few apical spines (Fig. 178). Palpal organ with broad asymmetric bulb and with long, tapering and slightly curved embolus (Figs 199–200).

SPINNERETS. See Fig. 275. PMS: length 0.85, diameter 0.34. PLS: maximal diameter 0.40; length of basal, medial and apical segments 1.32, 0.88, 0.57; total length 2.77; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.55 (5.26)	2.44 (2.33)	3.82 (3.41)	–	1.47 (3.03)	12.28 (14.03)
Leg I	7.82 (7.28)	3.86 (3.97)	5.77 (5.18)	6.04 (4.14)	3.42 (2.65)	26.91 (23.22)
Leg II	7.21 (6.43)	3.53 (3.75)	5.08 (4.17)	5.54 (3.98)	3.43 (2.66)	24.79 (20.99)
Leg III	5.94 (5.26)	2.90 (3.35)	4.07 (4.21)	5.84 (4.26)	3.65 (3.12)	22.40 (20.20)
Leg IV	7.62 (7.17)	3.16 (4.04)	6.17 (5.43)	7.42 (5.38)	4.06 (3.36)	28.43 (25.43)

Female (paratype from Mt Hojamaston)

HABITUS. As in Fig. 19.

MEASUREMENTS. TBL 26.60, CL 9.68, CW 8.10, LL 1.20, LW 1.95, SL 5.28, SW 4.22.

COLOUR. Differs from that of male in some details: carapace and legs light foxy brown; sternum, labium and maxillae slightly paler; caput darkened, but anterior part with pair of symmetric lighter, yellowish spots located laterally from eye tubercle; blackish brown spots surrounding AMEs and lateral eyes semi-fused; chelicerae dark carmine red; abdomen light greyish yellow, with dark brown pattern consisting of rather narrow transverse longitudinal spot crossed by wide transverse fascia and six pairs of lateral chevrons posteriorly; spinnerets light greyish yellow.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 67. Eye diameters and interdistances: AME, 0.22(0.31), ALE, 0.36, PLE, 0.20, PME: 0.16, AME-AME 0.32(0.24), ALE-AME 0.27(0.23), ALE-PLE 0.29, PLE-PME 0.11, PME-PME 0.93. Cheliceral rastellum composed of numerous spikes located on frontal cheliceral surface, not on mound. Each cheliceral furrow with 9 promarginal teeth and 4–5 medium-sized mesobasal denticles. Sternum, labium and maxillae as shown in Fig. 108. Sternal sigilla distant from sternum edge; posterior pair long oval or comma-shaped. Maxillae with 69–78 cuspules (forming, as in conspecific male, wide oval cusplular area) each.

LEGS. Scopula: distal on metatarsi I–II, entire on palpal tarsus and tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 11–14 each on tibiae, 16–19 on metatarsi, 18 on palpal tarsus, 24–27 on tarsi I and II, 18–22 on tarsi III and IV. Palpal claw with 4 promarginal teeth (as shown in Fig. 152). PTC I–II with 4–6 teeth on each margin (as in Figs 152–153). PTC III with 4–5 teeth on outer, 2–3 teeth on inner margins. PTC IV with 4–5 and 0–2 teeth, respectively.

SPINATION. Palp: pd1; patella p2; tibia p2, v12–13; tarsus v3–4. Leg I: femur pd3; patella p2; tibia p2; v5; metatarsus v3–6. Leg II: femur pd3; patella p2; tibia p2, v4–5; metatarsus p1, v5–7. Leg III: femur pd3, rd3; patella p1–2; tibia d1, p2, r2, v6; metatarsus d1, p3, r3, v7; tarsus p2. Leg IV: femur pd2–3; tibia r2, v7; metatarsus p3, rd2, v7. All femora with one basodorsal spine and few dorsal bristles; patella IV and tarsi I, II and IV aspinose.

SPERMATHECAE. Entire, with long and subapically narrowed stalks (Fig. 242).

SPINNERETS. See Fig. 276. PMS: length 1.05, diameter 0.53. PLS: maximal diameter 1.03; length of basal, medial and apical segments 1.75, 1.20, 0.62; total length 3.57; apical segment triangle. Spigots as shown in Figs 292–294.

Variation

The length of the carapace varies from 7.10 to 8.13 in males and from 7.78 to 10.04 in females. Colouration, shape of the embolus and configuration of the spermathecae vary through specimens very narrowly (see Figs 28–29, 199–202, 241–244). In some females, the cheliceral furrow may be armed with 2–3 retromarginal teeth (see Fig. 81). The number of maxillary cuspules may range from 40 to 55 in males and from 60 to 85 in females. Tarsus III with 1–2 spines (most often occupying prolateral position); tarsus IV mostly aspinose (in some specimens with one prolateral spine).

Habitats

The most widespread and common congener in southern Tajikistan, *A. oxiana* sp. nov. occurs in almost all the main community types represented there (including the true desert communities in lowlands): from riverside sand deserts (Tigrovaya Balka) and piedmont semi-deserts (Garavuti) through steppe and open low forest (Ganjina, Fahrabad Pass, Vahsh Karatau Mts, Panj Karatau Mts) to forested stations in the midland mountain belt (Sanglok Mts, Hazratisho Mts).

Distribution

South Tajikistan (Fig. 370).

Anemesia sogdiana sp. nov.

[urn:lsid:zoobank.org:act:15FFF793-3F27-4659-BE0D-15674535BD7A](https://zoobank.org/urn:lsid:zoobank.org:act:15FFF793-3F27-4659-BE0D-15674535BD7A)

Figs 7, 20, 30, 54, 68–69, 82, 96, 109, 124, 133–137, 154–155, 165–168, 179, 203–205, 235–240, 277–278, 295–297, 314–316, 332, 369

Brachythele birulai – Charitonov 1969: 66 (♂). Misidentified, not *Brachythele birulai* Spassky, 1937.

Diagnosis

In habitus, *Anemesia sogdiana* sp. nov. is largely similar to *A. pococki* sp. nov. and especially to *A. andreevae* sp. nov., but differs from them by the long, thin and gradually curved embolus in males (Figs 203–205, cf. Figs 193–194, 197–198) as well as by the entire and narrowed subapically spermathecae in females (Figs 235–240, cf. Figs 228–229, 233–234).

Etymology

Sogdiana (‘Σογδιανή’, an ancient Greek derivate from the Old Persian *Suguda*) is the name of an historical area in Central Asia that existed in the late antiquity and in the early Middle Ages (IVth century BC – IXth century AD) and is applied to the territory located between the Amu-Darya and Syr-Darya Rivers which corresponds to the known range of this species. This specific epithet is a noun in apposition to the genus name, the gender is feminine.

Material examined

Holotype

UZBEKISTAN: ♂, northwestern tip of Zeravshan Mts, Amankutan Pass, 1670 m, 39°17'27" N, 66°54'01" E, 5 May 1995, S. Zonstein leg. (SMNH).

Paratypes (4 ♂♂, 17 ♀♀)

UZBEKISTAN: 1 ♂, same collection data as for the holotype (SMNH); 1 ♂, same locality, 1650–1750 m, 39°18' N, 66°54' E, 11 Apr. 1966, V.F. Bakhvalov leg. (SMNH); 1 ♀, same collection data as for preceding but 7 Apr. 1989, S. Zonstein leg. (SMNH); 1 ♂, 9 ♀♀, same collection data as for preceding but 27 Apr. 1993 (SMNH); 2 ♀♀, Zeravshan Mts, foothills 10 km N of Kitab, 1000 m, 39°12' N, 66°54' E, 9 Apr. 1989, S. Zonstein leg. (SMNH); 1 ♂, Zeravshan Mts, Jindy-Daria Canyon, Hojakurgan, 1400–1800 m, 39°11' N, 67°17' E, 14 Apr. 1990, S. Zonstein leg. (SMNH); 2 ♀♀, same collection data as for preceding but 9 Apr. 1991 (SMNH); 2 ♀♀, same collection data as for preceding but 26 Apr. 1992 (SMNH).

Additional material (3 ♂♂, 45 ♀♀, 2 ♀♀ subad.)

UZBEKISTAN: 2 ♂♂, northwestern slope of Hissar Mts, surroundings of Ishkent, 1100–1300 m (38°51' N, 66°58' E), 25–28 Mar. 1942, K. Arnoldi and D. Fedotov leg. (PSU); 1 ♂, Turkestan Mts, foothills near Zaamin (700 m, 39°57' N, 68°23' E), 8 Apr. 1980, F. Khassanov leg. (SMNH); 2 ♀♀ subad., northwestern ending of Nuratau Mts, Zafarabad (Kokcha), 400 m, 40°32' N, 65°02' E, 7 Apr. 1990, S. Zonstein leg. (SMNH); 32 ♀♀, Baisuntau Mts, 2 km E Shurob, 1050–1200 m, 38°12' N, 67°00' E, 15 Apr. 1987, S. Zonstein leg. (SMNH, ZMMU); 3 ♀♀, Hissar Mts, Majanak 10 km N Kokbulak, 2500–2650 m, 38°41' N, 66°56' E, 6 Jun. 1997, S. Zonstein leg. (SMNH); 3 ♀♀, Kugitang Mts, Baglydara canyon, 1300–1800 m, Jul. 1983, A.B. Nenilin leg. (SMNH); 4 ♀♀, same locality, 37°53' N, 66°40' E, 1700 m, 15 May 1985, S. Zonstein leg. (SMNH); 1 ♀, same locality, 8 Apr. 1989, S. Zonstein leg. (SMNH); 2 ♀♀, Kugitang Mts, canyon 3 km SW of Vandob, 1600–1700 m, 37°42' N, 66°34' E, 30 May 1995, S. Zonstein leg. (SMNH).

TAJIKISTAN: 3 ♀♀, southern slope of Hissar Mts, foothills 8 km N Dushanbe, Varzob canyon, 1100 m, 38°40' N, 68°47' E, 25 May 2002, S. Zonstein leg. (SMNH).

Description**Male** (holotype)

HABITUS. See Fig. 7.

MEASUREMENTS. TBL 13.40, CL 5.15, CW 4.53, LL 0.60, LW 0.99, SL 2.86, SW 2.28.

COLOUR. Carapace light yellowish brown with anterior edge darker and thoracic part paler; chelicerae, majority of palps and legs light yellowish brown; sternum, labium, maxillae and leg tarsi paler; eye tubercle blackened; abdomen dorsally yellowish grey with brown pattern consisting of moderately wide median longitudinal spot and few paired transverse and slightly inclined short stripes, ventral part of abdomen pale yellowish grey, spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 54. Eye diameters and interdistances: AME 0.15(0.21), ALE 0.30, PLE 0.15, PME 0.06, AME–AME 0.15(0.09), ALE–AME 0.15(0.12), ALE–PLE 0.11, PLE–PME 0.05, PME–PME 0.48. Weak cheliceral rastellum composed of several long bristles lacking tips and grouped in one transverse row in front of fang base and in rastellar mound. Each cheliceral furrow with 8–9 promarginal teeth and 0–1 small retrobasal teeth. Sternum, labium and maxillae as shown in Fig. 96. Sternal sigilla small, posterior pair long-oval and distant from sternum edge. Maxillae with 7–9 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 124. Scopula: entire and distal on metatarsi I and II, narrowly divided on tarsi I and II, mixed and widely divided on tarsus III, vestigial on tarsus IV. Trichobothria: two rows of 8–9 each on tibiae, 11–13 on metatarsi, 12–14 on tarsi, 10 on cymbium. PTC I–II: outer and inner margins with 6–7 teeth each. PTC III with 6–7 and 5–6; PTC IV with 6 and 3, respectively.

SPINATION. Palp: femur d3, pd1; patella pd1; tibia p3, pv1; tarsus d7–8. Leg I: femur d5, pd3; patella pd1; tibia pd3, p1, r3, v6–7+m; metatarsus d1, p2, v1. Leg II: femur d5, pd3; patella p1; tibia p3, v8; metatarsus d2, p4, v7. Leg III: femur d4, p3, r2; patella p3, r1; tibia d1, p3, r3, v7; metatarsus d2, p4, r3, v8; tarsus p1–2. Leg IV: femur d5, r1; tibia d1, p3, r3, v7; metatarsus p4, r4, v8–9; tarsus p1. Patella IV and tarsi I–II unarmed.

PALP. Tibia, cymbium and palpal organ as shown in Figs 179, 204–205. Tibia relatively short, swollen, and aspinose (Fig. 179). Palpal organ with long, tapering and slightly curved embolus (Figs 204–205).

SPINNERETS. See Fig. 277. PMS: length 0.44, diameter 0.16. PLS: maximal diameter 0.54; length of basal, medial and apical segments 0.92, 0.70, 0.67; total length 2.29; apical segment short-digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.09 (4.03)	1.65 (1.91)	2.49 (2.54)	–	1.06 (2.23)	8.29 (10.71)
Leg I	5.15 (5.42)	2.58 (3.06)	3.76 (3.77)	4.11 (3.18)	2.52 (2.17)	18.12 (17.60)
Leg II	4.83 (4.56)	2.34 (2.63)	3.31 (2.98)	3.82 (2.76)	2.53 (2.09)	16.83 (15.02)
Leg III	3.77 (3.32)	1.74 (1.87)	2.34 (1.85)	3.57 (2.48)	2.48 (1.93)	13.90 (11.45)
Leg IV	4.79 (4.61)	2.26 (2.55)	3.78 (3.68)	4.37 (3.52)	2.65 (2.17)	17.85 (16.53)

Female (paratype from Amankutan)

HABITUS. See Fig. 20.

MEASUREMENTS. TBL 16.50, CL 6.93, SW 5.38, LL 0.87, LW 1.33, SL 3.30, SW 2.97.

COLOUR. Carapace and legs dorsally light yellowish foxy brown; cephalic part darkened, medium foxy brown; eye tubercle with blackish brown spots around AMEs and lateral eyes; chelicerae reddish brown; sternum, labium, maxillae and legs ventrally pale brownish yellow; abdomen light greyish brown with dark brown dorsal pattern consisting of wide median longitudinal spot and six pairs of lateral chevrons; spinnerets very pale greyish brown.

PROSOMA. Clypeus and eye tubercle as in Fig. 68. Eye diameters and interdistances: AME 0.18(0.24), ALE 0.38, PLE 0.20, PME 0.15, AME–AME 0.18(0.12), ALE–AME 0.20(0.17), ALE–PLE 0.15, PLE–PME 0.04, PME–PME 0.52. Cheliceral rastellum composed of about 30 spikes located mostly on low mound. Each cheliceral furrow with 8–9 promarginal teeth and one smaller retrobasal tooth. Sternum, labium and maxillae as shown in Fig. 109. Sternal sigilla minute and oval, posterior pair long-oval and distant from sternum edge. Maxillae with 14–16 cuspules each.

SPINATION. Palp: femur pd2; patella p1; tibia p5, v10–12; tarsus v2–3. Leg I: patella p3; tibia v7–8; metatarsus p1, v8–9. Leg II: patella p1; tibia p3, v7–8; metatarsus p2–3, v9–10. Leg III: patella p3; tibia d1; p1, r1, v7; metatarsus pd3, p4, dr3, v7; tarsus p2, v1. Leg IV: tibia v9–10; metatarsus p1, r1, v8; tarsus v2. All femora dorsally with 4–6 true spines and several bristles; patella IV and tarsi I and II aspinose.

LEGS. See Figs 133–137. Scopula entire and distal on metatarsi I and II, entire on palpal tarsus, narrowly divided on tarsi I and II, elsewhere absent. Trichobothria: two rows of 7–9 each on tibiae, 10–12 on metatarsi, 12–14 on tarsi, 10 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I–II with 4–5 teeth on each margin. PTC III with 4–5 teeth on outer, and 2–3 teeth on inner margins; PTC IV with 3–4 and 1–2 teeth, respectively. Difference in dentition between PTC I and PTC IV as shown in Figs 154–155.

SPERMATHECAE. Moderately long, entire, and narrowed apically. See Fig. 236.

SPINNERETS. See Fig. 278. PMS: length 0.62, diameter 0.32. PLS: maximal diameter 0.62; length of basal, medial and apical segments 0.98, 0.70, 0.63; total length 2.33; apical segment triangular. Spigots as shown in Figs 295–297.

Variation

The length of the carapace varies from 4.87 to 5.21 in males and from 4.47 to 7.33 in females. Colouration varies through specimens very narrowly (see Fig. 30). Throughout the specimens, both PLE and PME may be reduced or even lost (Fig. 69). In some females, the cheliceral furrow may be armed with 2–3 retromarginal teeth (see Fig. 82). In conspecific males, the shape of the palpal organ is almost identical (Figs 203–205). Spermathecae show some variations and can feature with straight or bent stalks (Figs 235–240).

Habitat

The known records mostly correspond to the midland mountain belt although the species can also occur in both the piedmont semi-desert (Zafarabad) and the highlands (Majanak); the preferred biotopes are represented by steppes and open forest communities with different species of *Juniperus* L., *Crataegus* Tourn. ex L. and *Acer* L. (see Figs 314–316).

Distribution

Central and southern Uzbekistan, and western Tajikistan (Fig. 369).

Note

Charitonov (1969) listed five males of this species collected by K. Arnoldi and D. Fedotov in 1942 in the surroundings of Ishkent as *Brachythele birulai* Spassky. A detailed examination of the spider collection at the Perm University (1987, 1988) revealed the presence of only two appropriate male specimens sampled and labelled according to the mentioned record data.

Anemesia castanea species group

Diagnostic characters

Males of the *A. castanea* species group resemble those of the *A. pallida* species group in possessing lateral spines on the cymbium. However, they differ from the members of the latter group in possessing a considerably longer palpal tibia and embolus (Figs 180–181, 206–210; cf. Figs 182–183, 211–214). Females are distinguished by the specific shape of the normally entire spermathecae provided with long cylindrical stalks (see Figs 245–249).

Species included

A. castanea sp. nov. and *A. karatauvi* (Andreeva, 1968).

Anemesia castanea sp. nov.

[urn:lsid:zoobank.org:act:94364192-0859-45D4-9DB9-5037FD7EE663](https://zoobank.org/act:94364192-0859-45D4-9DB9-5037FD7EE663)

Figs 8, 21, 55, 70, 97, 110, 125, 180, 206–208, 245, 279, 318–321, 371

Diagnosis

Anemesia castanea sp. nov. resembles *A. karatauvi* in habitus, as well as in possessing the similar looking comma-shaped palpal organ provided with a long, thin and gradually curved embolus in males, and relatively long and slender tapering spermathecae in females. However, in comparison with the latter

species, males of *A. castanea* sp. nov. have a more slender male palpal tibia, a domed ventral surface of the palpal bulb and a longer embolus (vs stouter tibia, flattened surface, and shorter embolus; Figs 180, 206–208, cf. Figs 181, 209–210). Females of *A. castanea* sp. nov. differ from those of *A. karatauvi* in having the closer spaced and more diverged spermathecae (Fig. 245, cf. Figs 246–249), as well as by a larger number of the maxillary cuspules (65–70 vs 40–55) and by a better developed cheliceral rastellum.

Etymology

The specific name is a derivative (using the feminine gender) of the Latin adjective ‘*castaneus*’ meaning ‘chestnut-brown’; the name is derived from the colouration of the specimens.

Material examined

Holotype

TAJIKISTAN: ♂, foothills of Aruktau Mt. R., 0.5 km SE of Ganjina Village, 750 m, 37°58′ N, 68°32′ E, 14 Apr. 1991, S. Zonstein leg. (SMNH).

Paratypes

TAJIKISTAN: 4 ♂♂ same collection data as for the holotype but S. Zonstein and S. Ovchinnikov leg. (SMNH).

Additional material

TAJIKISTAN: 1 ♀, Ganjina, under stone, 9 Apr. 1967, E. Andreeva leg. (MIZW), 1 ♀ (dried), Lower Vahsh Valley, Tigrovaya Balka (Tiger Gorge) Reserve, 12–18 Apr. 1967, E. Andreeva leg. (MIZW). See note below.

Description

Male (holotype)

HABITUS. See Fig. 8.

MEASUREMENTS. TBL 15.90, CL 6.15, CW 5.54, LL 0.56, LW 1.07, SL 2.96, SW 2.77.

COLOUR. Carapace almost uniformly light chestnut brown; chelicerae, leg I entirely and most part of palps and legs II–IV light-medium to dark brown; sternum, labium, maxillae and leg tarsi paler, brownish orange; eye tubercle black; abdomen dorsally yellowish grey with dark brown pattern consisting of dentate median stripe anteriorly and few paired transverse and slightly inclined chevrons posteriorly; ventral part of abdomen and spinnerets pale yellowish grey.

PROSOMA. Clypeus and eye tubercle as in Fig. 55. Eye diameters and interdistances: AME 0.15(0.23), ALE 0.25, PLE 0.22, PME 0.18, AME–AME 0.21(0.13), ALE–AME 0.12(0.08), ALE–PLE 0.12, PLE–PME 0.02, PME–PME 0.47. Cheliceral rastellum consists of about 20–25 spikes in front of fang base and on very low mound. Each cheliceral furrow with 7 promarginal teeth and 5–7 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 97. Sternal sigilla small oval, posterior pair considerably distant from sternum edge. Maxillae with ca 35 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 125. Scopula: distal and entire on metatarsi I and II, narrowly divided on tarsi I and II, widely divided on tarsi III, absent on tarsi IV. Trichobothria: two rows with 9–11 each on tibiae, 20–24 on metatarsi, 16–20 on tarsi, 13–14 on cymbium. PTC I–II with 11–13, PTC III–IV with 9–10 teeth on each margin, respectively.

SPINATION. Palp: femur d4, pd4, rd1; patella p1; tibia d1, p3–4, pv3, rv7; tarsus d6–7. Leg I: femur d4, pd3–4, rd3; tibia p3–4, r2, v9+m; metatarsus pd3, v5–7. Leg II: femur d4, pd3–4, rd3–4; tibia p3,

v7–8; metatarsus p4, v5–6; tarsus p2. Leg III: femur d4, pd3, rd3; patella p3, r2; tibia d2–3, p3, r3, v7; metatarsus dp4, r3–4, v7–8; tarsus p2–4. Leg IV: femur d4, p3, r2–3; patella r1; tibia d1, p3, r3, v8–9; metatarsus d6–7, p5, r4–5, v9–10; tarsus p2, r2. Patellae I, II, and tarsus I aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 180, 207–208. Palpal tibia very long, slender and cylindrical, with spines and numerous stout bristles (Fig. 180). Palpal organ with embolus very long, tapering and slightly curved (Figs 207–208).

SPINNERETS (see Fig. 279). PMS: length 0.46, diameter 0.20. PLS: maximal diameter 0.57; length of basal, medial and apical segments 0.94, 0.68, 0.76; total length 2.38; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.85 (4.54)	1.91 (2.01)	3.39 (2.97)	–	1.25 (2.91)	10.40 (12.43)
Leg I	6.95 (6.97)	3.12 (3.84)	5.61 (4.98)	5.51 (4.48)	3.18 (2.76)	24.37 (23.03)
Leg II	6.09 (5.93)	2.63 (2.82)	4.56 (4.05)	4.98 (3.78)	3.12 (2.75)	21.38 (19.33)
Leg III	4.96 (4.48)	1.97 (2.51)	3.43 (2.84)	4.40 (3.61)	3.42 (2.65)	18.18 (16.09)
Leg IV	6.07 (6.43)	2.54 (3.22)	5.18 (4.86)	6.91 (5.01)	3.78 (3.31)	23.40 (22.83)

Female (from Ganjina)

HABITUS. See Fig. 21.

MEASUREMENTS. TBL 25.20, CL 8.39, CW 7.44, LL 1.01, LW 1.60, SL 4.26, SW 4.16.

COLOUR. As in male.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 70. Eye diameters and interdistances: AME 0.15(0.25), ALE 0.32, PLE 0.24, PME 0.26, AME–AME 0.36(0.26), ALE–AME 0.28(0.23), ALE–PLE 0.27, PLE–PME 0.01, PME–PME 0.83. Cheliceral rastellum represented by approximately 40 spikes located in front of fang base and on low mound. Each cheliceral furrow with 9 promarginal teeth and 10–11 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 110. Sternal sigilla small; posterior pair distant from sternum edge, narrowly oval. Maxillae with ca 70 cuspules each.

LEGS. Scopula dense, occupies 5/6 ventral surface of metatarsus I, distal on metatarsus II, entire on palpal tarsus and tarsus I, widely divided on tarsus II, elsewhere absent. Palpal claw with 5 promarginal teeth. Trichobothria: 2 rows of 10–13 each on tibiae, 14–17 on metatarsi, 13–15 on leg tarsi, 13 on palpal tarsus. PTC I–II with 6–7 teeth on each margin. PTC III with 5–6 teeth on outer, 4–5 teeth on inner margins; PTC IV with 4–5 and 0–4 teeth, respectively.

SPINATION. Palp: femur pd1; patella p2; tibia p2, v14–15; tarsus v2. Leg I: femur pd1; patella p1; tibia v5; metatarsus v5. Leg II: femur pd2; patella p2; tibia p2, v5; metatarsus p2, v5–6. Leg III: femur pd2, rd3; patella p2; tibia d1; p3, r2, v7; metatarsus pd2, p3, rd3, v8–9; tarsus p1, v2. Leg IV: femur rd2; tibia r1, v6; metatarsus pd1, p2, rd2, v7–11; tarsus v2. All femora with 1 basodorsal spine and dorsal row of few bristles. Patella IV, and tarsi I and II aspinose.

SPERMATHECAE. Entire with thin stalks inclined outwards and narrowed subapically (Fig. 245).

SPINNERETS. PMS: length 0.71, diameter 0.34. PLS: maximal diameter 0.80; length of basal, medial and apical segments 1.47, 0.73, 0.80; total length 3.00; apical segment shortly digitiform.

Variation

The length of the carapace varies from 5.80 to 6.25 in males and from 7.73 to 8.39 in females. The colouration varies through specimens very narrowly. The number of maxillary cuspules ranges from 32 to 40 in males and from 65 to 70 in females. The variation in the shape of the palpal organ and the length of the embolus seems to be almost imponderable (see Figs 206–207).

Habitat

The species occurs in the piedmont sandy desert (Tigrovaya Balka Nature Reserve) and in the woodless steppe foothills near Ganjina. Curiously, despite intensive collecting, *A. castanea* sp. nov. has never been found in the less harsh montane zone of the Aruktau Mts, occupied by *A. incana* and some other congeners.

Distribution

The species is known from far southwestern Tajikistan only (Fig. 371).

Notes

Andreeva (1968) included both conspecific females in the type series of *Brachythele karatauvi*. To avoid a situation of the same specimen being listed as a paratype in two different species, these females are not included in the types of *Anemesia castanea* sp. nov., despite definitely belonging to the latter congener.

Anemesia karatauvi (Andreeva, 1968)

Figs 9, 22, 31, 56, 71, 83, 98, 111, 126, 145–146, 169–170, 181, 209–210, 246–249, 280–281, 298–301, 313, 317, 333–336, 362, 371

Brachythele karatauvi Andreeva, 1968: 70, fig. 2a–b (♂♀).

Brachythele karatauvi – Andreeva 1976: 14, figs 6–7 (♂♀). — Brignoli 1983: 123. — Fet 1984: 40. — Zonstein 1985: 159; 1987: 1013.

Anemesia karatauvi – Mikhailov 1996: 77; 1997: 20. — Zonstein 2001: 11; 2004: 352, fig. 6 (♀). — Marusik *et al.* 2014: 3, fig. 10 (♂).

Diagnosis

Males of *Anemesia karatauvi* differ from those of *A. castanea* sp. nov. by a stouter male palpal tibia, a flattened ventral surface of the palpal bulb and a shorter embolus (vs a slender tibia, a domed surface, and a longer embolus; Figs 181, 209–210, cf. Figs 180, 206–208). Females of *A. karatauvi* can be distinguished from those of *A. castanea* sp. nov. in having less diverged spermathecae which arise more distantly from each other (Figs 246–249, cf. Fig. 245), by relatively larger AME and ALE (Fig. 71, cf. Fig. 70), by a lesser number of the maxillary cuspules (40–55 vs 65–70) and by a weaker cheliceral rastellum.

Type material

Holotype

TAJIKISTAN: ♂, Vahsh Karatau Mts., no locality data, 23–25 Apr. 1967, E. Andreeva leg. (absent in the type series of *Brachythele karatauvi* kept in MIZW, seems lost and thus not examined)..

Paratypes

TAJIKISTAN: 7 ♀♀, same collection data as for the holotype (MIZW; examined). See notes below.

Additional material examined (2 ♂♂, 25 ♀♀)

TAJIKISTAN: 1 ♂, 6 ♀♀, western slope of Vahsh Karatau Mts, 950–1200 m, 38°01' N, 68°57' E, 3 km NNW of Mt Hojamaston, 21–25 Apr. 1989, S. Zonstein leg. (SMNH); 1 ♂, 5 ♀♀, same collection data

as for preceding but 26 Apr. 1990 (SMNH); 3 ♀♀, Vahsh Karatau Mts, 1.5 km W of Mt Hojamaston, 1040 m, 38°04.6' N, 68°57.2' E, 24 Apr. 2015, S. Zonstein leg. (SMNH); 9 ♀♀, Vahsh Karatau Mts, Chimsai Gorge, 700–1200 m, 38°00' N, 68°56' E, 22 Apr. 1986, S. Zonstein and A. Zyuzin leg. (SMNH); 2 ♀♀, foothills 3 km SE of Yavan, 800–1000 m, 38°18' N, 69°05' E, 19 Apr. 1988, S. Zonstein leg. (SMNH).

Description

Male (from Mt Hojamaston area)

HABITUS. See Fig. 9.

MEASUREMENTS. TBL 13.10, CL 5.95, CW 5.07, LL 0.63, LW 1.05, SL 2.77, SW 2.53.

COLOUR IN ALCOHOL. Carapace medium foxy brown with anterior edge darker and thoracic part lighter: chelicerae, most part of palps and legs light yellowish brown; sternum, labium, maxillae and leg tarsi paler; eye tubercle blackened; abdomen dorsally yellowish grey with brown pattern consisting of moderately wide median stripe and few paired transverse and slightly inclined short stripes, ventral part of abdomen pale yellowish grey, spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 56. Eye diameters and interdistances: AME 0.16(0.22), ALE 0.23, PLE 0.19, PME 0.16, AME–AME 0.22(0.16), ALE–AME 0.14(0.11), ALE–PLE 0.14, PLE–PME 0.02, PME–PME 0.49. Cheliceral rastellum consists of 20–25 spikes grouped in one transverse row. Each cheliceral furrow with 7 promarginal teeth and 4 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 98. Sternal sigilla small oval, posterior pair considerably distant from sternum edge. Maxillae with 30–32 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 126. Scopula: distal and entire on metatarsi I and II, narrowly divided on tarsi I and II, widely divided on tarsi III, absent on tarsi IV. Trichobothria: 2 rows of 8–9 each on tibiae, 12–14 on metatarsi, 12–15 on tarsi, 7 on cymbium. PTC I–II with 7 teeth on each margin. PTC III–IV with 8 teeth on outer and 5–6 teeth on inner margin.

SPINATION. Palp: femur d4, pd3, rd1; patella pd1; tibia d1, p3, r1, pv2, v6; tarsus d13–16. Leg I: femur d5, pd3, rd1; tibia pd4, p1, r3, v8+m; metatarsus d1, pd2, v6. Leg II: femur d5, pd3, rd1; tibia p3, v8; metatarsus p3, v7. Leg III: femur d4, pd3, rd3; patella p3, r2; tibia d1, p3, r3, v8; metatarsus pd4, p3, r2, v9; tarsus pv3. Leg IV: femur d5, p3, r3; tibia d1, p3, r3, v8; metatarsus pd2, p3, r7, v7; tarsus p2. Patellae I, II and IV, and tarsi I and II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 181, 209–210. Palpal tibia long, slender, and slightly swollen, with numerous stout bristles (Fig. 181). Palpal organ with embolus tapering and slightly curved (Figs 209–210).

SPINNERETS. See Fig. 280. PMS: length 0.51, diameter 0.22. PLS: maximal diameter 0.53; length of basal, medial and apical segments 0.90, 0.65, 0.83; total length 2.38; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	3.87 (4.46)	1.84 (2.27)	3.37 (4.41)	–	1.19 (2.84)	10.27 (12.98)
Leg I	6.47 (7.14)	2.98 (3.57)	5.23 (4.68)	4.94 (4.73)	3.13 (2.62)	22.75 (22.74)
Leg II	6.09 (5.80)	2.77 (3.34)	4.52 (3.77)	4.57 (4.65)	3.13 (2.59)	21.08 (20.15)
Leg III	4.82 (4.26)	2.05 (2.65)	3.29 (2.58)	4.26 (3.59)	3.26 (2.66)	17.68 (15.74)
Leg IV	5.90 (5.78)	2.66 (3.54)	5.04 (4.53)	5.58 (5.06)	3.61 (2.97)	22.79 (21.88)

Female (from Mt Hojamaston area)

HABITUS. See Fig. 22.

MEASUREMENTS. TBL 23.50, CL 8.07, CW 7.45, LL 0.88, LW 1.53, SL 4.35, SW 3.87.

COLOUR. Similar to that of male, but darker: caput, palps and anterior legs chestnut-brown; chelicerae dark copper-brown; dorsal abdominal pattern dark brown; in addition to setae, chelicerae covered with tiny copper-coloured iridescent hairs.

PROSOMA. Clypeus and eye tubercle as shown in Fig. 71. Eye diameters and interdistances: AME 0.18(0.25), ALE 0.33, PLE 0.22, PME 0.18, AME–AME 0.24(0.18), ALE–AME 0.20(0.17), ALE–PLE 0.20, PLE–PME 0.04, PME–PME 0.75. Cheliceral rastellum represented by approximately 20 spikes located in front of fang base and on low mound. Each cheliceral furrow with 7 promarginal teeth and 7 smaller retromarginal teeth (see Fig. 83). Sternum, labium and maxillae as shown in Fig. 111. Sternal sigilla small; posterior pair distant from sternum edge, oval, or of irregular shape, but anyway extended. Maxillae with 43–52 cuspules each.

LEGS. Scopula dense, occupies $\frac{5}{6}$ ventral surface of metatarsus I, distal on metatarsus II, entire on palpal tarsus and tarsi I–II, elsewhere absent. Trichobothria: 2 rows of 8–12 each on tibiae, 14–18 on metatarsi, 14–18 on leg tarsi, 12 on palpal tarsus. Palpal claw with 3–4 promarginal teeth. PTC I–III with 5–6 teeth on outer, 4–6 teeth on inner margin; PTC IV with 5–6 and 2–3 teeth, respectively.

SPINATION. Palp: femur pd1; patella d1, p1, pv1, rv2–3; tibia p2, v13–14; tarsus p1, v2–3. Leg I: femur pd1; tibia p1, v4; metatarsus v6. Leg II: femur pd1; tibia p3, v6–7; metatarsus p1, v6. Leg III: femur pd1–3, rd3; patella p3; tibia d1, p3, r1, v6–7; metatarsus pd2, p4, rd3, v7; tarsus p2. Leg IV: femur rd1; tibia rd2, v6–7; metatarsus pd1, p2, rd2, v8–9; tarsus v1. All femora except dorsal row of bristles with 1 basodorsal spine; patellae I, II, and IV, and tarsi I and II aspinose.

SPERMATHECAE. Normally entire with stalks narrowed subapically (Fig. 246).

SPINNERETS. See Fig. 281. PMS: length 0.83, diameter 0.35. PLS: maximal diameter 0.85; length of basal, medial and apical segments 1.45, 0.87, 0.85; total length 3.63; apical segment shortly digitiform.

Variation

The length of carapace varies from 5.78 to 5.90 in males and from 5.82 to 9.23 in females. The colouration varies through specimens very narrowly. The number of maxillary cuspules ranges from 28 to 32 in males and from 40 to 55 in females. No significant variation in structure of the palpal organ is evident. The spermathecae are generally uniform (Figs 246, 248–249); however, occasionally the stalks are divided subapically (see Fig. 247).

Habitats

The species occurs in woodless steppe foothills at 700–1000 m, as well as in the scarcely forested midland area above, with shrubs and low trees represented by *Acer*, *Prunus* and *Pistacia* (see Figs 313, 317).

Distribution

Contrary to the distribution provided with the original description, the range of this species is confined to the Vahsh Karatau Mts in southwestern Tajikistan only, as shown in Fig. 371 (see below).

Notes

A captured live male is shown in Fig. 31 (a positive slide made in 1989). The cheliceral rastellum, trichobothrial bases and tarsal organ of leg I, and spigots are shown in Figs 145–146, 169–170, and 298–301, respectively.

Andreeva (1968, 1976) listed as paratypes of *B. karatauvi* 17 ♀♀ collected together with the holotype and 8 ♀♀ collected in 1966–1967 in other regions of southern Tajikistan. As noted above, the type series comprises only 7 ♀♀ from Karatau Mts. All other females originally included in the type series are re-identified and considered here as belonging to other species of *Anemesia*.

Anemesia pallida* species group*Diagnostic characters**

The group comprises small, pale-coloured species. Males in this group resemble those of the *castanea* species group in possessing a laterally spinose cymbium, but differ from them in the considerably shorter palpal tibia and embolus (Figs 182–183, 211–214, cf. Figs 180–181, 206–210). Females of *Anemesia pallida* sp. nov. can be distinguished from other congeners in the reduced dorsal abdominal pattern (Fig. 23) and in the specific shape of the deeply divided spermathecae (Fig. 250).

Species included

Anemesia pallida sp. nov. and *A. parvula* sp. nov.

***Anemesia pallida* sp. nov.**

[urn:lsid:zoobank.org:act:8CF0BF65-A760-49B5-9B6F-1DB683314DD4](https://zoobank.org/act:8CF0BF65-A760-49B5-9B6F-1DB683314DD4)

Figs 10, 23, 57, 72, 99, 112, 127, 182, 211–212, 250, 282–283, 313, 318–321, 337, 372

Diagnosis

Anemesia pallida sp. nov. is a minute, pale-coloured species, with a dark dorsal abdominal pattern reduced to a longitudinal median spot. The configuration of the male palpal organ in this new taxon resembles that in males of *A. castanea* sp. nov. and *A. karatauvi*, but both the male palpal tibia and the embolus in *A. pallida* sp. nov. are considerably shorter (Figs 211–212, cf. Figs 206–210). *Anemesia pallida* sp. nov. differs from *A. parvula* sp. nov., another member of the same species group known only from males, in the shape of the bulb (which is pegtop-shaped, with a strongly bulging anterior lobe vs comma-shaped bulb with a weakly convex anterior lobe in *A. parvula* sp. nov.; Figs 211–212, cf. Figs 213–214). Females of *A. pallida* sp. nov. differ from all other known female congeners by their unique diverging and divided receptacles (Fig. 250).

Etymology

The specific name is derived from the Latin adjective ‘*pallidus*’ meaning ‘pale’, and reflects the general light colouration of the specimens; the gender is feminine.

Material examined**Holotype**

TAJIKISTAN: ♂, foothills of Aruktau Mts, 1 km NE of Ganjina Village, 750 m, 37°58' N, 68°32' E, 14 Apr. 1986, S. Zonstein leg. (SMNH).

Paratypes (11 ♂♂, 2 ♀♀)

TAJIKISTAN: 4 ♂♂, 1 ♀, same collection data as for preceding but 13–19 Apr. 1986 (SMNH); 1 ♂, same collection data as for preceding but 9 Apr. 1988 (SMNH); 3 ♂♂, same collection data as

for preceding but 15 Apr. 1991 (SMNH, ZMMU); 1 ♂, southernmost tip of Aruktau Mts, Garavuti, 3 Apr. 1974, A. Kononenko leg. (ZMMU); 1 ♂, Rangontau Mts, Yavan Pass, 1200 m, 38°24' N, 68°58' E, 29 Apr. 1986, S. Zonstein leg. (SMNH); 1 ♀, Vahsh River valley, Tigrovaya Balka (Tiger Gorge) Nature Reserve, Palvan-Tugai, 350 m, 37°08.5' N, 68°17.5' E, 16 Apr. 1989, S. Zonstein leg. (SMNH); 1 ♂, Vahsh Karatau Mts, western slope of Mt Hojamaston, 1040 m, 38°01.2' N, 68°57.1' E, 24 Apr. 2015, S. Zonstein leg. (SMNH).

Description

Male (holotype)

HABITUS. See Fig. 10.

MEASUREMENTS. TBL 10.80, CL 4.75, CW 4.03, LL 0.40, LW 0.75, SL 2.15, SW 2.03.

COLOUR. Carapace pale yellowish orange with brownish clypeus and blackish-brown spots surrounding AMEs and lateral eyes; chelicerae, palps and legs dorsally yellowish orange with femora and patellae slightly darker; sternum, labium, maxillae, palps and legs ventrally pale brownish yellow; abdomen dorsally greyish-yellow with simple brown pattern consisting of relatively narrow median lanceolate spot only, ventral part of abdomen pale yellowish grey, spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 57. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.27, PLE 0.12, PME 0.07, AME–AME 0.16(0.10), ALE–AME 0.09(0.06), ALE–PLE 0.14, PLE–PME 0.03, PME–PME 0.44. Cheliceral rastellum consists of 20–25 spikes located in front of fang base and on low mound. Each cheliceral furrow with 7 promarginal teeth and 3–4 smaller medial teeth. Sternum, labium and maxillae as in Fig. 99. Sternal sigilla very small but well defined. Maxillae with 22–27 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 127. Scopula entire and distal on metatarsus I, narrowly divided on tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 7–8 each on tibiae, 11–12 on metatarsi, 11–12 on tarsi, 7–8 on cymbium. PTC I–IV with 5–6 teeth on each margin.

SPINATION. Palp: femur d6–7, pd4, rd2; patella p1; tibia d2–3, p3, r4–5, v9–10; tarsus d13–15. Leg I: femur d6–7, pd3, rd3; tibia p3–5, r3, v7+m; metatarsus p3, v6. Leg II: femur d5, pd3, rd1; tibia p3, v8; metatarsus p3, v7. Leg III: femur d4, pd3, rd3; patella p3, r2; tibia d1, p3, r3, v8; metatarsus pd4, p3, r2, v9; tarsus p5, r3. Leg IV: femur d5, pd3, rd3; tibia d1, p3, r3, v8; metatarsus pd2, p3, r7, v7; tarsus p5, r6, v3. Patellae I–II and IV, and tarsi I–II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 182, 211–212. Palpal tibia short cylindrical and spinose (Fig. 182). Palpal organ with embolus tapering and slightly curved (Figs 211–212).

SPINNERETS. See Fig. 282. PMS: length 0.37, diameter 0.15. PLS: maximal diameter 0.40; length of basal, medial and apical segments 0.73, 0.75, 0.44; total length 1.92; apical segment triangular.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.83 (2.48)	1.48 (1.27)	2.27 (1.61)	–	1.03 (1.43)	7.61 (6.79)
Leg I	5.13 (3.43)	2.56 (2.06)	3.77 (2.27)	3.51 (1.92)	2.36 (1.37)	17.34 (11.05)
Leg II	4.81 (2.78)	2.03 (1.62)	3.46 (1.96)	3.63 (1.82)	2.36 (1.33)	16.29 (9.51)
Leg III	3.79 (2.26)	1.84 (1.52)	2.66 (1.33)	3.68 (1.94)	2.57 (1.47)	14.54 (8.52)
Leg IV	4.64 (3.02)	2.09 (2.04)	4.32 (2.71)	4.97 (2.90)	2.91 (1.66)	18.93 (12.33)

Female (paratype from Ganjina)

HABITUS. See Fig. 23.

MEASUREMENTS. TBL 13.30, CL 4.43, CW 3.65, LL 0.46, LW 0.93, SL 2.41, SW 2.20.

COLOUR. Similar to that of male, but slightly paler.

PROSOMA. Clypeus and eye tubercle as in Fig 72. Eye diameters and interdistances: AME 0.14(0.20), ALE 0.28, PLE 0.14, PME 0.07, AME–AME 0.14(0.06), ALE–AME 0.13(0.10), ALE–PLE 0.12, PLE–PME 0.05, PME–PME 0.39. Cheliceral rastellum strong and consists of about 15 stout thornlike spikes located in front of fang base and on low mound. Each cheliceral furrow with 6 promarginal teeth and 0–1 smaller teeth alongside. Sternum, labium and maxillae as in Fig. 112. Sternal sigilla very small, submarginal, and lacking certain edges. Maxillae with 30–32 cuspules each.

LEGS. Scopula: distal on metatarsi I and II, entire on palpal tarsus, narrowly divided on tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 6–8 each on tibiae, 14–15 on metatarsi I and II, 12 on metatarsus III, 13 on metatarsus IV, 13 on tarsi I and II, 10 on tarsus III and on palpal tarsus, 12 on tarsus IV. Palpal claw with 4 promarginal teeth. PTC I–II with 3–4 teeth on each margin. PTC III with 3–4 teeth on outer, 3 teeth on inner margins; PTC IV with 3 teeth and 1 tooth, respectively.

SPINATION. Palp: femur pd1–2; patella p1; tibia p3–4, v9–10; tarsus v2–3. Leg I: femur pd1; tibia p1, v5; metatarsus v6. Leg II: femur pd1; patella p1; tibia p2–3, v4–5; metatarsus p1, v7. Leg III: patella d1, p3; tibia d1, p2, r2, v6–7; metatarsus pd2, p2–3, rd4, v7–8; tarsus p1. Leg IV: tibia r2, v6; metatarsus pd 2, rd1–2, v11–12; tarsus p+r+v: ca 20. All femora with dorsal median row of 5–8 long slender bristles; femora III and IV also with pro- and retrodorsal rows of 2–4 spine-like bristles in each row; patellae I and IV, and tarsi I and II aspinose.

SPERMATHECAE. With diverging and branched stalks (see Fig. 250).

SPINNERETS. See Fig. 283. PMS: length 0.48, diameter 0.17. PLS: maximal diameter 0.50; length of basal, medial and apical segments 0.84, 0.60, 0.39; total length 1.83; apical segment triangular.

Variation

The length of the carapace varies from 4.10 to 4.55 in paratype males, the dorsal abdominal pattern may be developed somewhat better and represent the more contrasted variant than that shown in Fig. 10. The number of tarsal spines varies as follows: leg II: 0–3; leg III: 6–12; leg IV: 9–20; the number of the maxillary cuspules ranges as 21–27 in males and 28–32 in females.

Habitat

See the corresponding data for *A. incana* and *A. karatauvi*.

Distribution

Southwestern Tajikistan. See Fig. 372.

Anemesia parvula sp. nov.

[urn:lsid:zoobank.org:act:213F941D-1936-4F56-AB60-A8D24B6A7F8B](https://doi.org/10.21203/rs.3.rs-1936475/v1)

Figs 11, 58, 100, 128, 183, 213–214, 284, 324, 372

Diagnosis

Males of *Anemesia parvula* sp. nov. differ from those of *A. pallida* sp. nov. in the shape of the bulb (which is comma-shaped with a weakly convex anterior lobe in the former species, but pegtop-shaped with a strongly bulging anterior lobe in the latter; Figs 213–214, cf. Figs 211–212).

Etymology

The specific name is derived from the Latin adjective ‘*parvulus*’ meaning ‘small’, and reflects the minute size of the specimens; the gender is feminine.

Material examined

Holotype

TAJIKISTAN: ♂, Sanglok Mts, 3–4 km W of Sebiston, 1500–1700 m, 38°15′ N, 69°17′ E, 2 May 1990, S. Zonstein leg. (SMNH).

Paratype

TAJIKISTAN: 1 ♂, same locality, 5 May 1991, S. Ovchinnikov leg. (SMNH).

Description

Male (holotype)

HABITUS. See Fig. 11.

MEASUREMENTS. TBL 10.10, CL 4.08, CW 3.46, LL 0.38, LW 0.70, SL 2.04, SW 1.90.

COLOUR. Prosoma, palps and legs pale yellowish orange with slightly darker brownish orange chelicerae, clypeus and radial grooves of carapace; eye tubercle blackish brown; most part of abdomen and spinnerets milky white; dorsal abdominal pattern represented with narrow and interrupted brown longitudinal stripe and five pairs of brownish chevrons posteriorly.

PROSOMA. Clypeus and eye tubercle as in Fig 58. Eye diameters and interdistances: AME 0.12(0.20), ALE 0.25, PLE 0.12, PME 0.08, AME–AME 0.15(0.07), ALE–AME 0.08(0.04), ALE–PLE 0.10, PLE–PME 0.04, PME–PME 0.44. Cheliceral rastellum consists of ca 20 spikes located in front of fang base and on low mound. Each cheliceral furrow with 7–8 promarginal and 4 small retromarginal teeth. Sternum, labium and maxillae as in Fig. 100. Sternal sigilla very small, rounded posterior pair set relatively close to sternal edge. Maxillae with approximately 20 cuspules each.

LEGS. Tibia and metatarsus I as in Fig. 128. Scopula entire and distal on metatarsus I, narrowly divided on tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 7–8 each on tibiae, 12–14 on metatarsi, 10–12 on tarsi, 10 on cymbium. PTC I–II, III and IV with 6–8, 4–6 and 4–5 teeth on each margin, respectively.

LEG MEASUREMENTS.

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	2.19	1.13	1.99	–	0.69	7.00
Leg I	4.20	1.96	3.08	2.89	1.93	14.06
Leg II	3.71	1.65	2.52	2.78	1.95	12.61
Leg III	3.25	1.39	2.07	2.92	1.87	11.50
Leg IV	4.22	1.47	3.66	3.92	2.20	15.47

SPINATION. Palp: femur d4, pd1; tibia d3–4, p2–3, r1, pv4; tarsus d18–20. Leg I: femur d6, pd3, rd3–4; patella p1; tibia p3, pv4, rv3+m; metatarsus p3, v6. Leg II: femur d5, pd3, rd2–3; patella p1; tibia p3, v8; metatarsus p3, v7; tarsus p2. Leg III: femur d5–6, pd3, rd3; patella p3, r1; tibia d1, p3, r3, v8; metatarsus d2, p4, r3, v7; tarsus p8–10, r4. Leg IV: femur d6, p3, r3; patella p2, r1; tibia d1, p3, r3, v9; metatarsus d2, p5–6, r3–4, v10–11; tarsus p10–11, r5–6. Only palpal patella and tarsus I aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 183, 213–214. Palpal tibia short cylindrical and spinose (Fig. 183). Palpal organ with embolus tapering and slightly curved (Figs 213–214).

SPINNERETS. See Fig. 284. PMS: length 0.37, diameter 0.15. PLS: maximal diameter 0.40; length of basal, medial and apical segments 0.73, 0.75, 0.44; total length 1.92; apical segment triangular.

Female

Unknown.

Variation

The carapace length is 4.44 in the only paratype male; the colouration, including the dorsal abdominal pattern, looks completely the same as in the holotype and distinctive from that in males of *A. pallida* sp. nov.

Habitat

See the corresponding data for *A. infuscata* sp. nov.

Distribution

Known only from the type locality in the central part of Tajikistan (Fig. 372).

***Anemesia incana* species group**

Diagnostic characters

This group comprises intensely dark-coloured medium-sized and large species. Members of this species group can be easily distinguished from other congeners due to the unique membranous process near the embolus apex in males (see Figs 148, 150), and to a specific shape of the entire spermathecae with unusually wide stalks in females (Figs 251–265). Unlike most other members of *Anemesia*, all three species of the considered group have relatively large PMS (Figs 285–286, 288–290; cf. Figs 268–270, 274, 277–284).

Species included

Anemesia incana Zonstein, 2001, *A. infumata* sp. nov. and *A. infuscata* sp. nov.

***Anemesia incana* Zonstein, 2001**

Figs 12, 24, 32–33, 35, 43–44, 59, 73, 84–85, 101, 113, 129, 138–142, 147–150, 156–157, 171–172, 184, 215–216, 251–254, 285–286, 302–305, 318–321, 338–344, 363, 373

Anemesia incana Zonstein, 2001: 11, figs 1–8 (♂♀)

Anemesia incana – Zonstein 2007: 211, fig. 9 (♀). — Marusik *et al.* 2014: 3, fig. 9 (♂).

Diagnosis

Anemesia incana differs from the closely related and similar-looking *A. infumata* sp. nov. and *A. infuscata* sp. nov. in a considerably wider clypeus and noticeably smaller eyes both in males and females (Figs 59, 73; cf. Figs 60–62, 74–77). Additionally, males of *A. incana* are well distinguishable due to their wider palpal organ (Figs 215–216; cf. Figs 217–223), and the conspecific females due to their oblate receptacles (Figs 251–254; cf. Figs 255–265).

Material examined

Holotype

TAJIKISTAN: ♂, foothills of Aruktau Mts, 1 km NE of Ganjina Village, 750 m, 37°58' N, 68°32' E, 13 Apr. 1987, S. Zonstein leg. (AMNH).

Paratypes (15 ♂♂, 15 ♀♀)

TAJIKISTAN: 12 ♂♂, 9 ♀♀, Aruktau Mts, surroundings of Ganjina, 700–1000 m, 9–13 Apr. 1987, S. Zonstein leg. (SMNH: 9 ♂♂, 6 ♀♀; MNHL: 1 ♂; ZISP 1 ♀; ZMMU: 2 ♂♂, 2 ♀♀); 1 ♂, 4 ♀♀, same collection data as for preceding but 11 Apr. 1988 (SMNH); 1 ♂, 1 ♀, same collecting data as for preceding but 22 Apr. 1992 (SMNH).

Additional material (3 ♂♂, 7 ♀♀)

TAJIKISTAN: 1 ♀, Aruktau Mts, surroundings of Ganjina, 800–950 m, 19 Apr. 1989, S. Zonstein leg. (SMNH); 1 ♂, same collection data as for preceding but 18 Apr. 1992 (SMNH); 1 ♂, 2 ♀♀, same collection data as for preceding but 22 Apr. 2015 (SMNH); 3 ♀♀, same collection data as for preceding but 27 Apr. 2002, S. Zonstein and A. Feodorov leg. (SMNH); 1 ♂, Panj Karatau Mts, vicinity of Mt Astana, 1600 m, 37°23' N, 69°15' E, 23 Apr. 1991, S. Zonstein leg. (SMNH); 1 ♀, Vahsh Karatau Mts, summit area 4 km NNE of Mt Hojamaston, 1670 m, 38°00.9' N, 68°58.7' E, 24 Apr. 2015, S. Zonstein leg. (SMNH).

Redescription

Male (holotype)

HABITUS. See Fig. 12.

MEASUREMENTS. TBL 14.50, CL 6.87, CW 5.63, LL 0.63, LW 1.05, SL 4.25, SW 3.30.

COLOUR. Carapace, chelicerae, sternum, labium, most part of palps and legs intensely dark reddish brown; maxillae, coxae, metatarsi, tarsi and sternal sigilla dark brownish orange; eye tubercle blackened; abdomen dorsally dark grey with brown pattern consisting of wide median longitudinal spot and few paired transverse and slightly inclined short stripes, ventral part of abdomen dark yellowish grey, spinnerets pale yellow.

PROSOMA. Clypeus wide. Eye tubercle as in Fig 59. Eye diameters and interdistances: AME 0.19(0.27), ALE 0.28, PLE 0.15, PME 0.14, AME–AME 0.24(0.16), ALE–AME 0.22(0.18), ALE–PLE 0.22, PLE–PME 0.08, PME–PME 0.57. Weak cheliceral rastellum consists of about 20 spikes grouped in front of cheliceral fang and on low mound. Each cheliceral furrow with 7 promarginal teeth and 3–4 smaller teeth confined to basal retromargin. Sternum, labium and maxillae as shown in Fig. 101. Sternal sigilla oval; posterior pair relatively large, long oval, and located distantly from sternal margin. Maxillae with 4–5 cuspules each.

LEGS. Tibia and metatarsus I as shown in Fig. 129. Scopula distal on metatarsi I and II, very narrowly divided on tarsi I and II, widely divided on tarsus III, mixed, rudimentary, and widely divided on tarsus IV. Trichobothria: 2 rows of 9–10 each on tibiae, 14–17 on metatarsi, 14–17 on tarsi, 8 on cymbium. PTC I–IV with 6–7 teeth on each margin.

SPINATION. Palp: femur d3, p2; patella p2; tibia p3, r2, v3; tarsus d5–6. Leg I: femur d5, pd2; tibia p3, v6–7+m; metatarsus p2, v7. Leg II: femur d5, pd1; patella p3–4; tibia p3, v8; metatarsus p3, v6. Leg III: femur d4–5, pd3, r2; patella p4–5; tibia d1, p3, r3, v10–11; metatarsus d1, p3, r3, v10; tarsus v9–10. Leg IV: femur d5, p2, r3; tibia r3, v9–11; metatarsus p4, r2, v7–8; tarsus v7–10. Patellae I and IV, and tarsi I–II aspinose.

PALP. Tibia, cymbium and palpal organ as shown in Figs 184, 215–216. Palpal tibia long, cylindrical and spinose (Fig. 184). Palpal organ with wide asymmetrical bulb and tapering and slightly curved embolus (Figs 215–216).

SPINNERETS. See Fig. 285. PMS: length 0.63, diameter 0.30. PLS: maximal diameter 0.53; length of basal, medial and apical segments 1.45, 1.07, 0.95; total length 3.47; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.03 (4.00)	2.15 (2.75)	3.23 (3.25)	–	1.45 (2.37)	10.86 (12.37)
Leg I	6.57 (6.17)	3.05 (3.70)	5.17 (4.37)	5.27 (3.77)	2.83 (2.80)	22.89 (21.81)
Leg II	6.43 (5.55)	3.00 (3.43)	4.65 (4.05)	4.57 (3.60)	2.83 (2.57)	21.48 (19.20)
Leg III	5.75 (4.30)	2.55 (3.35)	3.30 (3.23)	4.65 (3.37)	2.27 (2.85)	18.52 (17.10)
Leg IV	6.83 (5.57)	3.20 (3.67)	5.57 (4.55)	5.63 (5.10)	3.05 (3.03)	24.34 (21.92)

Female (paratype)

HABITUS. See Fig. 24.

MEASUREMENTS. TBL 17.50, CL 8.15, CW 7.07, LL 0.85, LW 1.63, SL 4.75, SW 3.97.

COLOUR. Similar to that of male, except even darker chelicerae.

PROSOMA. Clypeus and eye tubercle as in Fig 73. Eye diameters and interdistances: AME 0.23(0.30), ALE 0.28, PLE 0.20, PME 0.18, AME–AME 0.20(0.13), ALE–AME 0.20(0.17), ALE–PLE 0.22, PLE–PME 0.05, PME–PME 0.53. Weak cheliceral rastellum as in male. Each cheliceral furrow with 7–8 promarginal teeth and 5–6 smaller retromarginal teeth. Sternum, labium and maxillae as shown in Fig. 113. Sternal sigilla as in male. Maxillae with 7–10 cuspules each.

SPINATION. Palp: tibia p5, v18–20; tarsus v1. Leg I: tibia v8–10; metatarsus p1, v10. Leg II: tibia p3, v8–9; metatarsus p3, v8–10. Leg III: patella r2; tibia p2–3, r2, v9–10; metatarsus p3–4, r3, v12–14; tarsus v6–8. Leg IV: tibia r2, v10–12; metatarsus r2, v11–12; tarsus ventrally ca 20. All femora and most part of patellae with long and relatively thin bristles instead of spines; tarsi I and II unarmed.

LEGS. Scopula distal on metatarsi I and II, entire on palpal tarsus, very narrowly divided on tarsus I, narrowly divided on tarsus II, elsewhere absent. Trichobothria: 8–10 in each row on tibiae, 16–20 on metatarsi, 15–18 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–II with 6–7 teeth on each margin. PTC III with 6 teeth on outer margin, 3 teeth on inner margin; PTC IV with 3 teeth and one tooth, respectively.

SPERMATHECAE. Entire with short stout stalks and considerably oblate receptacles (Fig. 251).

SPINNERETS. See Fig. 286. PMS: length 0.67, diameter 0.50. PLS: maximal diameter 0.93; length of basal, medial and apical segments 1.55, 1.13, 0.95; total length 3.63; apical segment shortly digitiform.

Variation

The length of the carapace varies from 6.30 to 7.92 in males and from 5.96 to 8.43 in females. The colour of the carapace and legs varies from very dark reddish brown to deep blackish-brown. Number of maxillary cuspules varies from 2 to 11.

Habitat

Foothills and low mountain ridges at an altitude of 600–1700 m, covered with ephemeral grasslands and shrubs (mostly species of *Artemisia*), often with tall shrubs or low open forest (*Pistacia vera* L., different species of *Prunus*, *Crataegus* and *Acer*). The typical biotopes preferred by these spiders are shown in Figs 318–321.

Distribution

South-western Tajikistan (Fig. 273).

Notes

Some illustrations of *Anemesia incana* used in this study are partially based on the additional (non-type) material. Live spiders are presented in Figs 32–33, 35, 43–44. The dentition of the cheliceral furrow in female and male paratypes is shown in Figs 84 and 85, respectively. The separated female palps and legs I–IV are shown in Figs 138–142. The SEM micrographs include those of the palpal organ (147, 149), the tip of the embolus (Figs 148, 150), the tarsal claws (Figs 156–157), the trichobothrial base and the tarsal organ of leg I (Figs 171 and 172, respectively), and spigots of PLE (Fig. 302) and PME (Figs 303–305).

Anemesia infumata sp. nov.

[urn:lsid:zoobank.org:act:E256AE02-439D-4044-BB6C-5355A94CA677](https://zoobank.org/urn:lsid:zoobank.org:act:E256AE02-439D-4044-BB6C-5355A94CA677)

Figs 13, 25, 36–37, 60, 74–75, 86, 102, 114, 130, 185, 217–219, 255–257,
287–288, 322–323, 345, 364, 373

Diagnosis

Anemesia infumata sp. nov. differs from *A. incana* by a considerably narrower clypeus and noticeably larger eyes in both males and females (Figs 60, 74–75; cf. Figs 59, 73). From the most similarly-looking *A. infuscata* sp. nov., males of *A. infumata* sp. nov. differ in the more tapering embolus which arises closer to the retrolateral side of the palpal organ (Figs 217–219; cf. Figs 220–223), while the conspecific females differ by their short and uniformly stout spermathecae (Figs 255–257; cf. Figs 258–265).

Etymology

The specific epithet is derived from the Latin adjective ‘*infumatus*’, meaning ‘smoked’, referring to the mostly darkened (blackened) colouration of these spiders. The gender is feminine.

Material examined

Holotype

TAJIKISTAN: ♂, Panj Karatau Mts, surroundings of Mt Astana, 1400–1600 m, 37°23′ N, 69°15′ E, 23 Apr. 1991, S. Zonstein leg. (SMNH).

Paratypes (1 ♂, 6 ♀♀)

TAJIKISTAN: 1 ♂, 5 ♀♀, same collection data as for the holotype but 22–24 Apr. 1991, S. Zonstein and S. Ovchinnikov leg. (SMNH); 1 ♀, same collecting date as for preceding but 0.3 km E of summit, 1670 m, 37°23.2′ N, 69°14.8′ E, 4 May 2015, S. Zonstein leg. (SMNH).

Additional material

TAJIKISTAN: 2 ♀♀, same ridge, Akkutsal Pass 35 km NNE of Panj Town, ca 800 m, 37°18′ N, 69°18′ E, 23–25 Apr. 1967, E. Andreeva leg. (MIZW).

Description

Male (holotype)

HABITUS. See Fig. 13.

MEASUREMENTS. TBL 18.30, CL 6.65, CW 5.88, LL 0.58, LW 1.22, SL 3.75, SW 3.39.

COLOUR. Carapace intensely dark mahogany, with darker brown clypeus, margins, thoracic grooves, and numerous small spots forming reticulate pattern on mahogany background; eye tubercle brownish black;

chelicerae, palps, leg I entirely, leg II from femur to tibia, femora III and IV dark chestnut brown; other segments of legs III and IV, and metatarsus and tarsus II light to medium brownish orange; maxillae orange, sternum and labium medium brownish orange; abdomen greyish, dorsally with dark coffee brown pattern consisting of median longitudinal stripe, very broad in anterior half, but narrow and fused with several paired chevrons in posterior half; spinnerets pale brownish yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 60. Eye diameters and interdistances: AME 0.18(0.26), 0.38, 0.24, 0.18, AME–AME 0.20(0.12), ALE–AME 0.19(0.15), ALE–PLE 0.16, PLE–PME 0.04, PME–PME 0.49. Cheliceral rastellum composed of ca 40 stout bristles lacking tips and located in front of fang base and on weakly developed low mound. Cheliceral furrow with 7–8 promarginal teeth and 7–10 smaller retromarginal teeth each (Fig. 86). Sternum, labium and maxillae as shown in Fig. 86. Sternal sigilla poorly defined; posterior sigillum divided into two separate parts. Each maxilla with 12 cuspules confined to probasal maxillary edge.

LEGS. Tibia and metatarsus I as shown in Fig. 130. Scopula entire and distal on metatarsus I, mixed and distal on metatarsus II, very narrowly divided on tarsus I, narrowly divided on tarsus II, widely divided on tarsi III, absent on tarsi IV. Trichobothria: 2 rows of 10–11 each on tibiae; 16–19 on metatarsi; 13–14 on tarsi, 11 on cymbium. PTC I–IV with 8–10 teeth on each margin.

SPINATION. Palp: femur d4, pd3, rd3–4; patella p1; tibia p4, v7–8 stout bristles; tarsus d5. Leg I: femur d5, pd3, rd3–4; patella p1; tibia p3, v6–7+m; metatarsus v4–5. Leg II: femur d5, pd4, rd2–4; patella p1–2; tibia p3, v8–9; metatarsus p2, v7. Leg III: femur d4, pd3, rd3; patella p3, r2; tibia d1, p3, r3, v7; metatarsus d2, p7, r3, v11–12; tarsus p6. Leg IV: femur d5, p3, r3; patella r1–2; tibia r3, v7–8; metatarsus d2, p4, r2, v13–15; tarsus pv8–9, r1–2. Tarsi I and II aspinose.

PALP. Tibia, cymbium and palpal organ as in Figs 185, 217–219. Tibia cylindrical with numerous thick ventral bristles (Fig. 185). Embolus tapering, slightly curved, embolic tip with small membranous keel (Figs 217–219).

SPINNERETS. See Fig. 287. PMS: length 0.63, diameter 0.31. PLS: maximal diameter 0.64; length of basal, medial and apical segments 1.38, 0.74, 0.91; total length 3.03; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.27 (4.51)	2.05 (2.40)	3.41 (3.01)	–	1.44 (2.74)	11.17 (12.66)
Leg I	6.58 (6.35)	3.26 (3.31)	4.85 (4.22)	4.98 (3.83)	2.88 (2.55)	22.49 (20.26)
Leg II	5.96 (5.31)	2.92 (2.78)	4.27 (3.47)	4.53 (3.38)	2.87 (2.54)	20.55 (17.44)
Leg III	4.68 (4.54)	2.15 (2.45)	3.09 (2.42)	4.45 (3.26)	2.73 (2.51)	17.10 (15.18)
Leg IV	6.38 (5.65)	2.71 (3.16)	5.41 (4.40)	5.67 (4.62)	3.14 (2.76)	23.31 (20.59)

Female (paratype)

HABITUS. See Figs 25, 36–37.

MEASUREMENTS. TBL 25.10, CL 8.19, CW 6.51, LL 0.92, LW 1.73, SL 4.24, SW 4.07.

COLOUR. Almost identical to that in male.

PROSOMA. Clypeus and eye tubercle as in Fig. 74. Eye diameters and interdistances: AME 0.19(0.33), ALE 0.46, PLE 0.40, PME 0.25, AME–AME 0.23(0.09), ALE–AME 0.23(0.16), ALE–PLE 0.14, PLE–PME 0.03, PME–PME 0.59. Cheliceral rastellum composed of numerous spikes located in front of fang base and on low mound. Each cheliceral furrow with 7 promarginal teeth and 6–7 smaller retrolateral teeth. Sternum, labium and maxillae as shown in Fig. 102. Sternal sigilla poorly defined; posterior sigillum fragmentary. Each maxilla with ca 20 cuspules.

LEGS. Scopula entire and distal on metatarsus I, distal and widely divided on metatarsus II, entire on palpal tarsus and tarsus I, widely divided on tarsus II, elsewhere absent. Trichobothria: 10–11 in each row on tibiae; 17–21 on metatarsi; 16–17 on leg tarsi, 14 on palpal tarsus. Palpal claw with 4 promarginal teeth. PTC I and II with 5–7 teeth on each margin, PTC III–IV with 6–7 teeth, respectively.

SPINATION. Palp: patella p1; tibia p3–4, v22–25; tarsus v4. Leg I: femur pd1; tibia p2, v5; metatarsus v4. Leg II: femur pd1–2; patella p1; tibia p2, v5; metatarsus p1, v7–9. Leg III: femur p0–2; patella p5, r1; tibia d1, p3, r2, v7–8; metatarsus d1, pd3, r6, v9; tarsus p2. Leg IV: tibia r2, v8–10; metatarsus p3, r2, v12–15; tarsus p4. All femora with 5–7, 2–3, and 3–4 long bristles instead of true spines, located medially, pro- and retrodorsally, respectively; patellae I and IV, and tarsi I and II aspinose.

SPERMATHECAE. Entire, short and evenly stout (Fig. 255).

SPINNERETS. See Fig. 288. PMS: length 0.78, diameter 0.43. PLS: maximal diameter 0.89; length of basal, medial and apical segments 1.46, 0.73, 0.96; total length 3.15; apical segment triangular to shortly digitiform.

Variation

The length of the carapace varies from 6.65 to 6.78 in males and in females from 5.58 to 8.09. There are small variations in the eye size and arrangement as shown in Figs 74–75. The shape of the palpal organ in both collected male congeners looks practically the same. The configuration of the spermathecae does not show any noticeable difference (Figs 255–257).

Habitat

As in *A. incana* (see above); however, *A. infumata* sp. nov. has been hitherto encountered in low and middle montane areas between 800 and 1700 m, with slopes covered by rarely standing trees (*Acer*, *Crataegus*), shrubs and steppe vegetation (Figs 322–323).

Distribution

Known currently from a few localities in South Tajikistan only, see Fig. 273.

Note

Two females from Akkotal Pass deposited in MIZW were collected, according to the cover label, by K. Andrejeva-Prószyńska, on the same date as the type series of *Brachythele karatauvi*: 23–25 Apr. 1967. It is likely, however, that these data are correct and that both groups of spiders were sampled during the same short-distance collecting trip. The measured air distance between Akkotal and Vahsh Karatau Mts is only 60–90 km, depending on the localities.

Anemesia infuscata sp. nov.

[urn:lsid:zoobank.org:act:84CDD144-26EB-4DFF-8BE2-F878AA5C7471](https://doi.org/10.2307/84CDD144-26EB-4DFF-8BE2-F878AA5C7471)

Figs 14, 26, 38–41, 45–47, 61–62, 76–77, 87–89, 103, 115–116, 131–132, 186–187, 220–223, 258–265, 289–290, 324–329, 346–353, 365–367, 373

Diagnosis

Anemesia infuscata sp. nov. differs from *A. incana* in a considerably narrower clypeus and noticeably larger eyes both in males and females (Figs 61–62, 76–77; cf. Figs 59, 73). From the most similar-looking *A. infumata* sp. nov., males of *A. infuscata* sp. nov. differ by a less tapering embolus which arises closer to the prolateral side of the palpal organ (Figs 220–223; cf. Figs 217–219), while the conspecific females differ in their longer cone spermathecae ending with certainly dilated receptacles (Figs 258–265; cf. Figs 255–257).

Etymology

The specific epithet is derived from the Latin adjective '*infuscatus*', meaning 'infuscate', referring to the entirely darkened (blackened) colouration of these spiders. The gender is feminine.

Material examined**Holotype**

TAJIKISTAN: ♂, foothills of Hissar Mts, Varzob Canyon, 7 km N of Dushanbe, vicinity of Harangon, 1060 m, 38°40'04" N, 68°46'56" E, 27 May 2002, S. Zonstein leg. (SMNH).

Paratypes (19 ♂♂, 37 ♀♀)

TAJIKISTAN: 1 ♂, 2 ♀♀, same collecting data as for the holotype (SMNH); 1 ♀, same area, environs of Harangon 5 km N of Dushanbe, 1100 m, 38°39.9' N, 68°47.7' E, 3 May 2015, S. Zonstein leg. (SMNH); 2 ♂♂, 6 ♀♀, Sanglok Mts, 3–5 km W Sebiston, 1300–2200 m (38°15' N, 69°17' E), 2 May 1990, S. Zonstein leg. (SMNH); 3 ♂♂, 2 ♀♀, same collection data as for preceding but 7 May 1991, S. Ovchinnikov and S. Zonstein leg. (SMNH); 2 ♂♂, 5 ♀♀, same collection data as for preceding but 16–18 May 2002, S. Zonstein leg. (SMNH); 4 ♀♀, same collection data as for preceding but 29 Apr. 2015, S. Zonstein leg. (SMNH); 6 ♂♂, 8 ♀♀, Hazratisho Mts, Sangdara Gorge, 1650 m, 38°22' N, 70°09' E, 19–25 May 2002, S. Zonstein leg. (SMNH); 5 ♂♂, same area, Iokunj Gorge, 1600–2000 m, 38°23' N, 70°10' E, 23–26 May 2002, S. Zonstein leg. (SMNH); 3 ♀♀, Kuhitek Mts, 7 km NE of Hovaling, 1850 m, 38°21.6' N, 70°03.9' E, 28 Apr. 2015, S. Zonstein leg. (SMNH, ZMMU); 3 ♀♀, Mazar Mts, Sultanmazar 16 km NNE of Hovaling, 1850 m, 38°28.3' N, 70°04.1' E, 28 Apr. 2015, S. Zonstein leg. (SMNH); 3 ♀♀, same area, Darai-Mukhtor 5 km NW of Hovaling, 1600 m, 38°23.6' N, 69°57.9' E, 28 Apr. 2015, S. Zonstein leg. (SMNH).

Other material examined (8 ♀♀, 2 ♀♀ subad.)

TAJIKISTAN: 1 ♀, Rangentau Mts, Fahrabad Pass, 1200–1300 m, 38°20' N, 68°43' E, 3 Apr. 1967, E. Andreeva leg. (MIZW); 1 ♀ subad., Hazratisho Mts, 25 km E of Muminabad, 24 May 1966, E. Andreeva leg. (MIZW); 1 ♀ subad., same collection data as for preceding but 13 km NE of Muminabad, 13 Jun. 1966, E. Andreeva leg. (MIZW); 7 ♀♀, Kuhitek Mts, 1 km E of Hovaling, 1600–1700 m, 38°20' N, 69°59' E, 11 Oct. 1987, S. Zonstein and S. Ovchinnikov leg. (SMNH, ZMMU).

Description**Male** (holotype)

HABITUS. See Fig. 14.

MEASUREMENTS. TBL 17.80, CL 7.17, CW 6.28, LL 0.80, LW 1.24, SL 3.63, SW 3.33.

COLOUR. Carapace, palps and legs predominantly intensive dark reddish brown; anterior edge and lateral margins of carapace, chelicerae and femora even darker; whole eye tubercle brownish black; sternum, labium, maxillae and leg coxae light coffee brownish coloured, metatarsi and tarsi III–IV brownish orange; abdomen yellowish brown with dark chocolate brown pattern consisting of very broad median longitudinal stripe crossed medially and posteriorly with six wide procurved fasciae, and numerous small and partially fused spots located between them; ventral abdominal surface with darker horse-shoe spot covering genital area; book-lungs paler, light yellowish brown; spinnerets even paler, light yellow.

PROSOMA. Clypeus and eye tubercle as in Fig. 61. Eye diameters and interdistances: AME 0.20(0.29), 0.30, 0.27, 0.22, AME–AME 0.23(0.13), ALE–AME 0.23(0.19), ALE–PLE 0.14, PLE–PME 0.02, PME–PME 0.49. Cheliceral rastellum composed of 15–20 stout bristles lacking tips and located in front of fang base and on low mound. Cheliceral furrow with 6 promarginal teeth and 9–10 smaller retromarginal teeth each. Sternum, labium and maxillae as shown in Fig. 103. Sternal sigilla small,

posterior pair broadly oval and located distantly from sternal margin. Each maxilla with 11–12 cuspules confined to probasal maxillary edge.

SPINATION. Palp: femur d3, pd1; patella p1; tibia d1, p3, r1, v1+ca 20 stout bristles; tarsus d5–6. Leg I: femur d4, pd2; tibia p2, v6–7+m; metatarsus v5. Leg II: femur d4, pd2, rd1; patella p1; tibia p3, v8–9; metatarsus p1, v8. Leg III: femur d4, pd3, rd3–4; patella p2, r1; tibia d1, p3, r3, v7; metatarsus pd5, p5, r3, v9–11; tarsus p3. Leg IV: femur d4, p3, r3; patella r1; tibia r3, v9; metatarsus pd1, p2, r3, v13–15; tarsus pv9–10, r2. Patella I, tarsi I and II aspinose.

LEGS. Tibia and metatarsus I as shown in Fig. 132. Scopula entire and distal on metatarsi I and II, very narrowly divided on tarsi I and II, widely divided on tarsi III, absent on tarsi IV. Trichobothria: 2 rows of 9–11 each on tibiae; 10–12 on metatarsi; 16 on tarsi I and II; 13 on tarsi III and IV, 9–10 on cymbium. PTC I–II with 7 teeth on each margin; PTC III–IV with 7 teeth on outer and 6 teeth on inner margins.

PALP. Tibia, cymbium and palpal organ as in Figs 187, 220–221, 223. Tibia cylindrical with numerous thick ventral bristles (Fig. 187). Embolus tapering, slightly curved, embolic tip with small membranous keel (Figs 220–221, 223).

SPINNERETS. See Fig. 289. PMS: length 0.51, diameter 0.22. PLS: maximal diameter 0.53; length of basal, medial and apical segments 0.90, 0.65, 0.83; total length 2.38; apical segment shortly digitiform.

LEG MEASUREMENTS. ♂(♀)

	Femur	Patella	Tibia	Metatarsus	Tarsus	Total
Palp	4.14 (4.84)	2.13 (2.54)	3.48 (3.07)	–	1.57 (2.90)	11.32 (13.35)
Leg I	6.87 (6.82)	3.41 (3.37)	4.94 (4.17)	4.87 (4.04)	3.07 (2.67)	23.16 (21.07)
Leg II	6.16 (5.44)	3.04 (3.15)	4.28 (3.68)	4.44 (3.43)	2.95 (2.48)	20.87 (18.18)
Leg III	5.13 (4.87)	2.26 (2.74)	3.21 (3.53)	4.25 (3.24)	2.93 (2.47)	17.78 (16.85)
Leg IV	6.33 (5.84)	2.86 (3.39)	5.29 (4.42)	5.63 (4.41)	3.24 (2.86)	23.35 (20.92)

Female (paratype, Varzob canyon)

HABITUS. See Fig. 26.

MEASUREMENTS. TBL 22.30, CL 8.55, CW 7.32, LL 1.12, LW 1.82, SL 4.70, SW 4.11.

COLOUR. Similar to that of male, but carapace and leg more intensive reddish coloured; dark brown dorsal abdominal pattern is even better developed; ventral brownish yellow surface of abdomen with numerous dense and tiny brown spots located irregularly between last pair of book lings to spinnerets.

PROSOMA. Clypeus and eye tubercle as in Fig. 76. Eye diameters and interdistances: AME 0.21(0.30), ALE 0.38, PLE 0.28, PME 0.19, AME–AME 0.24(0.19), ALE–AME 0.25(0.20), ALE–PLE 0.21, PLE–PME 0.15, PME–PME 0.56. Cheliceral rastellum composed of numerous spikes located in front of fang base and on low mound. Each cheliceral furrow with 7–8 promarginal teeth and 9–13 smaller retrolateral teeth (as in Fig. 87). Sternum, labium and maxillae as shown in Fig. 115. Sternal sigilla small, posterior pair broadly oval and located distantly from sternal margin. Maxillae with 10–11 cuspules each.

LEGS. Scopula entire and distal on metatarsi I and II, entire on palpal tarsus, very narrowly divided on tarsi I and II, elsewhere absent. Trichobothria: 2 rows of 8–9 each on tibiae; 15–18 on metatarsi; 12–17 on tarsi. Palpal claw with 4 promarginal teeth. PTC I–II with 5–6 teeth on outer and 4–5 teeth on inner margins; PTC III with 4–5 and 2–3; PTC IV with 3–4 and 1–2 teeth, respectively.

SPINATION. Palp: femur pd1; patella p1; tibia p3, v12–14; tarsus v3. Leg I: femur pd1; tibia p3, v6–7; metatarsus v5–7. Leg II: femur pd1; patella p1; tibia p3, v8–9; metatarsus v9–10. Leg III: femur r2; patella p3; tibia p2, v7; metatarsus d1, p3, r3, v9–10; tarsus p2. Leg IV: tibia v7–8; metatarsus p4, v11–12; tarsus pv7–8. All femora with 3–5 long bristles located medially, femora III and IV also with prodorsal and retrodorsal rows of bristles, with 2–3 bristles in each row; patellae I and IV, and tarsi I and II aspinose.

SPERMATHECAE. Entire and mushroom-shaped with wide tapering stalks and rounded receptacles (Fig. 259).

SPINNERETS. See Fig. 290. PMS: length 0.79, diameter 0.48. PLS: maximal diameter 1.02; length of basal, medial and apical segments 1.52, 0.75, 0.97; total length 3.24; apical segment triangular to shortly digitiform.

Variation

The length of the carapace varies from 6.48 to 6.97 in males and from 6.89 to 9.47 in females. The colour varies narrowly from somewhat lighter and more reddish to an even darker brown than that of the holotype. The thoracic fovea are sometimes slightly recurved. Variations in shape, arrangement and structure are shown for the eyes (Figs 61–62, 76–77), the cheliceral furrow (Figs 87–89), the sternum (Figs 115–116), the male tibia and the metatarsus I (Figs 131–132), the male palpal tibia and the cymbium (Figs 186–187), the palpal organ (Figs 220–223), and the spermathecae (Figs 258–265). The number of maxillary cuspules ranges from 10 to 14.

Habitat

Anemesia infuscata sp. nov. seems to be the most mesophilic congener inhabiting shrubby and forested slopes between 1000 and 2300 m (Figs 324–329).

Distribution

Tajikistan. See Fig. 373.

Notes

Some illustrations of *Anemesia infuscata* sp. nov. are based on the additional paratype specimens; these include the images showing variations (see above) and photos of live spiders presented in Figs 38–41 and 45–47.

Data on natural history

Burrows

All known species of *Anemesia*, living mostly in large colonies, build open burrows lacking the wafer-lid or trap-door (see Figs 330–367). The length of the burrows generally varies from 25 to 40 cm (Andreeva 1968 and own data), although in some populations of *A. tubifex* inhabiting the sandy desert biotopes, it can reach 60 cm in length. In adult congeners the diameter of the burrow entrance, always with a raised rim, ranges from 0.5 to 1.5 cm. In *A. incana* this rim is more developed and resembles a tower-like or mushroom-like surface soil turret 2–3 cm in height and 1.5–4 cm in diameter (Figs 340–344). The entrance leads to a narrow burrow neck which then becomes wider; this dilated burrow section, lined by silk, ends with a wide living chamber (Figs 362–367). A variant of the general form is observed in *A. oxiana* sp. nov., in which the burrow is provided with a lateral chamber, either ending with an additional entrance located close to the main one (Fig. 332), or blind and closely reaching the soil surface.

Phenology

Data on the phenology of the congeners are sparse and based completely on fragmentary field observations. The collecting data indicate that the wandering adult males of *Anemesia* occur in March–April in lowland localities at 200–1300 m and from mid-April to at least the end of May in midland localities at 1300–2300 m. Females with egg sacs containing 30–40 eggs were found only in October (*A. infuscata* sp. nov.). They have never been observed during the spring months, despite intensive collecting.

Feeding

Several burrows built by adult *Anemesia* females (11 burrows of *A. karatauvi* and 45 burrows of *A. incana*) were examined to reveal the character of the prey remains accumulated at the burrow bottom. Almost all these burrows, with minor exceptions, contained fragments (the head capsules, parts of the legs, the separate thoracic and abdominal sclerites) of the carpophagous foraging ants belonging to two species of *Messor* Forel, 1890: *M. inermis* Kuznetsov-Ugamsky, 1929 and *M. structor* (Latreille, 1798).

Other arthropod remains

These were represented in one to six samples, when found. Most of them belonged to the following representatives of the Coleoptera Linnaeus, 1758: Carabidae Latreille, 1802: *Poecilus liosomus* Chaudoir, 1876 and *Pterostichus medvedevi* Kryzhanovskij & Mikhailov, 1972; Chrysomelidae Latreille, 1802: *Chrysolina sacorum* (Weise, 1890) and *Entomoscelis adonidis* (Pallas, 1771); Curculionidae Latreille, 1802: *Lixus* sp.; Elateridae Leach, 1815: one unidentified species; Scarabaeidae Latreille, 1802: *Tropinota turanica* Reitter, 1889, *Madotrogus* sp. aff. *ferganensis* Protzenko, 1962), *Euonthophagus* sp. aff. *amyntas* (Olivier, 1789) and one unidentified representative of the Melolonthinae Samouelle, 1819; Tenebrionidae Latreille, 1802: *Stalagmoptera* sp. A few other remains belonged to ants of the genera *Cataglyphis* Förster, 1850 and *Camponotus* Mayr, 1861 (Hymenoptera Linnaeus, 1758: Formicidae Latreille, 1809, and to the terrestrial crustaceans of the genera *Hemilepistus* Budde-Lund, 1879 and *Protracheoniscus* Verhoeff, 1917 (Isopoda Latreille, 1817: Agnaridae Schmidt, 2003 and Trachelipodidae Strouhal, 1953, respectively).

Predators

Data on the predators feeding on *Anemesia* spp. are currently known only for a few taxa of the spider wasps (Hymenoptera: Pompilidae Latreille, 1804). The pompilids preying on *Anemesia* spp. belong to the genera *Pareiocurgus* Haupt, 1962 (Pompilinae Latreille, 1804) and *Claveliocnemis* Wolf, 1968 (Pepsinae Lepeletier, 1845). *Pareiocurgus bactriacus* Wolf, 1968 in Turkmenistan and *P. latigena* (F. Morawitz, 1893) in Uzbekistan and Tajikistan feed on different burrowing spiders, including representatives of *Anemesia* (Zonstein 2000), whereas all three known species of *Claveliocnemis* – *C. incisipennis* Wolf, 1968, *C. brachypteris* (Gussakovskij, 1935) and *C. alata* Zonstein, 2007 – are specialized predators feeding only on these cyrtaucheniids (Zonstein 2001, 2007).

Misidentified material

Raveniola sp. aff. *concolor* Zonstein, 2000

Anemesia tubifex – Denis 1958: 82 (♀). Misidentified.

Material examined

AFGHANISTAN: 1 ♀, Koh-i-Baba Mts, Tarapas, 3200 m, 23 Jul. 1948, N. Haarløv leg. (NHMD); 6 ♀♀, same ridge, Puistangoli, 3000–3400 m, 1 Aug. 1948, N. Haarløv leg. (NHMD); 5 ♀♀, same ridge, Sar-i-Djedjaghana, 3000–3400 m, 8 Aug. 1948, N. Haarløv leg. (NHMD).

Notes

The re-examination of these specimens, identified by Denis (1958) as *Anemesia tubifex*, shows that they actually represent an undescribed alpine species of the nemesiid *Raveniola* Zonstein, 1987, closely related to *R. concolor* from the highlands of northern India. The characters missed by Denis (a short and wide labium, a broadly rounded sternum, a fairly rounded and submarginal posterior pair of the sternal sigilla, the characteristic divided spermathecae, as well as many less significant features) contradict his identification and confirm the given re-assignment. The species is planned to be described in a revision of Central Asian *Raveniola* spp. (Zonstein, in prep.).

Discussion

Introductory notes

In this review *Anemesia* has been compared with the putatively related genera of the Cyrtaucheniidae, the related family Euctenizidae, and the similarly looking members of two subfamilies of the Nemesiidae: Nemesiinae s. str. (without *Raveniola*, tentatively included in this subfamily for want of a better assignment), and Bemmerinae. Several characters of other nemesiids have also been included. The Bemmerinae are considered here without *Pionothele* Purcell, 1902 which was tentatively included in this subfamily by Raven (1985). Prior to 1985, all these taxa were considered as members of the same family, Ctenizidae s. lat. Raven (1985) elevated the earlier tribes of Simon, Cyrtaucheniinae and Nemesiinae, to family rank, Bemmerinae to the subfamily of the Nemesiidae, and established the Euctenizinae as a new cyrtaucheniid subfamily. Bond *et al.* (2012b) raised the latter taxon to family rank. Currently, the monophyletic status of both Cyrtaucheniidae and Nemesiidae is debated (Goloboff 1993; Bond & Opel 2002; Hedin & Bond 2006; Bond *et al.* 2012b; Garrison *et al.* 2016; Wheeler *et al.* 2017). These families are expected to be radically revised in the near future. Therefore, all the obtained data and results listed below should be considered as approximate and preliminary.

Characters

CARAPACE. In species of *Anemesia*, as well as generally in *Nemesia* and other nemesiid genera, a posterior portion of the carapace is broadly and gradually rounded or only slightly constricted (Figs 1–26, 42–47; cf. Decae *et al.* 2015: fig. 4A, C, E). By contrast, the common trend observed in the members of Cyrtaucheniidae and Euctenizidae is that the posterior half of the carapace is narrowed and constricted laterally, as shown in Fig. 374 (Buchli 1966: figs 21, 28; Raven 1985: figs 192, 197, 213; Bond *et al.* 2012a: figs 3–4, 10–11; Bond & Godwin 2013: figs 2, 23–24, 37, 58; Decae *et al.* 2014: figs 3A–I, 4A–C, 8–9; Decae & Bosmans 2014: figs 2–5). Exceptions are found in the cyrtaucheniid genera *Bolostromoides* Schiapelli & Gerschman, 1945, *Angka* Raven & Schwendinger, 1995 and *Fufius* Simon, 1888, where this part of the carapace is broadly rounded or only slightly constricted (Schiapelli & Gerschman 1945: pl. II; Raven & Schwendinger 1995: fig. 6A; Ortega *et al.* 2013: figs 7, 10, 12, 21, 25, 32, 35, 42, 44). An opposite situation can be observed within the Nemesiidae, where a weak posterior constriction of a generally rounded carapace occurs in some species (see Figs 381–382). In view of all the above, a posteriorly rounded carapace in *Anemesia* seems to be a low-value character which cannot be used to clarify the possible relationships between this genus and any representatives of the above-mentioned groups.

CLYPEUS. The anteriorly protruded clypeus is shared by almost all *Anemesia* spp.; this character seems less developed in males than in the conspecific females (see Figs 48–77). It does not represent, however, the unique feature of this genus since a somewhat similar though less pronounced clypeus is observed in some *Eucteniza* Ausserer, 1875 (Euctenizidae) (Bond & Godwin 2013: figs 2, 23; Valdez-Mondragón & Cortez-Roldán 2016: fig. 47). Other euctenizids (possibly except *Apomastus* Bond & Opel, 2002; see Bond 2004: fig. 5a), most genera of Cyrtaucheniidae (save *Anemesia* and some *Ancylotrypa* Simon, 1889) and the majority of nemesiids lack a pronounced clypeus (see Raven 1985). Curiously, *Raveniola*

spp., taxonomically distant from species of *Anemesia* but often inhabiting the same biotopes in Central Asia, also possess a protruded clypeus (Zonstein 2009: fig. 2; Zonstein *et al.* 2018: figs 102–128).

THORACIC FOVEA. In *Anemesia* the thoracic fovea appears mostly straight or varies from slightly procurved to weakly recurved. It thus differs from the recurved fovea characteristic for the majority of the nemesiine genera and some cyrtaucheniids (most species of *Fufius*), as well as from a well-cambered procurved fovea known for the most genera of Cyrtaucheniidae, Euctenizidae and bemmerine nemesiids (see Raven 1985, 1987; Bond & Opel 2002; Decae & Cardoso 2006; Ortega *et al.* 2013; Siliwal *et al.* 2015). Since cyrtaucheniid *Angka* also possess a weakly modified (slightly procurved) thoracic fovea (Fig. 380; Raven & Schwendinger 1995, fig. 6A), this feature in principle might be considered a character grouping the genus with *Anemesia*.

CHELICERAL TEETH. Most Cyrtaucheniidae, Euctenizidae, and Nemesiidae possess the cheliceral furrow with normally developed teeth set only on the promargin, while the opposite retromarginal or median row is shortened and represented by small to tiny denticles often restricted to a patch (like those shown in Figs 385–387, 390–391, 393–395). However, *Eucteniza* (Euctenizidae), *Homostola* Simon, 1892 (Cyrtaucheniidae), and at least one species of *Spiroctenus* Simon, 1889 (Nemesiidae) possess a second, retromarginal row of smaller teeth sometimes interspersed with denticles (Raven 1985; Bond & Opel 2002; Dippenaar-Schoeman 2002, 2014; Bond & Godwin 2013; Valdez-Mondragón & Cortez-Roldán 2016: figs 47–48; see also Figs 388–389, 392). It should be noted that this second row differs in shape from the true retromarginal teeth series known for the Ctenizidae and their closest affinities (see Fig. 384). In some species of *Anemesia* the retromarginal teeth row resembles similar structures in *Homostola* more than the mesobasal denticles in most taxa of Cyrtaucheniidae and Nemesiidae (Figs 78, 83–84, 86–88, 378–379; cf. Figs 386–387, 390–391, 393–395), that might serve as an argument to group the mentioned genera. In males of *Anemesia* spp. this retromarginal row is always shorter and composed of smaller teeth than in conspecific females (see Figs 85, 89; cf. Figs 84, 87–88). This fact can be regarded as a weighty argument in favour of the assumption that in other congeners, possessing fewer retromarginal teeth (Figs 79–82), the second row has become reduced.

LEGS I–IV. Within *Anemesia*, the female legs I–IV are generally equal in width; while in *A. andreevae* sp. nov. legs III–IV are slightly stouter than legs I–II (Fig. 18). In most members of Cyrtaucheniidae and Euctenizidae the legs III–IV in females, and often in the conspecific males, are thicker than legs I–II (as shown in Figs 374, 376; Raven 1995: figs 192, 197, 213; Bond & Godwin 2013: figs 2–7, 23; Decae & Bosmans 2014: figs 4–5). However, in *Bolostromoides*, *Angka*, *Fufius* and some *Homostola* legs III–IV are similar to legs I–II in width or only slightly exceed them (see Schiapelli & Gerschman 1945: pl. II; Raven & Schwendinger 1985: fig. 2A; Dippenaar-Schoeman 2002: fig. 22; Ortega *et al.* 2013: fig. 44). The same is true for *Acontius* Karsch, 1879 and some species of *Ancylotrypa* Simon, 1889 (as shown in Figs 375, 377–378). Among members of the Nemesiinae all legs are similarly slender (as shown in Fig. 381; Decae *et al.* 2015: figs 2–3, 10; Leavitt *et al.* 2015: fig. 4). Regarding the Bemmerinae, legs III–IV are not modified in *Damarchus* Thorell, 1891 (Zonstein & Marusik 2014: fig. 7) and *Spiroctenus* (Dippenaar-Schoeman 2002: fig. 57). However, in *Atmetochilus* Simon, 1887 they may be almost unmodified in some species (Simon 1892: fig. 73) and slightly thicker in other congeners (Zonstein & Marusik 2016: fig. 2b, e). Therefore, in relation to *Anemesia* this character has a particular significance; it can neither confirm, nor disprove the current assignment of this genus.

LEG MICROSTRUCTURES. Among the surveyed taxa, the trichobothrial bases seem to be almost uniformly corrugated and thus very similar in representatives of all three considered families (Figs 158–159, 161, 163, 165–166, 169, 171, 396, 399, 403, 405; Raven 1983: pl. II, figs 1, 4; Raven & Schwendinger 1995: figs 4B, 5A–D; Bond 2012: fig. 43). However, the structure of a lingulate TO in *Anemesia* spp. (Figs 160, 162, 164, 167–168, 170, 172) seems to be similar to the comparably flattened TO of the

cyrtaucheniids *Acontius*, *Ancylotrypa*, *Cyrtauchenius* Thorell, 1869 (Figs 397, 400, 402, respectively) and *Rhytidicolus* (Goloboff 1993: fig. 7), as well as for the euctenizid *Aptostichus* (Bond 2012: figs 42, 63). It appears equally dissimilar to the domed TO of *Nemesia* (Fig. 407) and to the craterous TO of the nemesiid *Entypesa* Simon, 1902 (Fig. 403). Unfortunately, the scarcity of the corresponding data (structure of the tarsal organ and the trichobothrial bases remains unknown for most cyrtaucheniids and euctenizids) makes these characters limited in value when being used in relation to *Anemesia* spp.

SPERMATHECAE. Raven (1985) listed the multilobate spermathecae (which have been found in several species of *Anemesia*) among the diagnostic characters of the Cyrtaucheniidae. This feature may have a limited taxonomic significance because the multi-branched spermathecae have been recently described also for some nemesiids (see Goloboff 1995: figs 66E, 68, 71, 74A; Ferretti & Pompozzi 2016: fig. 10). Within the latter family, however, both the Bemmerinae and Nemesiinae possess entire or sometimes divided, but never multilobate, spermathecae (Raven 1985: fig. 54, 1987: fig. 8; Lazarov 2005: fig. 5; Decae & Cardoso 2006: figs 15–16; Decae 2012: fig. 2Da–Fd; Zonstein & Marusik 2014: figs 14–15, 2016, fig. 12a–d). Among the genera of Cyrtaucheniidae the entire and multilobate spermathecae can occur within a pair of the related genera, or even within the same genus. The members of *Cyrtauchenius* possess the spermathecae either entire or branched; while in *Amblyocarenum* Simon, 1892 they are only integral (Raven 1985; Decae *et al.* 2014: fig. 7A–E; Decae & Bosmans 2014: figs 18–19). For some genera of Cyrtaucheniidae, however, the structure of the vulva still remains either unknown or known and shown only for single species (Raven 1985: figs 201, 208; Rudloff 1996: fig. 5). Regarding *Anemesia*, the pronounced differences in shape of the spermathecae may be considered a criterion for clustering congeners into the well-defined species groups, as it has been shown for the nemesiid *Raveniola* (see Zonstein *et al.* 2018).

SPINNERETS. AS in some nemesiids and almost all euctenizids (see Murphy & Roberts 2015: pls 14, 23–24), the species of *Anemesia* possess only AC spigots, evenly distributed on the ventral side of PLS (all three segments) and clustered on one of the PMS apex (Figs 291–305). Meanwhile, the Cyrtaucheniidae, as well as representatives of the Nemesiinae (the situation in the Bemmerinae still remains unknown) possess also a few MAC spigots mixed with more numerous ACs (Figs 398, 408–409; Murphy & Roberts 2015: pls 10–11, 25). The full absence of MAC spigots can thus be potentially considered a feature shared by *Anemesia* and Euctenizidae and concurrently, as a character distinguishing this genus from Cyrtaucheniidae. However, contrary to Murphy & Roberts (2015), within the former family at least *Eucteniza* possesses a few spigots certainly belonging to the MAC type (see Bond & Opel 2002: fig. 4D). Additionally, *Anemesia* spp. also lack the inflated-base spigot type known for the anamine nemesiids (Goloboff 1995: figs 48–49, 56), cyrtaucheniids *Acontius* and *Cyrtauchenius* (Bond & Opel 2002: fig. 3D; Decae & Bosmans 2014: fig. 6a), and euctenizids *Neoapachella* Bond & Opel, 2002 and *Eucteniza* (Bond & Opel 2002: fig. 3E–F). Since the latter spigot type seems to be missing also in many nemesiids, and in some cyrtaucheniids and euctenizids (see Goloboff 1995; Bond 2012: fig. 65; Decae & Bosmans 2014: fig. 7a), its taxonomic significance in relation to *Anemesia* spp. seems to be vastly limited.

BURROW CONSTRUCTION. Among the genera of Cyrtaucheniidae, burrow entrances are usually protected with wafer-lids in *Ancylotrypa* and *Homostola* (Dippenaar-Schoeman 2002). The same is true for species of *Amblyocarenum* Simon, 1892 (see Buchli 1966: figs 34–35; Decae *et al.* 2014: figs 12A–D, 13). Within *Cyrtauchenius* Thorell, 1869, most species construct wafer-lids, while a few of them, e.g., *C. inops* (Simon, 1889) build open burrows extending into the elevated surface turrets (Simon 1889: pl. XII, fig. 5). According to Raven & Schwendinger (1995), females of *Angka hexops* in captivity can build a short simple burrow almost completely lacking any silk-lining. The South American *Bolostromoides* builds burrows with an open entrance lacking any protection (Vellard 1945). An open burrow was also described for at least one species of *Acontius* (Blandin & Célérier 1977). According to the known

data on the life history of the Nemesiinae, the spiders belonging to *Nemesia* and *Iberesia* close their burrows with trap doors or wafer-lids (Decae 1996: fig. 2a–j, 2005: figs 68–82), whereas members of *Brachythele* and *Calisoga* build burrows with an unprotected entrance (see Smith 1908; Decae 1996: fig. 1e; Thaler & Knoflach 2001). Regarding the Asian nemesiid genera belonging to the Bemmerinae, *Damarchus* Thorell, 1891 and *Damarchulus* Siliwal, Molur & Raven, 2015 build open burrows provided with an entrance turret (Abraham 1924; Siliwal *et al.* 2015); the character of burrows in *Atmetochilus* Simon, 1887 remains unknown. In South African *Spiroctenus* Simon, 1889 the burrows demonstrate a wide array of constructions which may be entire, chambered, with or without trap doors, lids and turrets (Dippenaar-Schoeman 2002: table 6). Among the above-listed variations, a great number of burrow variants used by *Anemesia* spp. resemble the similar open tower constructions of some South African cyrtaucheniids (Dippenaar-Schoeman 2014: text-figure on p. 386; cf. Figs 330–361).

Relationships

As noted earlier (Zonstein 2001), females of *Anemesia* spp. possess several characters listed by Raven (1985), as indicative for the family Cyrtaucheniidae: (1) the carapace glabrous or only slightly hirsute; (2) an incomplete biserial dentition of PTC III and IV; (3) the characteristic comb of spines on the prodistal edge of femur IV; (4) the multilobate spermathecae (at least in some species); (5) the leg tarsi with few to numerous spines, and tarsi I–II with fewer (if any) spines than tarsi III–IV. Some exceptions include a hirsute carapace in some species of *Cyrtauchenius*, the aspinose leg tarsi I–IV, and the biserially and multidentate PTC III–IV in some Apoptichinae (*Op. cit.*). Nevertheless, the placing of *Anemesia* in the Cyrtaucheniidae is problematic.

Superficially, *Anemesia* resembles the apoptichine genera. It differs, however, significantly in the structure of the chelicerae, labium, sternum and sigilla which makes a close relationship between these groups improbable. Regarding other cyrtaucheniid genera, the situation looks less obvious. *Amblyocarenum*, *Cyrtauchenius* and *Ancylotrypa* share with *Anemesia* the anteriorly narrowed sternum, with the posterior pair of sigilla located relatively far apart the sternal edge, and lack of the metatarsal preening combs (entirely or in some species). Even so, in comparison with *Anemesia*, these genera possess a more elevated cephalic portion of the posteriorly narrowed carapace, a predominantly procurved thoracic fovea, the distinctly thickened female legs III–IV, and a considerably better developed cheliceral rastellum (Figs 374, 376; Raven 1985: figs 191–205; Dippenaar-Schoeman 2002: fig. 25b–f; Jocqué & Dippenaar-Schoeman 2006: fig. 30e; Decae & Bosmans 2014: figs 2–5, 10–11; Decae *et al.* 2014: figs 3A–I, 4A–C, 10A–B; cf. Figs 1–47, 90–116, 143–146). Hence, the relationships between *Anemesia* and the three above-listed genera do not seem to be close.

Among the remaining cyrtaucheniid genera, the monotypic Asian *Angka* (Cyrtaucheniidae incertae sedis) shares with *Anemesia* some characters such as a retrolateral localisation of megaspines on the male tibia I, the almost uniformly slender legs I–IV lacking the metatarsal preening combs, the maxillae with a deep and rounded heel, a straight thoracic fovea, and a moderately arched cephalic portion of the carapace both in males and females (Raven & Schwendinger 1995: figs 6B, 6E, 6F, 6J, respectively). Concurrently, *Angka* differs from *Anemesia* in having a rounded (as in most nemesiids) sternum with small submarginal sigilla, the aspinose leg tarsi with equally and evenly bipectinate PTC (*op. cit.*, fig. 3D), and tiny PMS. It can also be distinguished from the latter by the absence of an eye tubercle or any developed clypeus, and the apical spine cluster on the female femur IV. No characters demonstrating a common specialisation shared by these genera, except possibly the same type of megaspine localisation, are evident. In other words, despite several characters shared by *Angka* and *Anemesia*, most of them are here considered symplesiomorphic and thus not indicating the close relationship between these genera.

Owing to the presence of the second teeth row, *Anemesia* shows some resemblance to *Homostola*; additional similarity is based on the fact that in the latter genus legs I–II either equal in width to legs

III–IV, or only slightly thicker than the posterior legs, and the congeners appear habitually to resemble *Anemesia* (Bond & Hedin 2006: fig. 1B; Hedin & Bond 2006: fig. 2M). Unfortunately, in this case no male characters could be compared, because all five species of *Homostola* still remain known exclusively from females (information concerning males of *H. zebrina* is based on misidentifications; see Raven 1985). The differences between *Homostola* and *Anemesia* relate mainly to the shape of the thoracic fovea and the apical segment of PLS (mostly procurved and domed in the former genus vs more or less straight and triangular to shortly digitiform in the latter one). Apart from *Anemesia*, members of *Homostola* possess the scarcely toothed PTC I–IV (not only PTC III–IV, as in the former genus), and the metatarsal preening combs on legs III–IV. Within the Cyrtaucheniidae, *Homostola* appears currently to be the least distant genus from *Anemesia*.

The remaining variants can be presented here as follows. The Euctenizidae are strictly distinguishable from *Anemesia* in a great array of parameters, including the family level features listed by Raven (1985), Bond & Opel (2002) and Bond *et al.* (2012b). Unlike *Anemesia*, the genera of Nemesiinae generally have a normally hirsute carapace, a rounded sternum with small submarginal sigilla, unarmed leg tarsi with equally multi-dentate PTC, a shortened male palpal tibia, and predominantly ventral or prolateral megaspines (only males representing the monotypic *Mexentypesa* Raven, 1987 possess a sessile retroventral megaspine; see Raven 1987: fig. 2). The members of Bemmerinae, although they also have the sigilla located distantly from the sternal edge, differ from *Anemesia* in having male PTC with a single S-shaped teeth row, and megaspines located ventrally and/or prolaterally. Thus, until both families, Cyrtaucheniidae and Nemesiidae, are revised and the character polarity is specified for these groups, *Anemesia* could be tentatively considered as a representative of the Cyrtaucheniidae incertae sedis, with the reservation that the genus seems to be more closely related to *Homostola* rather than to other cyrtaucheniid genera.

Biogeography

As a member of the Cyrtaucheniidae, the Central Asian *Anemesia* is isolated geographically from the prime range of this family which covers, according to the World Spider Catalog (2018), Central and South America, the entire African continent and the Western Mediterranean. Hence, the genus appears to be separated from this main family range by a vast area, including the fairly well-studied Eastern Mediterranean, where cyrtaucheniids have not been detected. In relation to *Anemesia*, the geographically closest family members are known from Algeria (*Cyrtauchenius*), mainland Italy, Sardinia and Sicily (*Amblyocarenum*), and Ethiopia (*Ancylotrypa*). Such isolation, however, does not represent anything extraordinary. In comparison with *Anemesia*, the South-East Asian cyrtaucheniid *Angka* appears to be isolated from other genera of this family to a much greater extent.

Biogeographically, the distribution of *Anemesia* is limited to the area of Turkmen-Khorassan and the Turkestan multi-zonal provinces belonging to the arid Sahara-Gobian Region of the Palearctic realm (see Kryzhanovski 1965, 2002). The known range of the genus is thus confined to the north-eastern part of the Turkmen-Horassan biogeographic province (Kopetdag and Piro-pamiz Mts, Badhyz and Karabyl Plateaus) and to the adjoining south-western part of the Turkestan biogeographic province (the western Hissar-Alaj Mts and Afghan-Tajik Depression). Within this range, two centres of species diversity can be currently observed; one in each of the noted provinces, respectively.

The first of these is restricted to the south-western Badhyz, where three of the four known members of *tubifex* species group are sympatric. The second centre of species diversity, even more defined, is located in the territory of the Afghan-Tajik Depression. Regarding the Tajik part of this region, many of the investigated localities are known to host three and some of them (e.g., Ganjina) four sympatric congeners. Three of six species groups and eight of fourteen species of *Anemesia* are represented only here (see Figs 370–373). Outside the mentioned centres and at the range periphery, the genus is

represented by a few sub-allopatric species (in the localities situated closer to the diversity centres, these species, *A. andreevae* sp. nov., *A. birulai* and *A. sogdiana* sp. nov., are sympatric with some other congeners).

Unfortunately, the scarcity of data regarding the spider fauna of Iran and Afghanistan (Logunov & Zamanpoore 2005; Mirshamsi 2005; Logunov 2010) leaves some questions open. It is thus impossible at present to determine whether these two diversity centres are indeed isolated from one another, or whether we are able to see here only the two visible endings of a single invisible arc stretching across the northern face of the Hindu Kush, from Horassan in the west to the Pamirs in the east.

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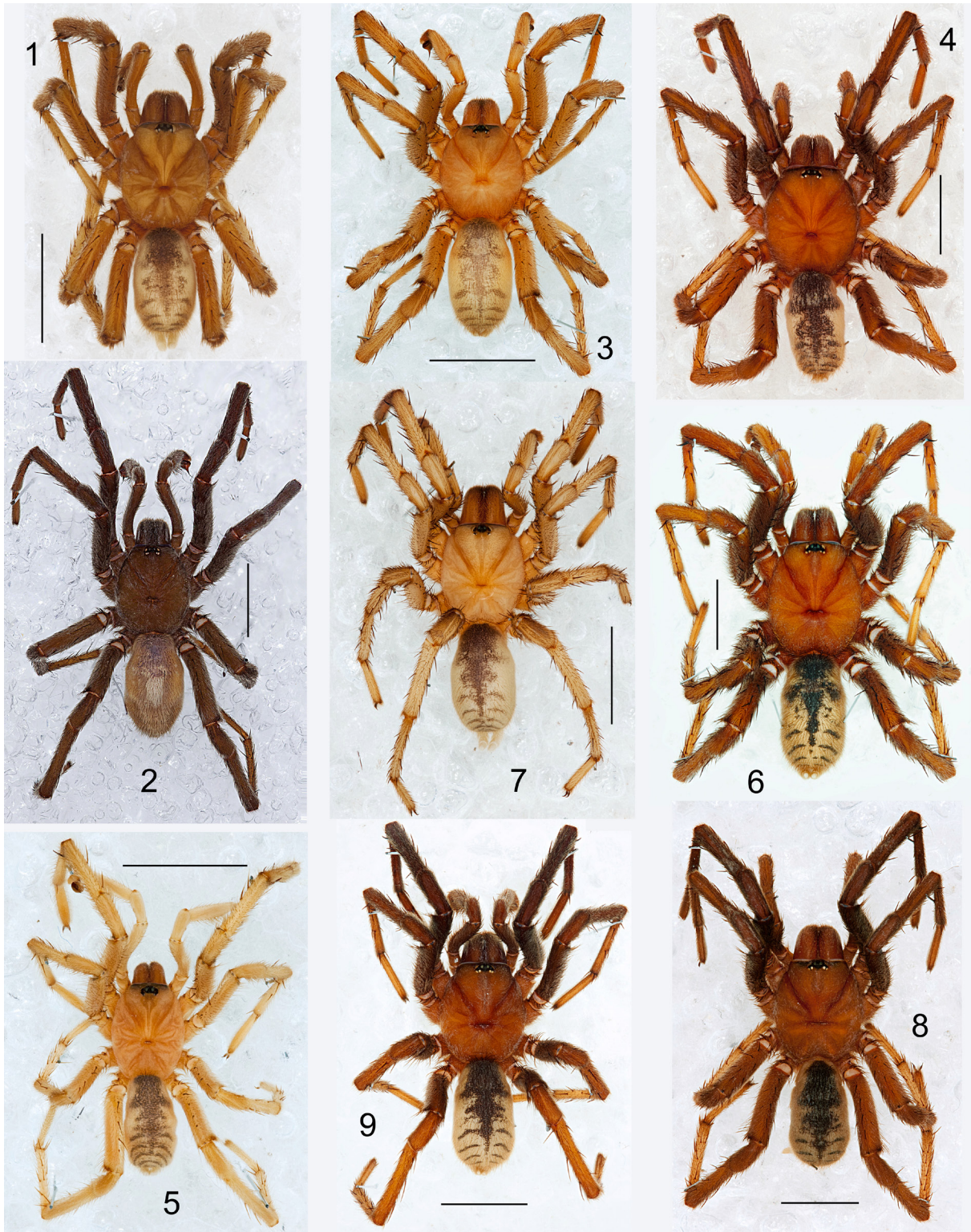
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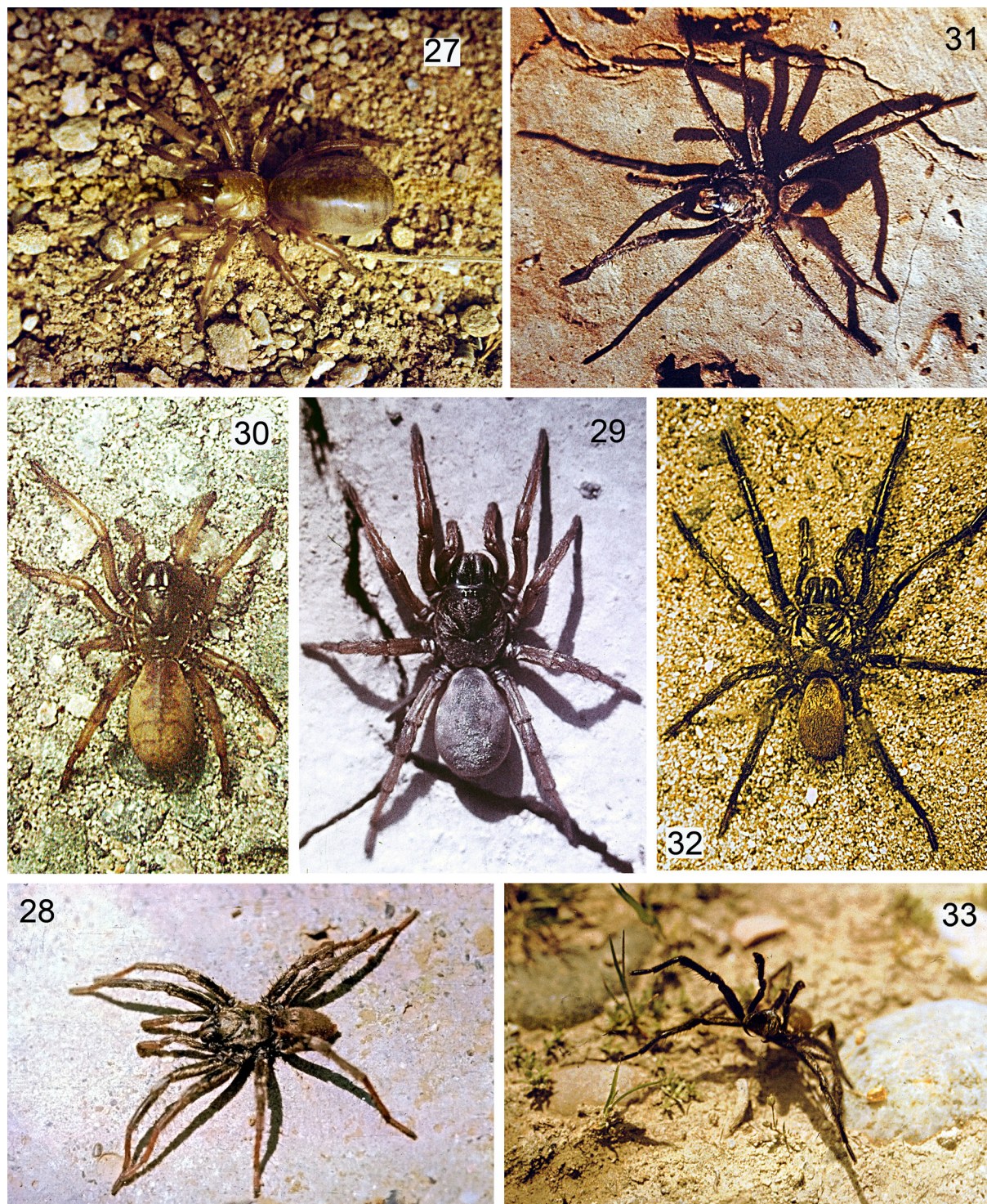
Figs 1–9. *Anemesia* spp., ♂♂, habitus, dorsal views. 1. *A. birulai* (Spassky, 1937). 2. *A. koponeni* Marusik, Zamani & Mirshamsi, 2014. 3. *A. pococki* sp. nov. 4. *A. tubifex* (Pocock, 1889). 5. *A. andreevae* sp. nov. 6. *A. oxiana* sp. nov. 7. *A. sogdiana* sp. nov. 8. *A. castanea* sp. nov. 9. *A. karatauvi* (Andreeva, 1968). Scale bars: 5.0 mm.



Figs 10–17. *Anemesia* spp., ♂♂ (10–14) and ♀♀ (15–17), habitus, dorsal views. **10.** *A. pallida* sp. nov. **11.** *A. parvula* sp. nov. **12.** *A. incana* Zonstein, 2001. **13.** *A. infumata* sp. nov. **14.** *A. infuscata* sp. nov. **15.** *A. birulai* (Spassky, 1937). **16.** *A. pococki* sp. nov. **17.** *A. tubifex* (Pocock, 1889). Scale bars: 5.0 mm.



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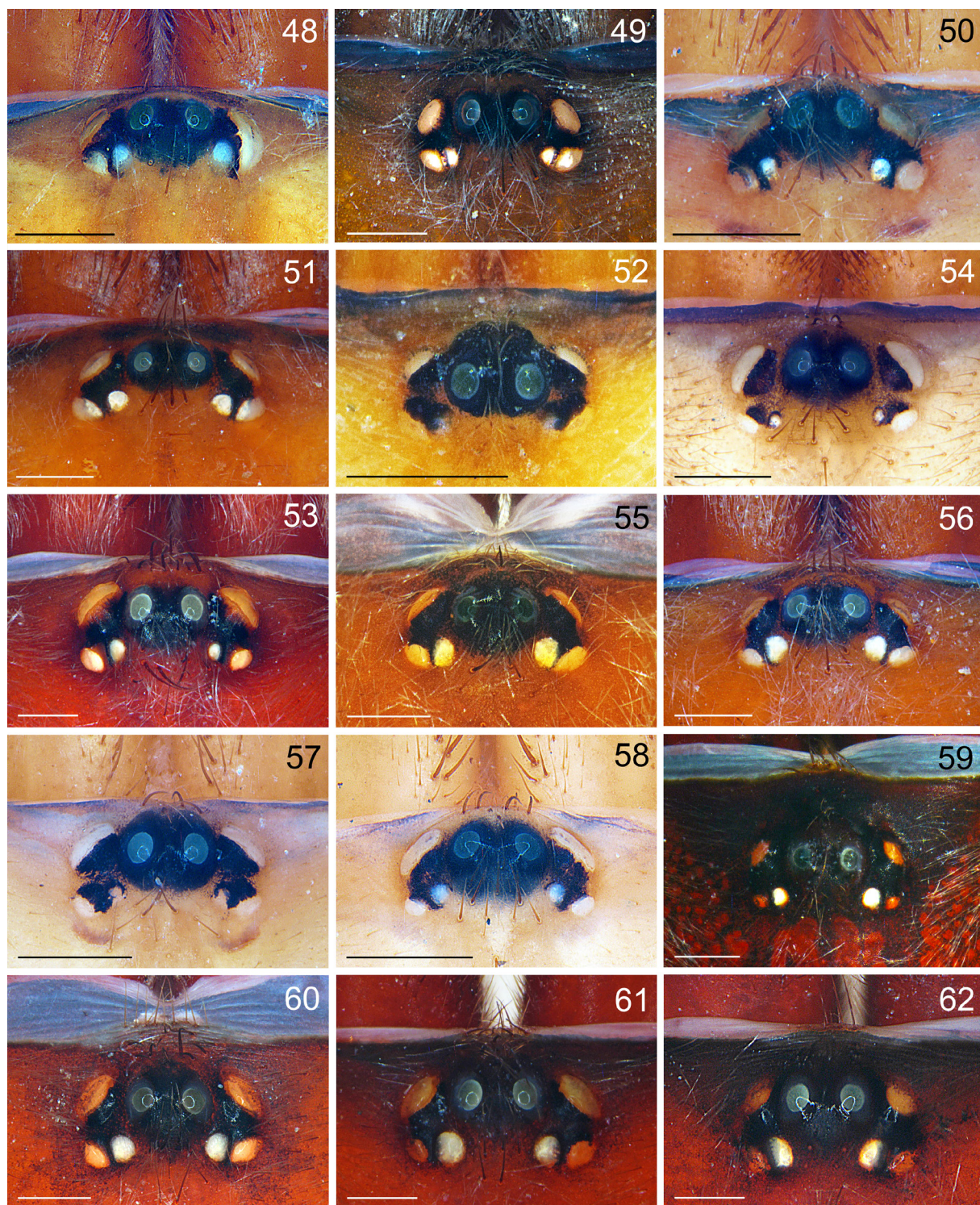
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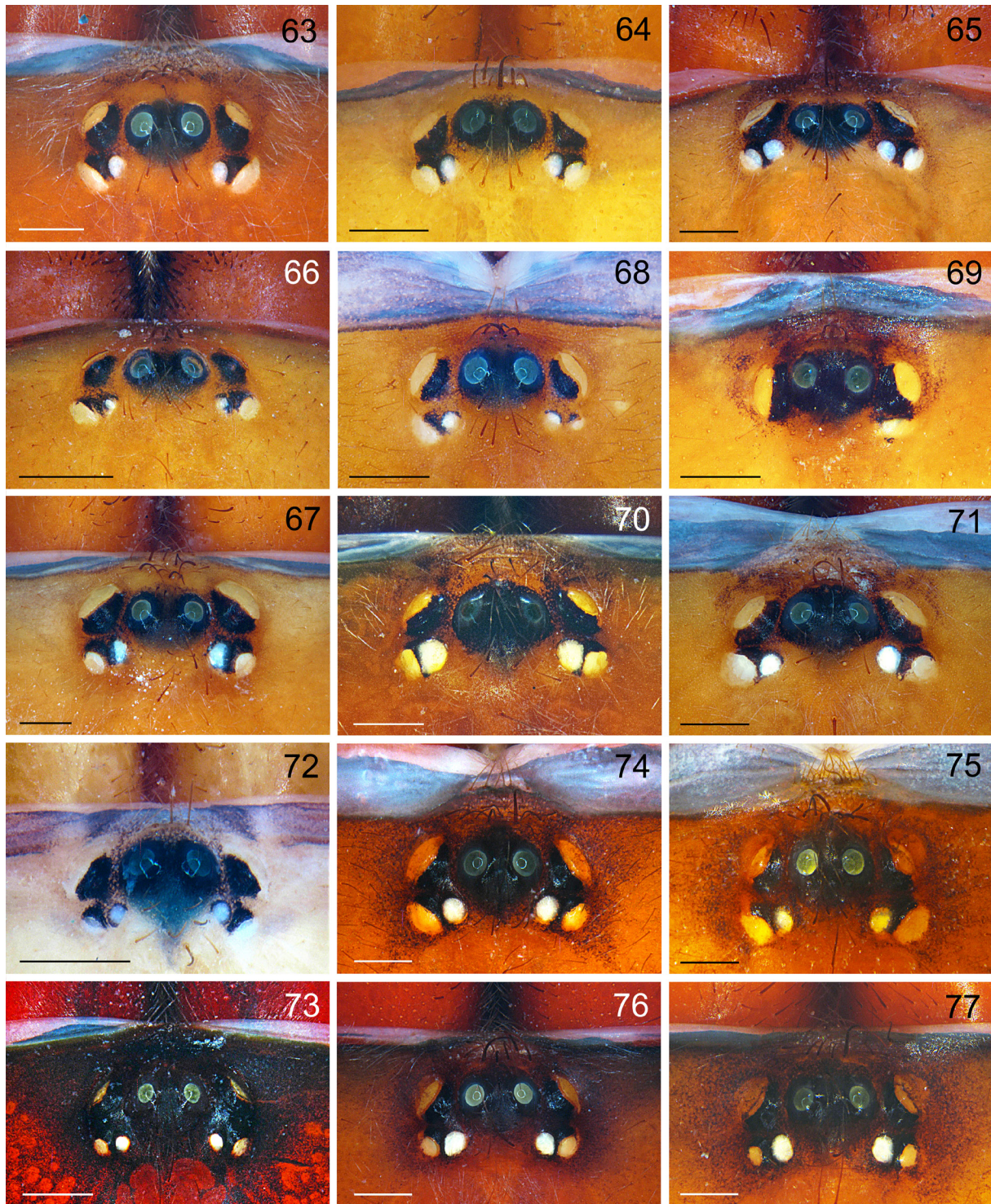
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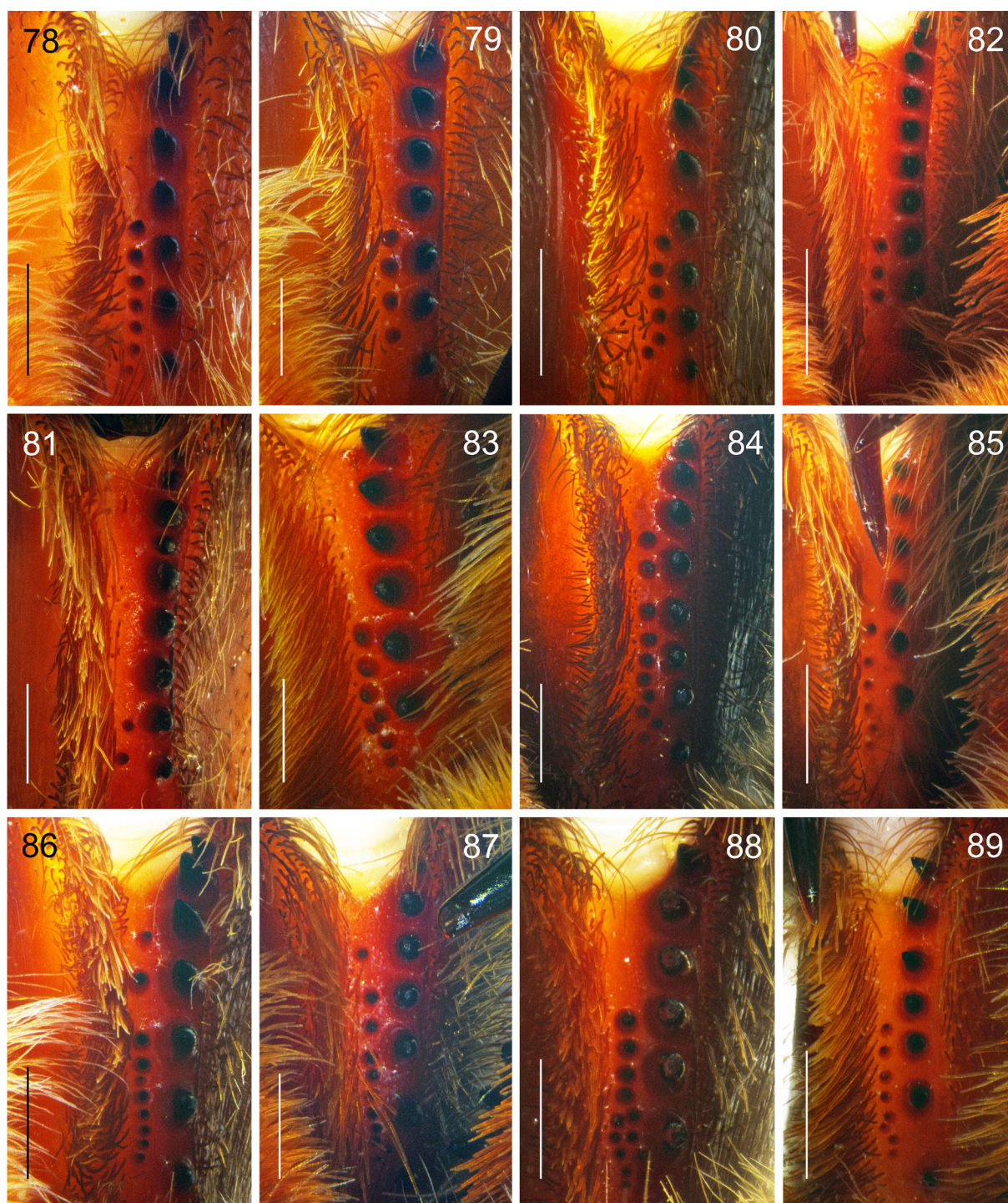
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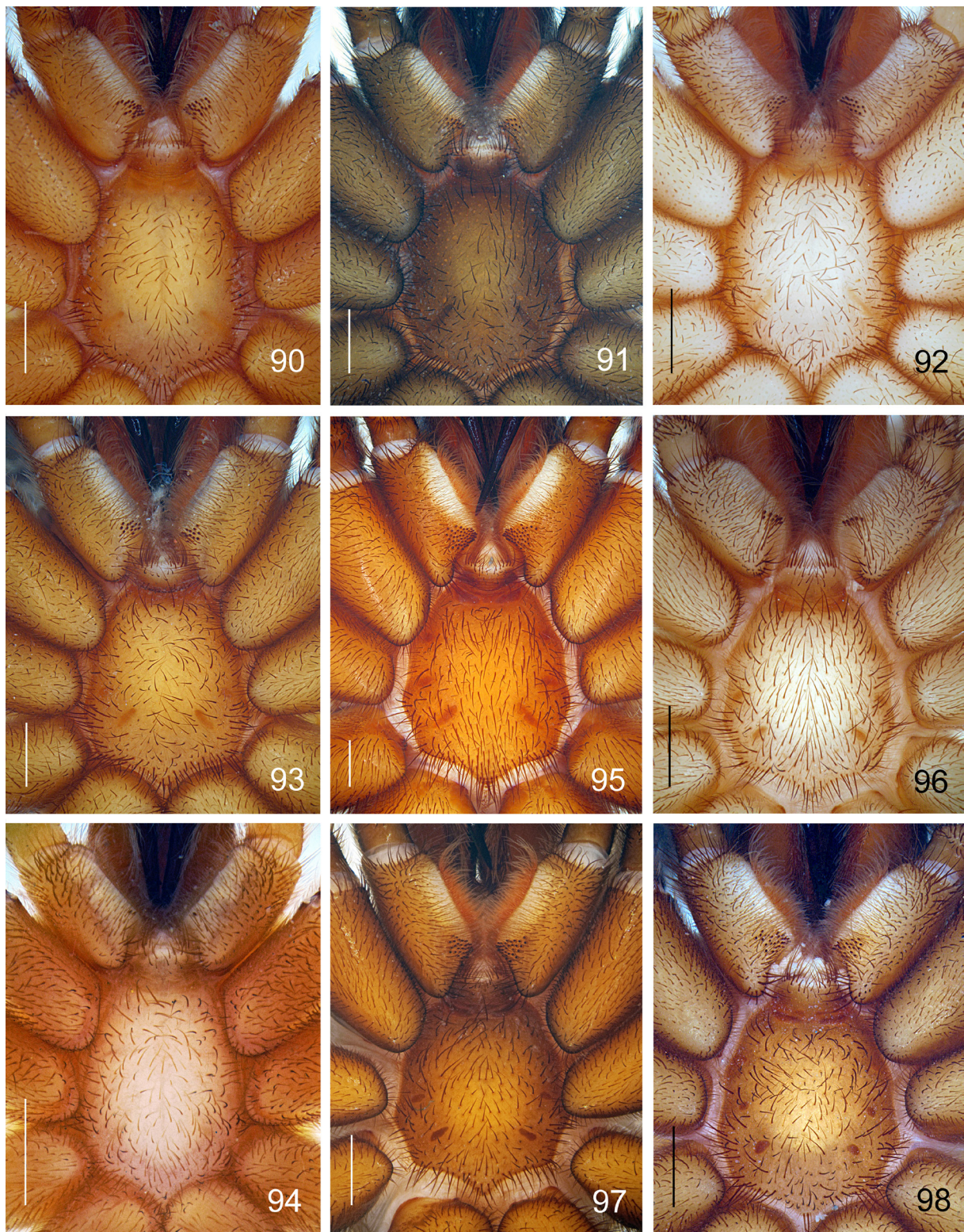
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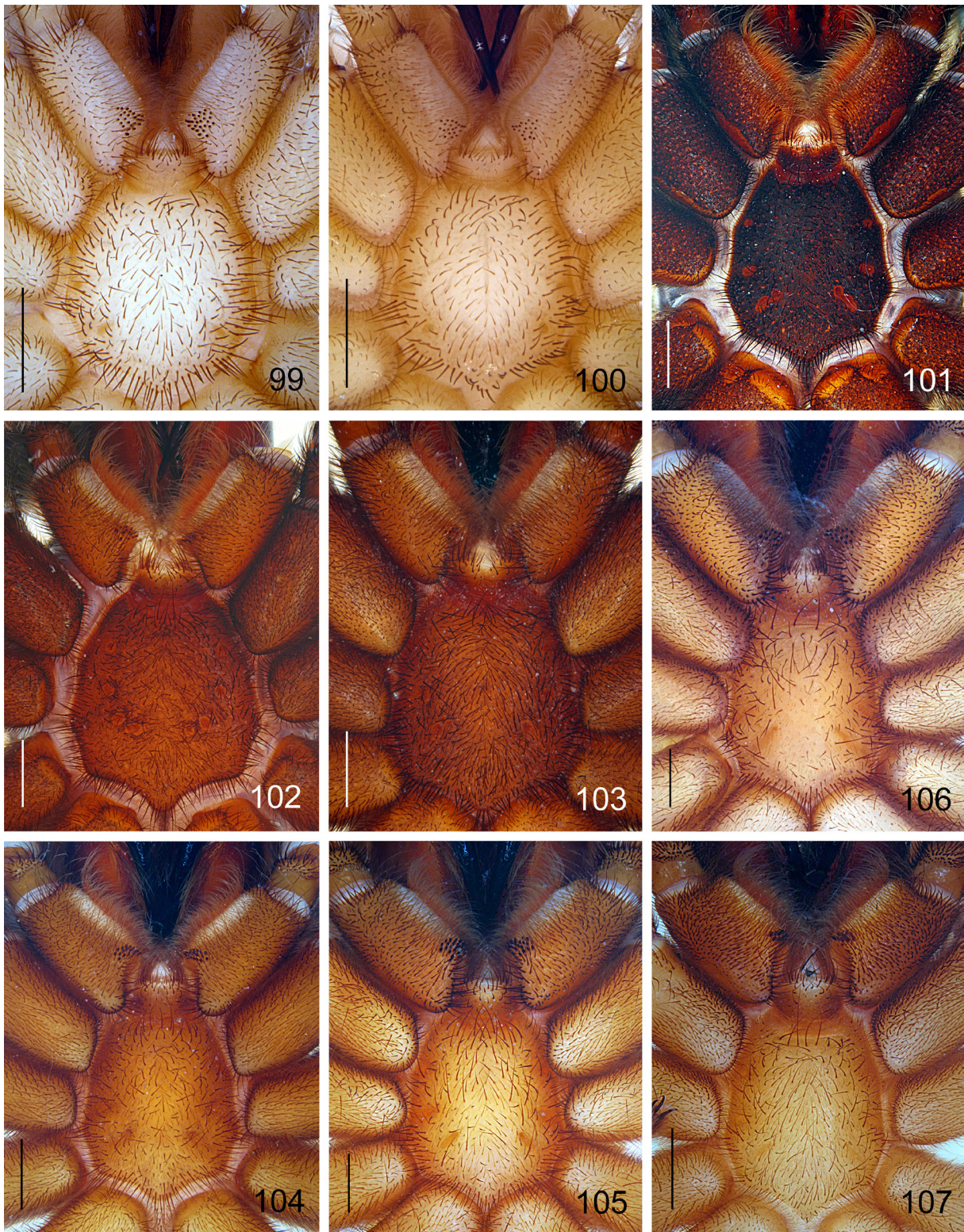
Figs 63–77. *Anemesia* spp., ♀♀, clypeus and eye tubercle, dorsal views. **63.** *A. birulai* (Spassky, 1937) (Kepele). **64.** *A. pococki* sp. nov. (paratype). **65.** *A. tubifex* (Pocock, 1889) (Kalaimor). **66.** *A. andreevae* sp. nov. (paratype, Babatag Mts). **67.** *A. oxiana* sp. nov. (paratype, Hojamaston). **68.** *A. sogdiana* sp. nov. (paratype, Amankutan Pass). **69.** Same (Baglydara). **70.** *A. castanea* sp. nov. (Ganjina). **71.** *A. karatauvi* (Andreeva, 1968) (paratype, Hojamaston). **72.** *A. pallida* sp. nov. (paratype, Ganjina). **73.** *A. incana* Zonstein, 2001. **74–75.** *A. infumata* sp. nov. (paratypes). **76–77.** *A. infuscata* sp. nov. (paratypes, Varzob and Sanglok Mts, respectively). Scale bars: 0.5 mm.



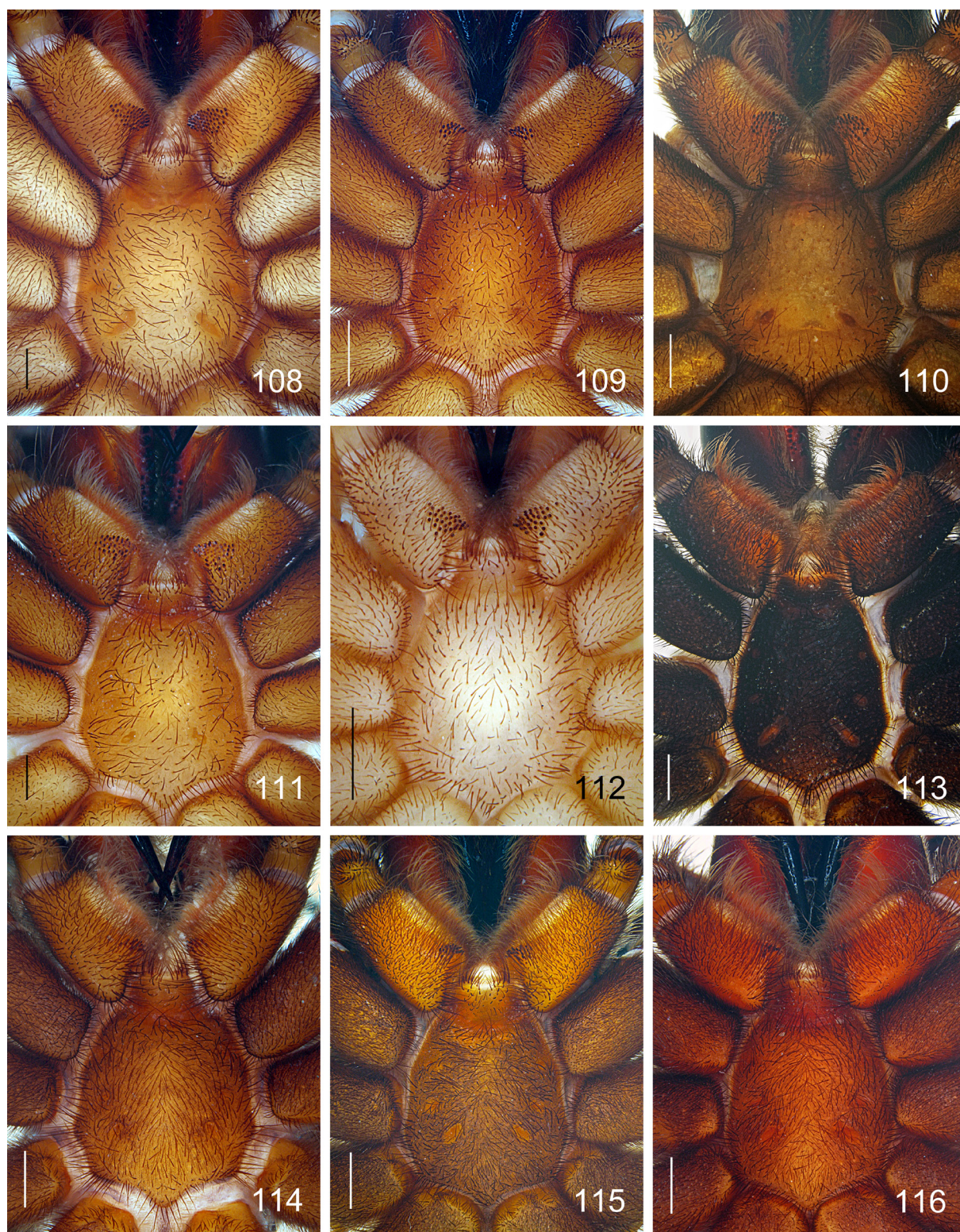
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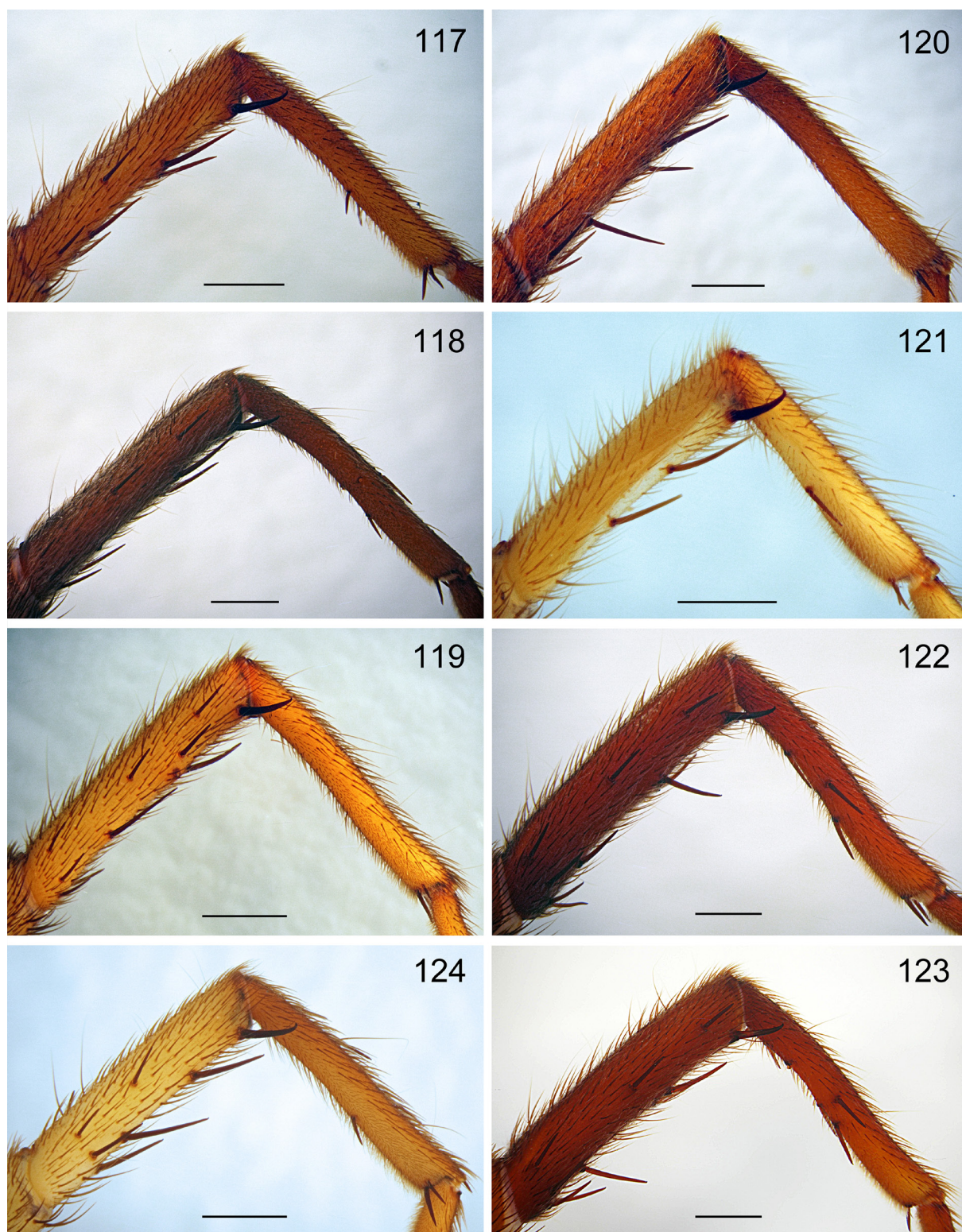
Figs 90–98. *Anemesia* spp., ♂♂, sternum, labium and maxillae, ventral views. **90.** *A. birulai* (Spassky, 1937) (holotype). **91.** *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (holotype). **92.** *A. pococki* sp. nov. (holotype). **93.** *A. tubifex* (Pocock, 1889) (Kalaimor). **94.** *A. andreevae* sp. nov. (holotype). **95.** *A. oxiana* sp. nov. (holotype). **96.** *A. sogdiana* sp. nov. (holotype). **97.** *A. castanea* sp. nov. (holotype). **98.** *A. karatauvi* (Andreeva, 1968) (Hojamaston). Scale bars: 1.0 mm.



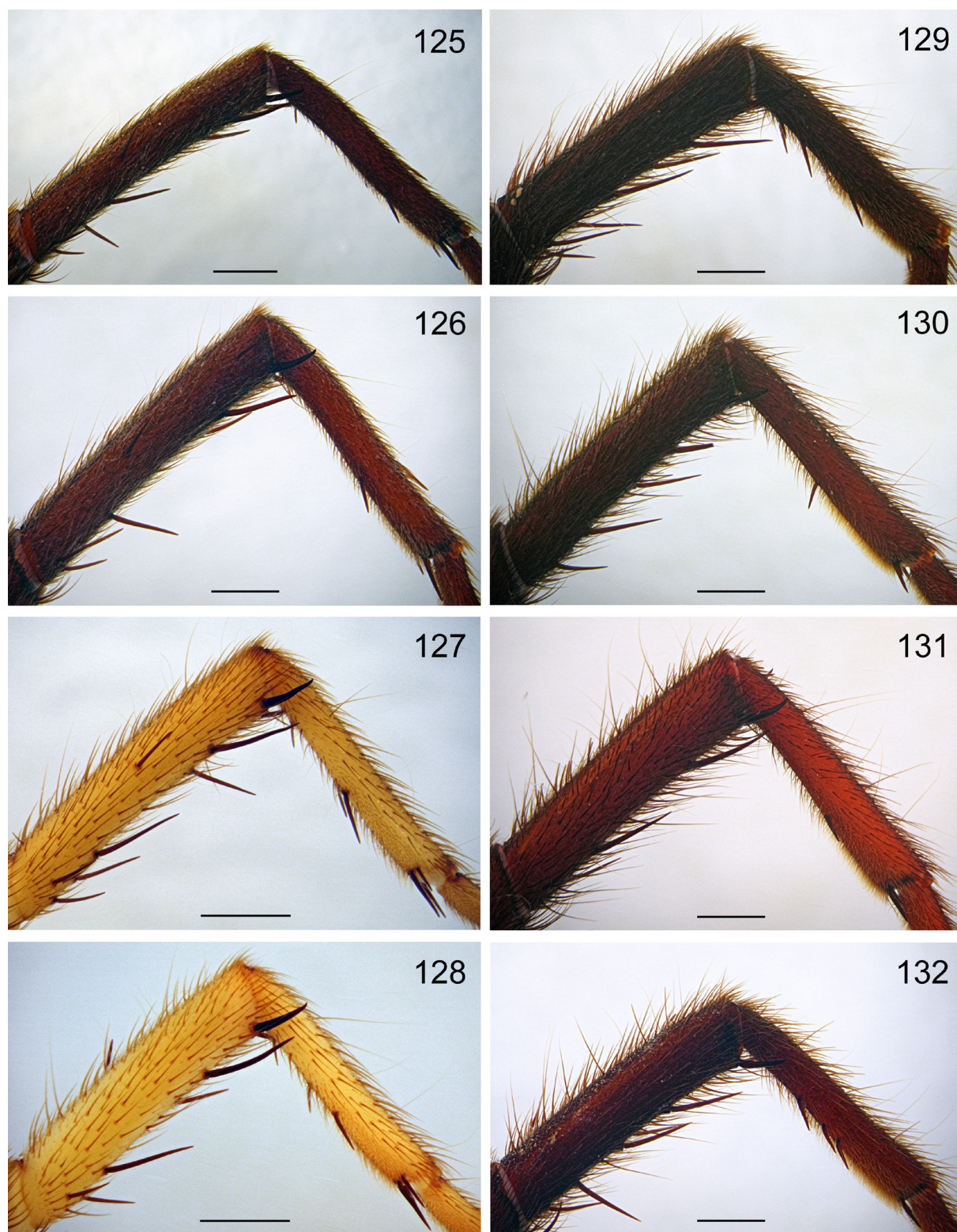
Figs 99–107. *Anemesia* spp., ♂♂ (99–103) and ♀♀ (104–107), sternum, labium and maxillae, ventral views. **99.** *A. pallida* sp. nov. (holotype). **100.** *A. parvula* sp. nov. (holotype). **101.** *A. incana* Zonstein, 2001 (holotype). **102.** *A. infumata* sp. nov. (holotype). **103.** *A. infusata* sp. nov. (holotype). **104.** *A. birulai* (Spassky, 1937) (Kepele). **105.** *A. pococki* sp. nov. (paratype). **106.** *A. tubifex* (Pocock, 1889) (Kalaimor). **107.** *A. andreevae* sp. nov. (paratype, Babatag Mts). Scale bars: 1.0 mm.



Figs 108–116. *Anemesia* spp., ♀♀, sternum, labium and maxillae, ventral views. **108.** *A. oxiana* sp. nov. (paratype, Hojamaston). **109.** *A. sogdiana* sp. nov. (paratype, Amankutan Pass). **110.** *A. castanea* sp. nov. (Ganjina). **111.** *A. karatauvi* (Andreeva, 1968) (paratype, Hojamaston). **112.** *A. pallida* sp. nov. (paratype, Ganjina). **113.** *A. incana* Zonstein, 2001 (paratype). **114.** *A. infumata* sp. nov. (paratype). **115–116.** *A. infuscata* sp. nov. (paratypes, Varzob and Sanglok Mts, respectively). Scale bars: 1.0 mm.



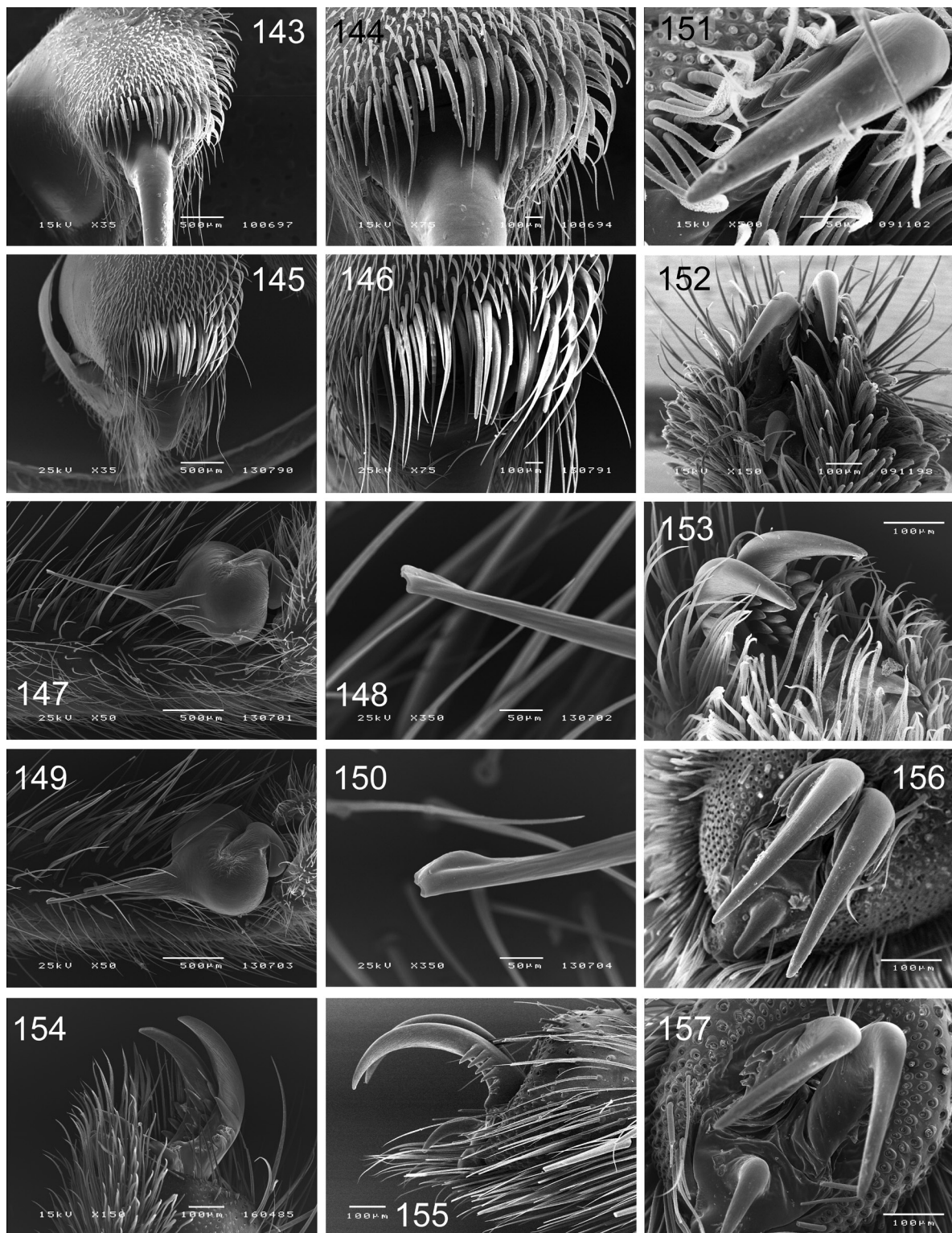
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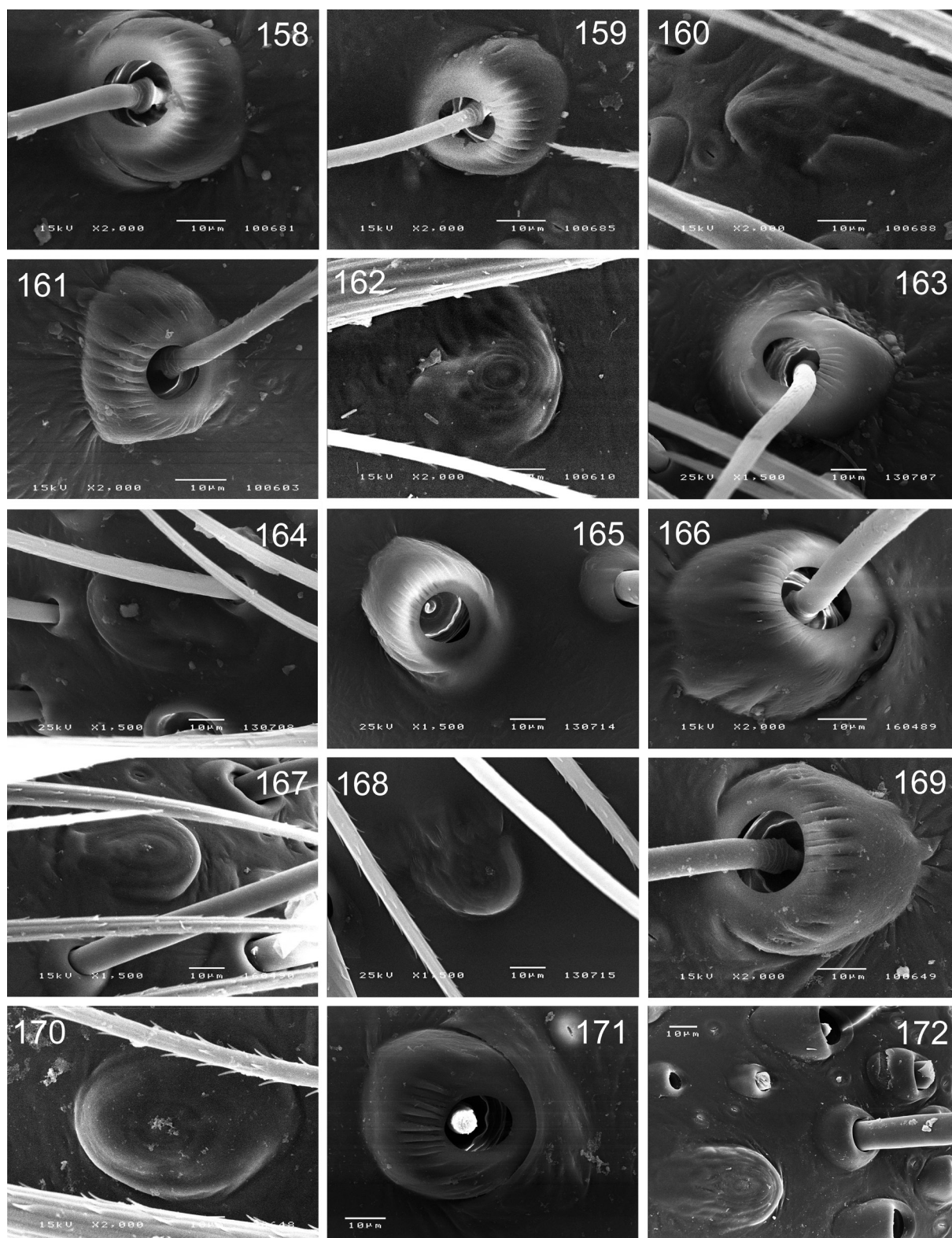
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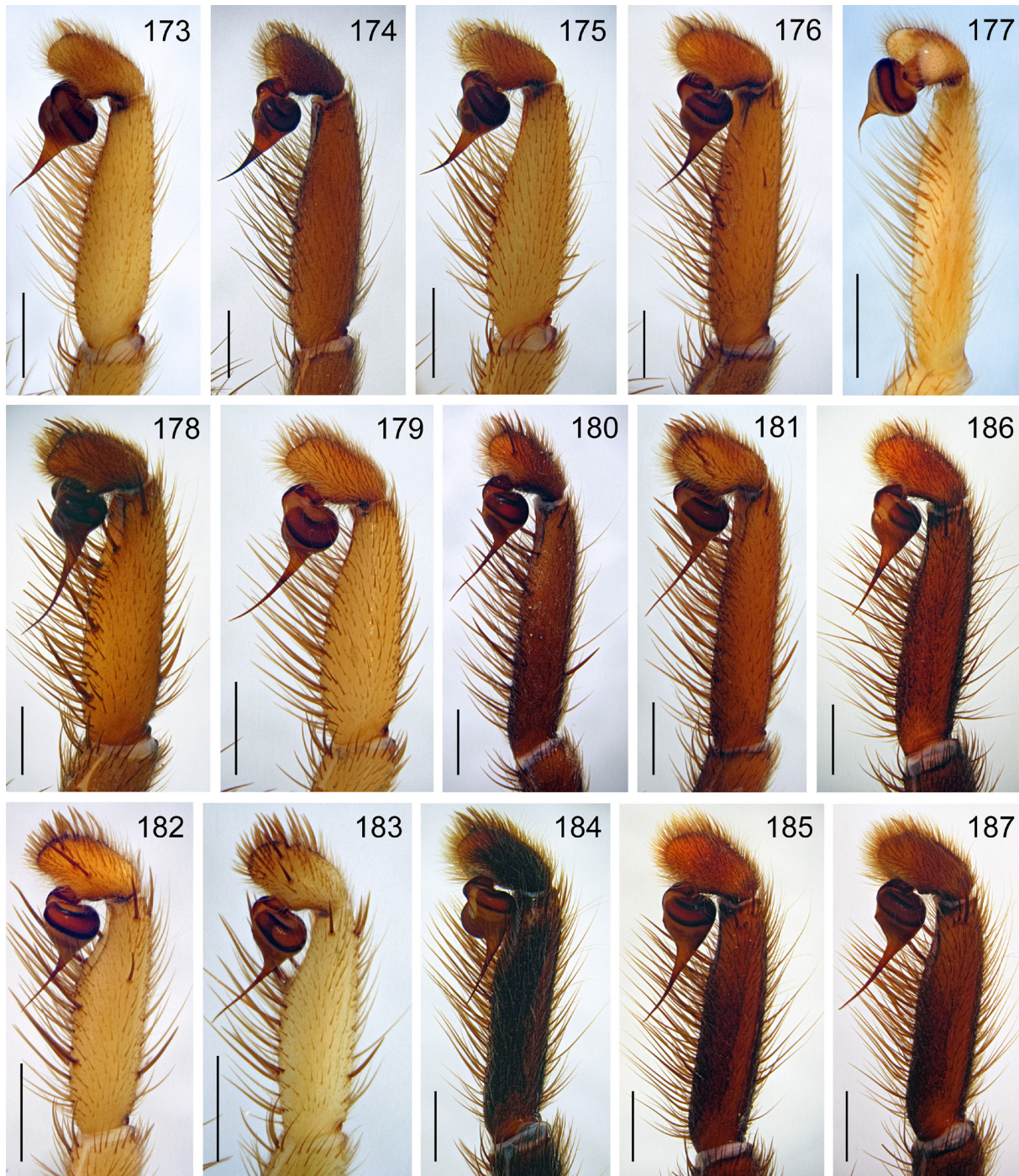
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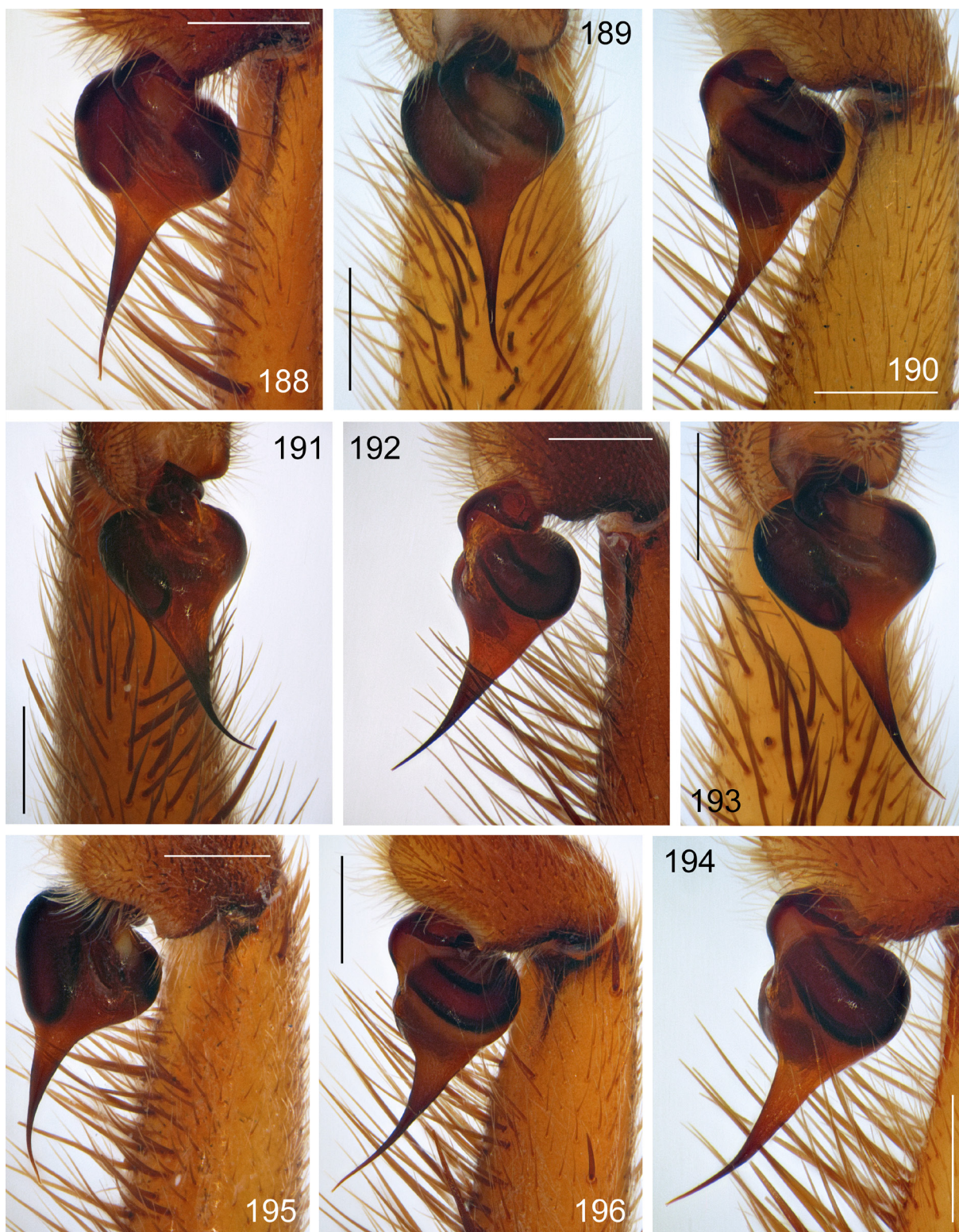
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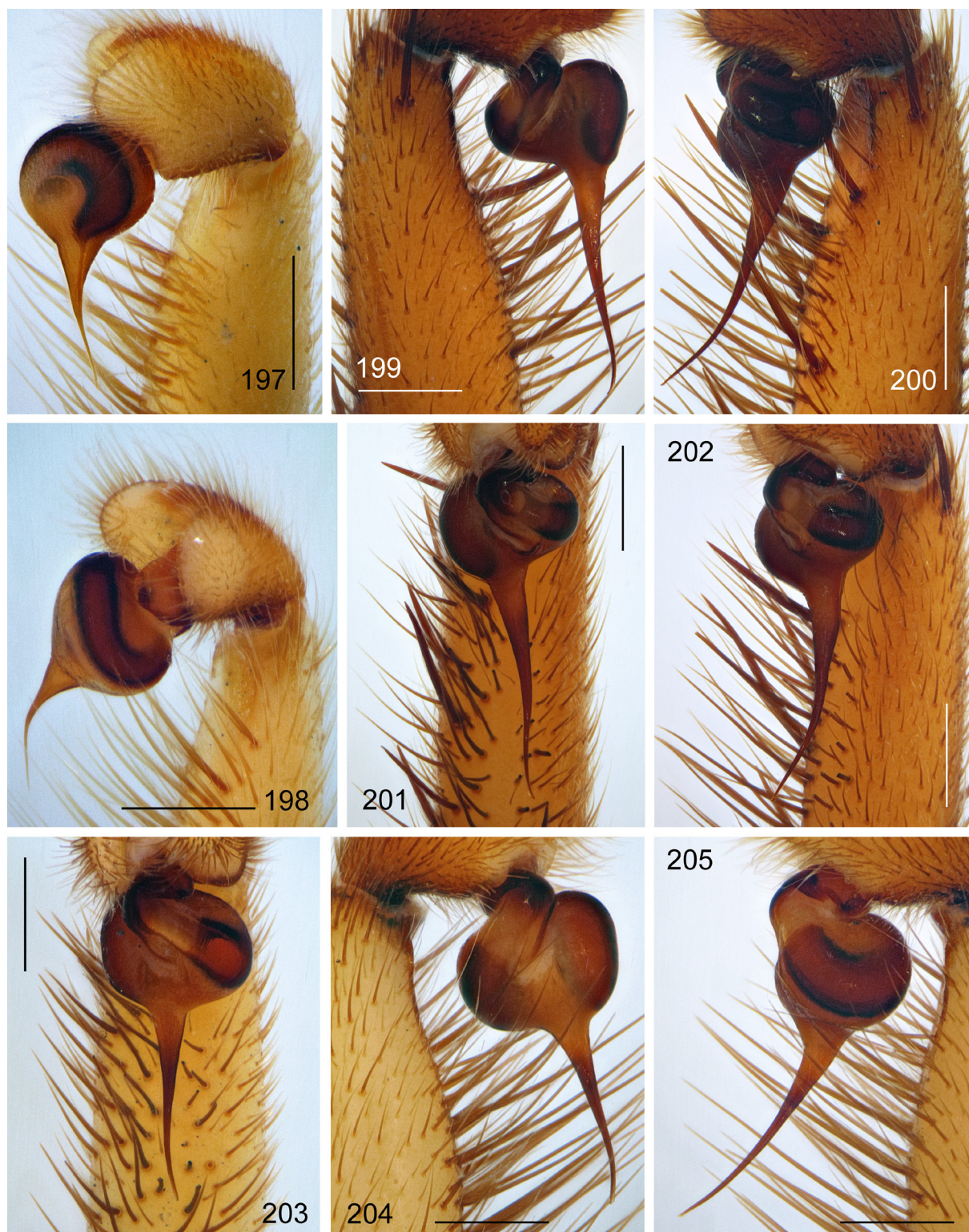
Figs 158–172. *Anemesia* spp., ♀♀ (158–160, 163–172) and ♂♂ (161–162), bases of trichobothria (158–159, 161, 163, 165–166, 169, 171) and tarsal organ (160, 162, 164, 167–168, 170, 172) of leg I (158–167, 169–172) and leg IV (168); dorsal views. **158–160.** *A. pococki* sp. nov. **161–162.** *A. tubifex* (Pocock, 1889). **163–164.** *A. andreevae* sp. nov. **165–168.** *A. sogdiana* sp. nov. **169–170.** *A. karatauvi* (Andreeva, 1968). **171–172.** *A. incana* Zonstein, 2001.



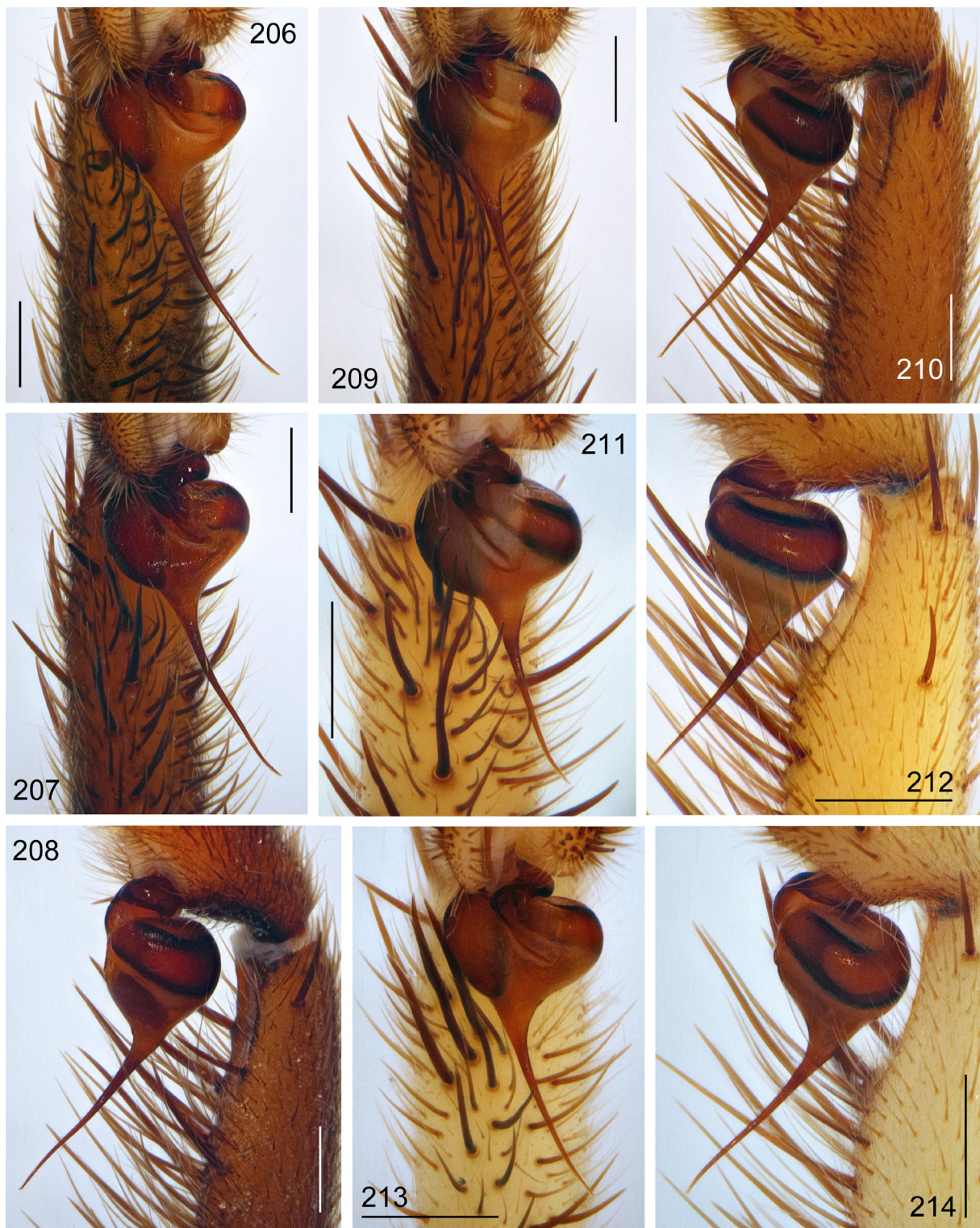
Figs 173–187. *Anemesia* spp., ♂♂, palpal tibia, cymbium and palpal organ, retrolateral views. 173. *A. birulai* (Spassky, 1937) (holotype). 174. *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (holotype). 175. *A. pococki* sp. nov. (holotype). 176. *A. tubifex* (Pocock, 1889) (Kalaimor). 177. *A. andreevae* sp. nov. (holotype). 178. *A. oxiana* sp. nov. (holotype). 179. *A. sogdiana* sp. nov. (holotype). 180. *A. castanea* sp. nov. (holotype). 181. *A. karatauvi* (Andreeva, 1968) (Hojamaston). 182. *A. pallida* sp. nov. (holotype). 183. *A. parvula* sp. nov. (holotype). 184. *A. incana* Zonstein, 2001 (holotype). 185. *A. infumata* sp. nov. (holotype). 186–187. *A. infuscata* sp. nov. (paratype from Sanglok Mts and holotype, respectively). Scale bars: 1.0 mm.



Figs 188–196. *Anemesia* spp., ♂♂, details of palpal organ; ventral (188–189, 191, 193–194) and retrolateral (191, 192, 195–196) views. **188–190.** *A. birulai* (Spassky, 1937) (holotype and conspecific ♂ from Zulfagar Mts, respectively). **191–192.** *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (holotype). **193–194.** *A. pococki* sp. nov. (holotype). **195–196.** *A. tubifex* (Pocock, 1889) (Kalaimor). Scale bars: 0.5 mm.



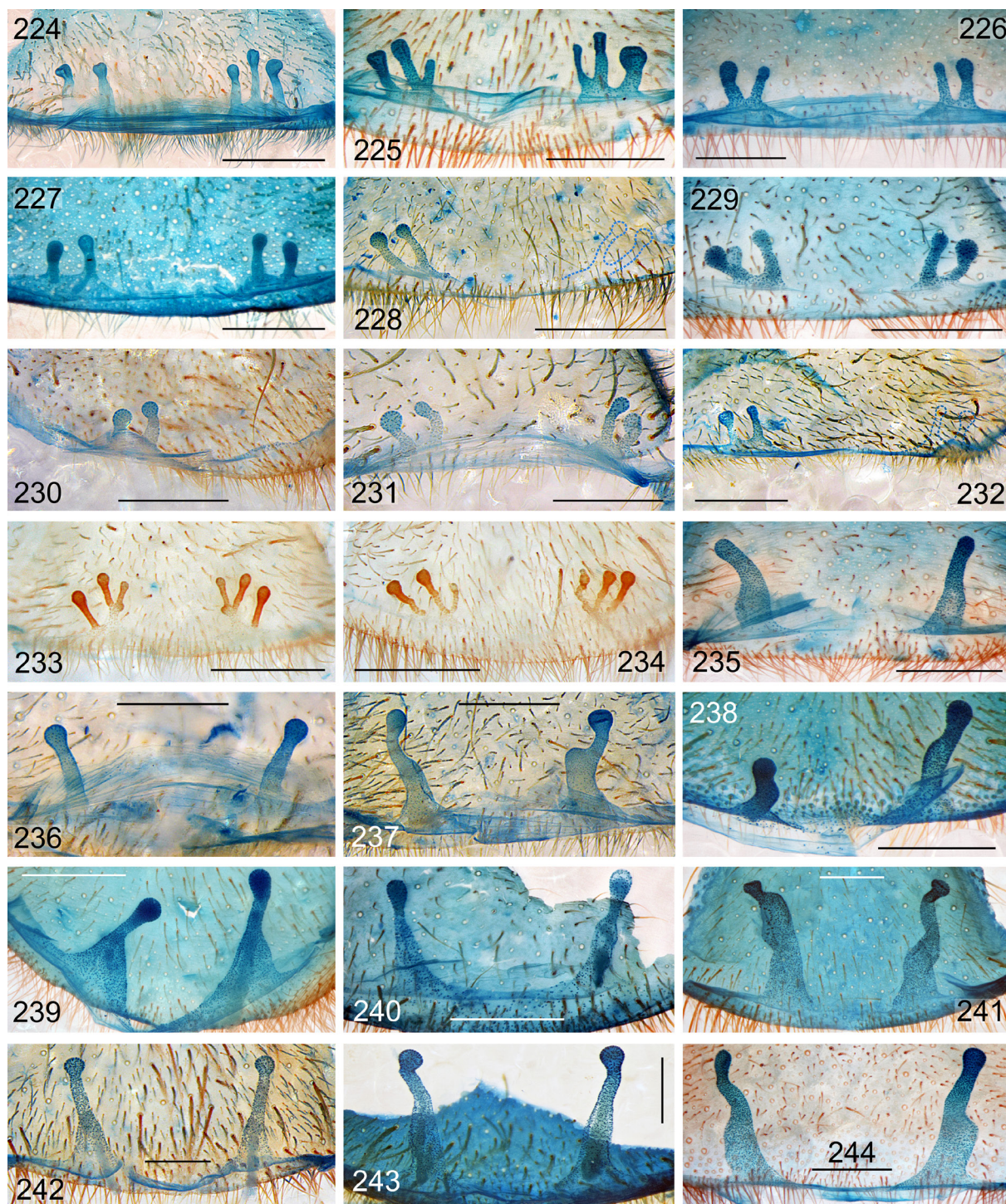
Figs 197–205. *Anemesia* spp., ♂♂, details of palpal organ; proventral (197), retroventral (198, 202), ventral (199, 201, 203–204) and retrolateral (200, 205) views. **197–198.** *A. andreevae* sp. nov. (holotype). **199–202.** *A. oxiana* sp. nov. (holotype and paratype from Sanglok Mts, respectively). **203–205.** *A. sogdiana* sp. nov. (conspecific ♂ from Zaamin and holotype, respectively). Scale bars: 0.5 mm.



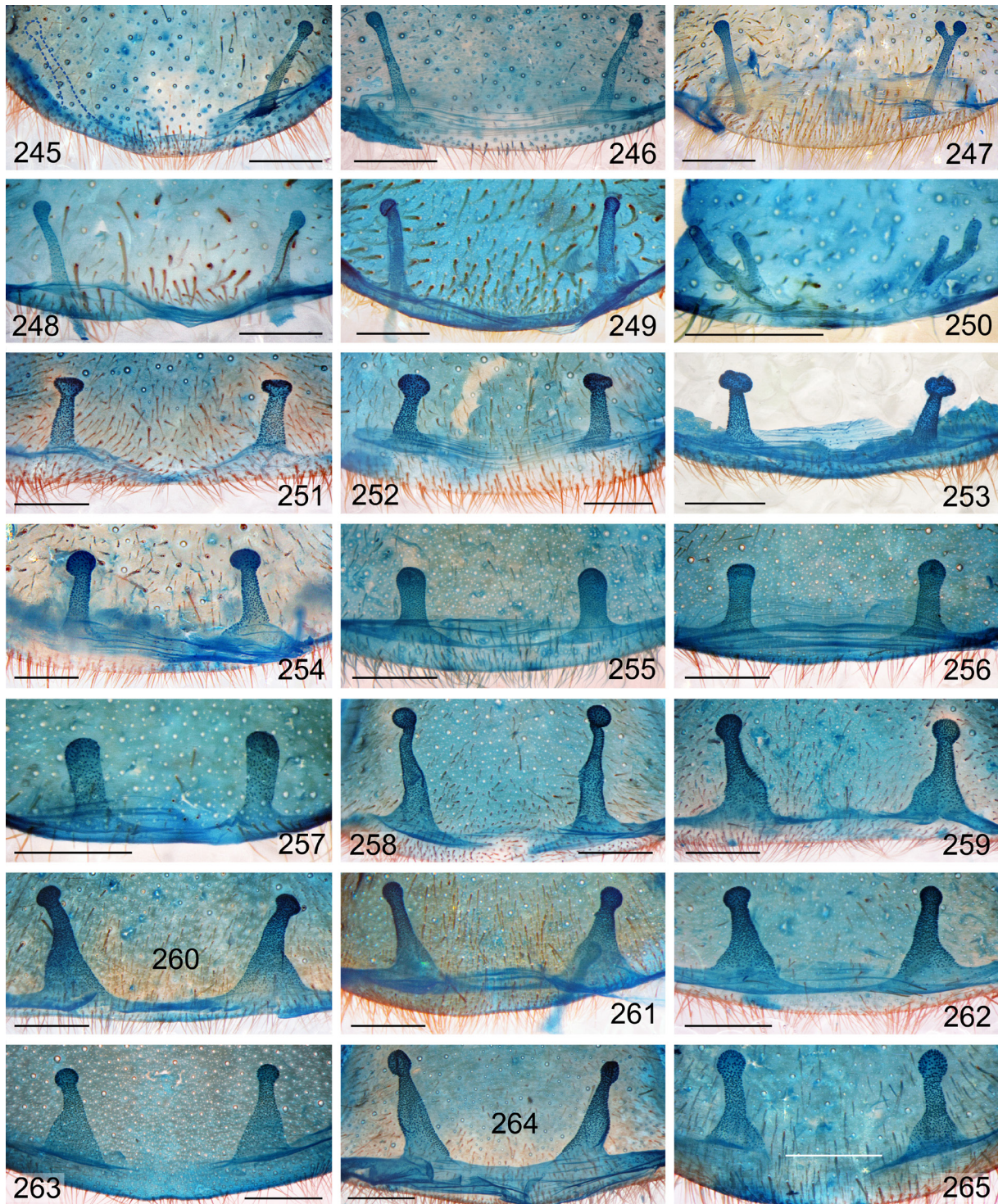
Figs 206–214. *Anemesia* spp., ♂♂, details of palpal organ; ventral (206–207, 209, 211, 213) and retrolateral (208, 210, 212, 214) views. **206–208.** *A. castanea* sp. nov. (paratype and holotype, respectively). **209–210.** *A. karatauvi* (Andreeva, 1968) (Hojamaston). **211–212.** *A. pallida* sp. nov. (holotype). **213–214.** *A. parvula* sp. nov. (holotype). Scale bars: 0.5 mm.



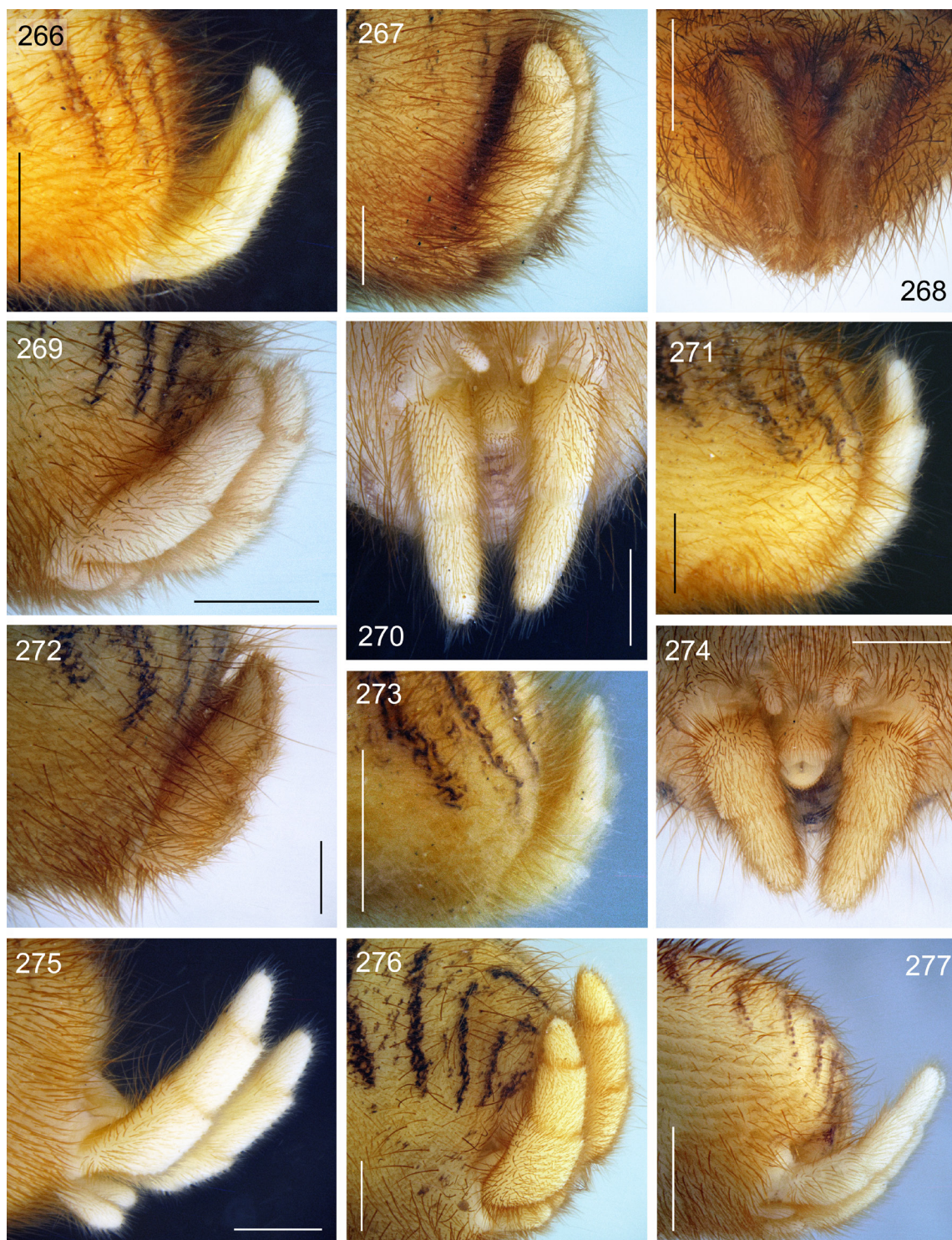
Figs 215–223. *Anemesia* spp., ♂♂, details of palpal organ; ventral (215, 218–221, 213) and retrolateral (216–217, 222–223) views. **215–216.** *A. incana* Zonstein, 2001 (holotype). **217–219.** *A. infumata* sp. nov. (holotype). **220–221, 223.** *A. infuscata* sp. nov. (holotype). **222.** Same (paratype from Sanglok Mts). Scale bars: 0.5 mm.



Figs 224–244. *Anemesia* spp., ♀♀, spermathecae, dorsal views. **224.** *A. birulai* (Spassky, 1937) (Kepele). **225.** Same (Zulfagar Mts). **226–227.** Same (Kushka). **228–229.** *A. pococki* sp. nov. (paratypes). **230.** *A. tubifex* (Pocock, 1889) (Kalaimor). **231.** Same (Zulfagar Mts). **232.** Same (Gyangaly). **233–234.** *A. andreevae* sp. nov. (paratypes from Babatag Mts and Varzob, respectively). **235.** *A. sogdiana* sp. nov. (Varzob). **236.** Same (paratype, Amankutan). **237–238.** Same (Akrabat). **239–240.** Same (Kugitang Mts: Badlydara and Vandob, respectively). **241–242.** *A. oxiana* sp. nov. (paratypes, Ganjina). **243–244.** Same (paratypes, Sanglok Mts and Mt Astana, respectively). Scale bars: 0.5 mm.



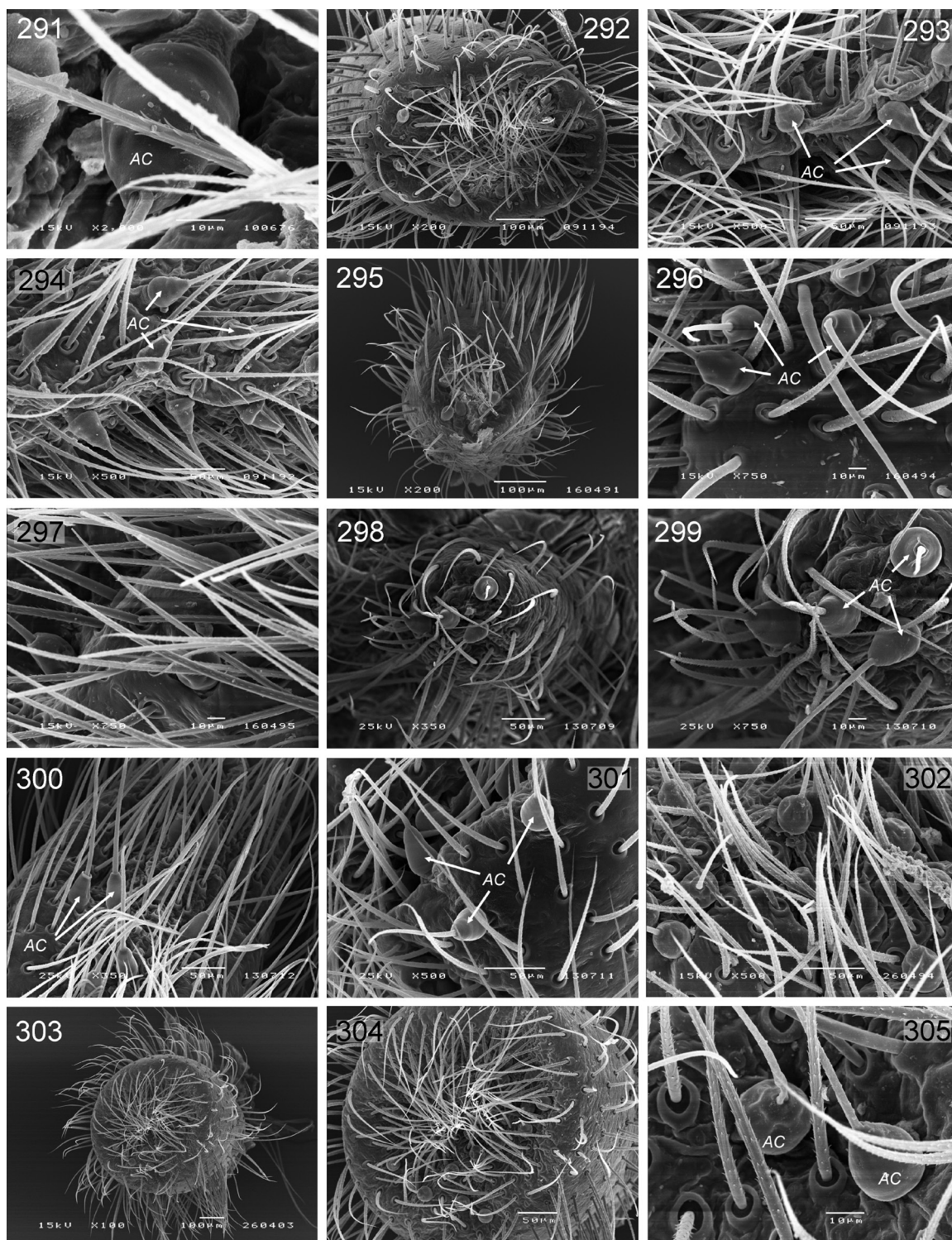
Figs 245–265. *Anemesia* spp., ♀♀, spermathecae, dorsal views. **245.** *A. castanea* sp. nov. (Ganjina). **246–249.** *A. karatauvi* (Andreeva, 1968) (Mt Hojamaston). **250.** *A. pallida* sp. nov. (paratype, Ganjina). **251–253.** *A. incana* Zonstein, 2001 (paratypes, Ganjina). **254.** Same (Mt Hojamaston). **255–257.** *A. infumata* sp. nov. (paratypes). **258–259.** *A. infusata* sp. nov. (paratypes, Varzob). **260–262.** Same (paratypes, Sanglok Mts). **263–265.** Same (paratypes from Kuhitek Mts, Sultanmazar and Sangdara, respectively). Scale bars: 0.5 mm.



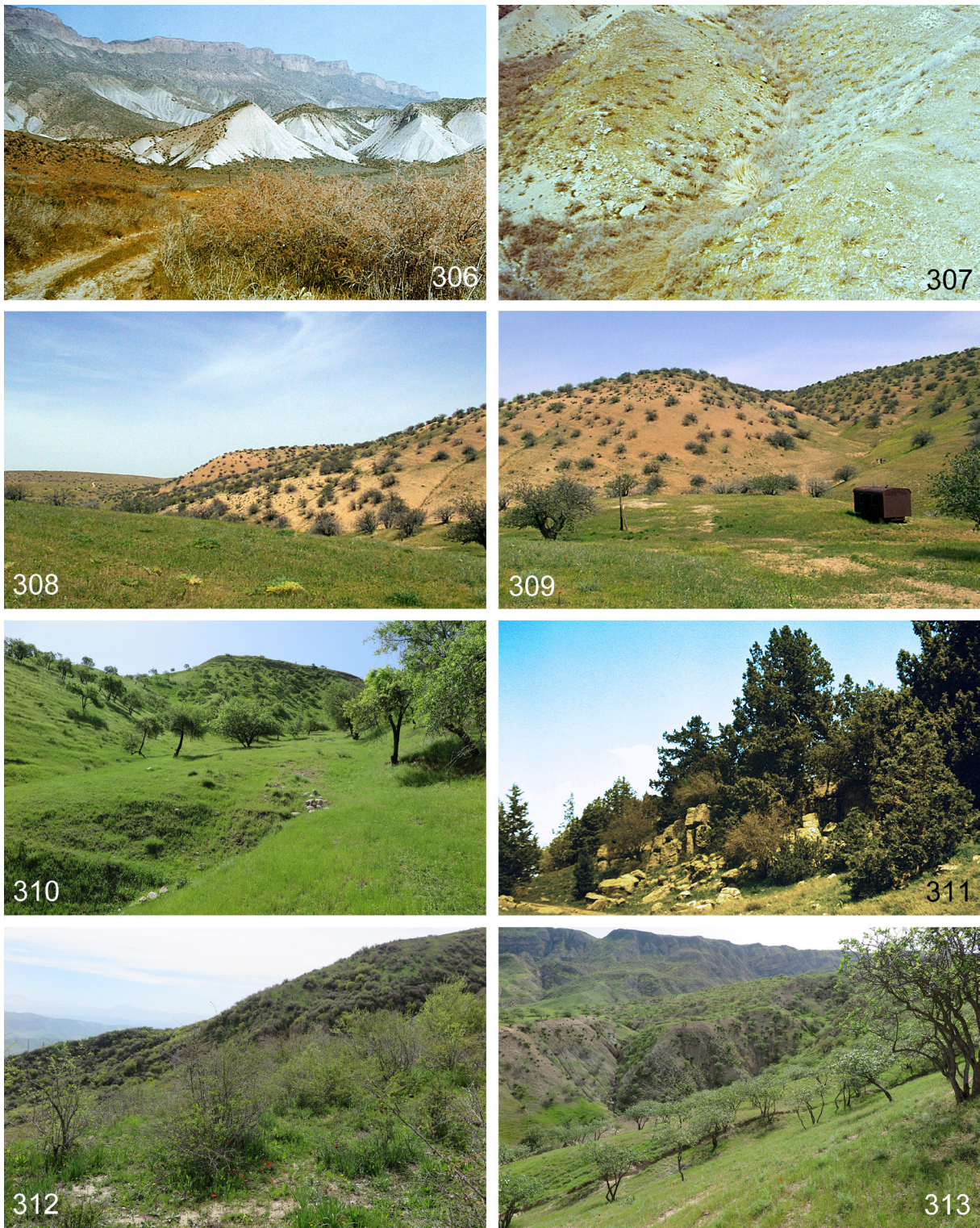
Figs 266–277. *Anemesia* spp., ♂♂ (266, 268–269, 271, 273, 275, 277) and ♀♀ (267, 270, 272, 274, 276), spinnerets; lateral (266–267, 269, 271–273, 275–277) and ventral (268, 270, 274) views. **266–267.** *A. birulai* (Spassky, 1937) (Zulfagar Mts). **268.** *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (holotype). **269–270.** *A. pococki* sp. nov. (holotype and paratype). **271–272.** *A. tubifex* (Pocock, 1889) (Kalaimor). **273–274.** *A. andreevae* sp. nov. (holotype and paratype from Babatag Mts). **275–276.** *A. oxiana* sp. nov. (holotype and paratype from Ganjina). **277.** *A. sogdiana* sp. nov. (holotype). Scale bars: 1.0 mm.



Figs 278–290. *Anemesia* spp., ♀♀ (278, 281, 283, 285, 286, 288, 290) and ♂♂ (279–280, 282, 284–285, 287, 289), spinnerets; ventral (278–279, 281–282, 284–285, 289–290) and lateral (280, 283, 286–288) views. **278.** *A. sogdiana* sp. nov. (paratype, Amankutan). **279.** *A. castanea* sp. nov. (holotype). **280–281.** *A. karatauvi* (Andreeva, 1968) (Hojamaston). **282–283.** *A. pallida* sp. nov. (holotype and paratype from Ganjina). **284.** *A. parvula* sp. nov. (holotype). **285–286.** *A. incana* Zonstein, 2001 (holotype and paratype). **287–288.** *A. infumata* sp. nov. (holotype and paratype). **289–290.** *A. infuscata* sp. nov. (holotype and paratype from Varzob). Scale bars: 1.0 mm.



Figs 291–305. *Anemesia* spp., conspecific ♀♀, details of spinnerets and spigots; ventral (291, 293–294, 296–297, 300–302) and apical (292, 295, 298–299, 303–305) views. **291.** *A. pococki* sp. nov. (apical spigot on PMS). **292–294.** *A. oxiana* sp. nov. (PMS, median and apical segments of PLS, respectively). **295–297.** *A. sogdiana* sp. nov. (PMS, median and apical segments of PLS, respectively). **298–301.** *A. karatauvi* (Andreeva, 1968) (PMS, apical spigots on PLS, median and apical segments of PLS, respectively). **302–305.** *A. incana* Zonstein, 2001 (apical segment of PLS; PMS with apical spigots at larger magnification, respectively). Abbreviations: see Material and methods.



Figs 306–313. *Anemesia* spp., habitats of *A. birulai* (Spassky, 1937) (306–309), *A. pococki* sp. nov. (306–307), *A. tubifex* (Pocock, 1889) (306–307), *A. andreevae* sp. nov. (310–311), *A. oxiana* sp. nov. (312–313), *A. karatauvi* (Andreeva, 1968) (313) and *A. pallida* sp. nov. (313); Turkmenistan (306–309), Tajikistan (310, 312–313) and Uzbekistan (311). **306–307.** Zulfagar Mts. **308–309.** Badkhyz Plateau, surroundings of Kepele Well (images courtesy of Victor Fet). **310.** Hissar Mts, Varzob Canyon. **311.** Flattened summit part of Babatag Mts. **312–313.** Sanglok Mts and Vahsh Karatau Mts, respectively.



Figs 314–321. *Anemesia* spp., habitats of *A. sogdiana* sp. nov. (314–316), *A. karatauvi* (Andreeva, 1968) (317), *A. oxiana* sp. nov., *A. castanea* sp. nov., *A. pallida* sp. nov. and *A. incana* Zonstein, 2001 (318–321); Uzbekistan (334–336) and Tajikistan (317–321). **314–316.** Zeravshan Mts (Amankutan Pass), south-western Hissar Mts (near Akrobat Pass) and Kugitang Mts (Kampyrtepa), respectively. **317.** Foothills of Vahsh Karatau Mts. **318–321.** Surroundings of Ganjina.



Figs 322–329. *Anemesia* spp., habitats of *A. infumata* sp. nov. (322–323), *A. parvula* sp. nov. (324) and *A. infuscata* sp. nov. (324–329); Tajikistan. **322–323.** Summit part of Panj Karatau Mts north of the Panj River bordering Tajikistan and Afghanistan. **324–325.** Summit part of Sanglok Mts., south of the Nurek Reservoir. **326.** Midland zone of Hazratisho Mts (Sangdara), **327.** Same, Kuhitek Mts (east of Hovaling). **328–329.** Same, Mazar Mts (Mazarsultan).



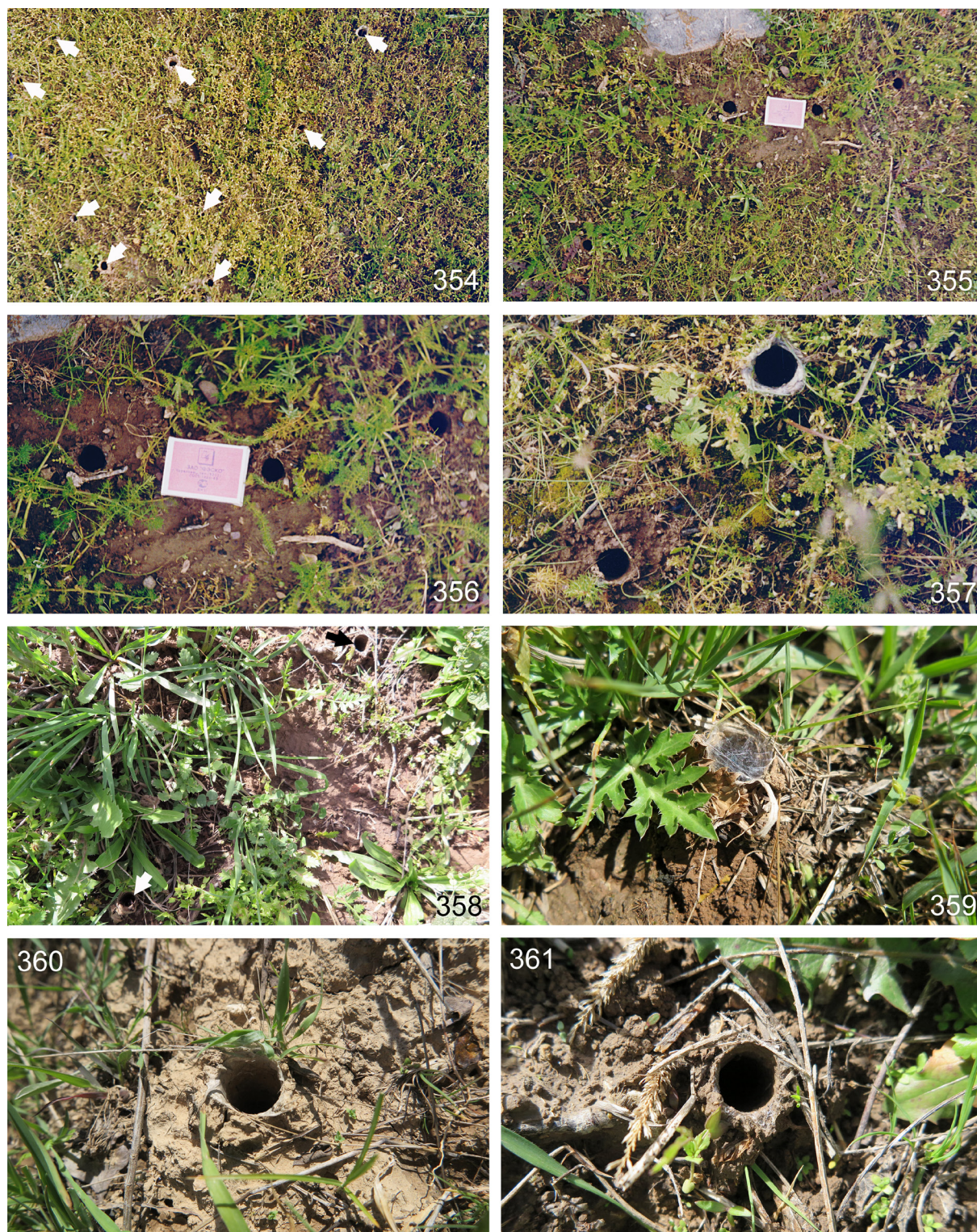
Figs 330–337. *Anemesia* spp., burrow entrances; Tajikistan (330–331, 333–337) and Uzbekistan (332). **330.** *A. andreevae* sp. nov. (Varzob Canyon). **331.** *A. oxiana* sp. nov. (Mt Hojamaston). **332.** *A. sogdiana* sp. nov. (Amankutan Pass). **333–336.** *A. karatauvi* (Andreeva, 1968) (Vahsh Karatau Mts). **337.** *A. pallida* sp. nov. (Mt Hojamaston). White arrows indicate burrow entrances.



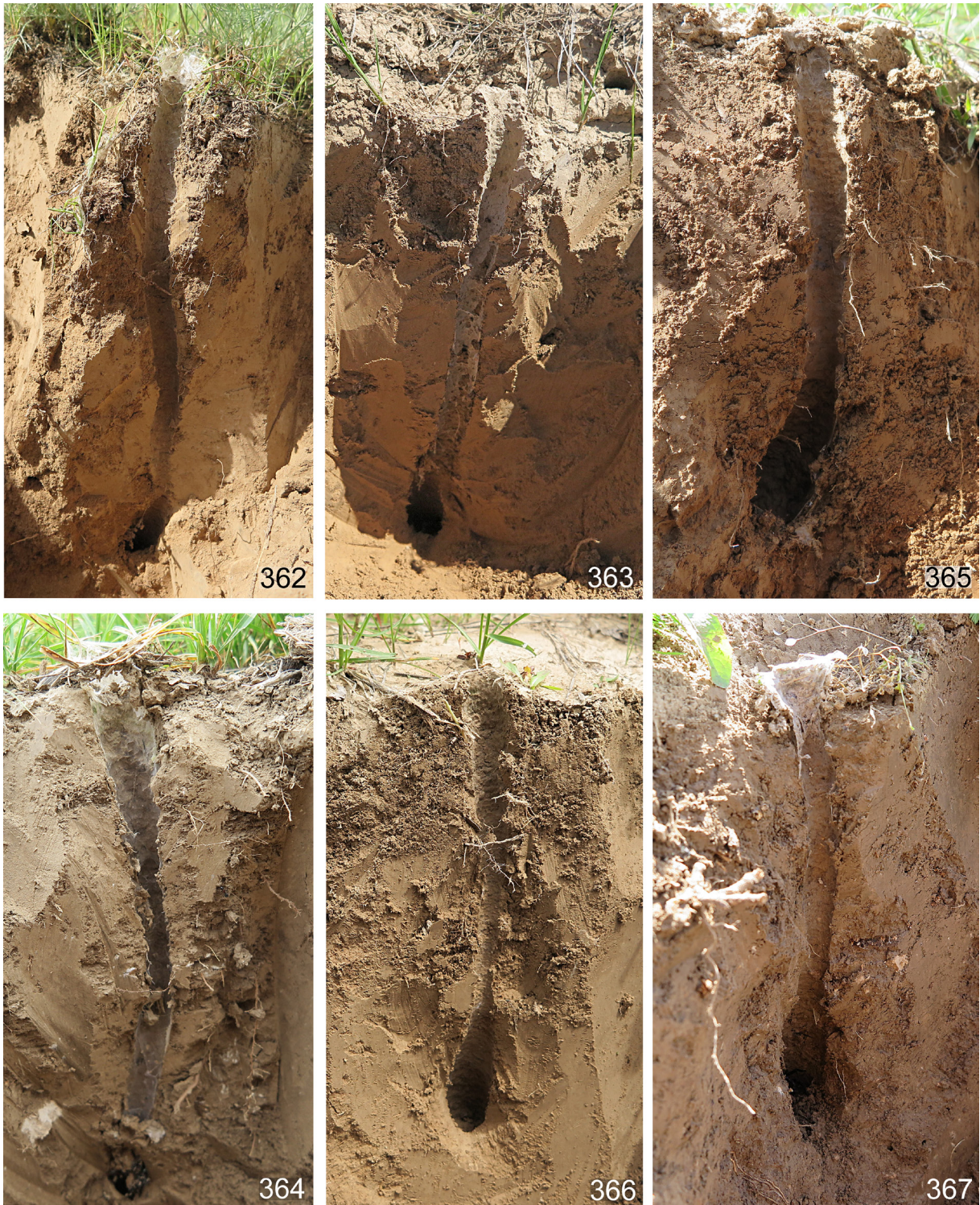
Figs 338–345. *Anemesia* spp., burrow entrances and their aggregations (338–339); Tajikistan. **338–343.** *A. incana* Zonstein, 2001 (Ganjina). **344.** Same (Mt Hojamaston). **345.** *A. infumata* sp. nov. (Panj Karatau Mts). White arrows indicate burrow entrances.



Figs 346–353. *Anemesia infuscata* sp. nov., burrow entrances: opened (346–349, 351–353), aggregated (348), curtained with web (350), located on escarp (352) and different substrates; Tajikistan. 346–347. Varzob Canyon. 348–353. Sanglok Mts. Black arrows indicate burrow entrances.



Figs 354–361. *Anemesia* spp., burrow entrances of *A. infuscata* sp. nov. (354–356, 358–361 and 357, bottom left) and *A. oxiana* sp. nov. (357, above centre): opened (354–358, 360–361), aggregated (354–358) and curtained with web (359); located on the open ground (354–357) and on the forest floor (358–361); Tajikistan. **354–357.** Sangdara. **358–361.** Sultanmazar. White and black arrows indicate burrow entrances. A matchbox 5 cm long intended to capture a live spider is used to indicate measurements.



Figs 362–367. *Anemesia* spp., burrows in cross section, dug and exposed laterally; Tajikistan. **362.** *A. karatauvi* (Andreeva, 1968) (Mt Hojamaston). **363.** *A. incana* Zonstein, 2001 (Ganjina), **364.** *A. infumata* sp. nov. (Panj Karatau Mts). **365–367.** *A. infuscata* sp. nov. (Kuhitek Mts, Sanglok Mts and Varzob Canyon, respectively).

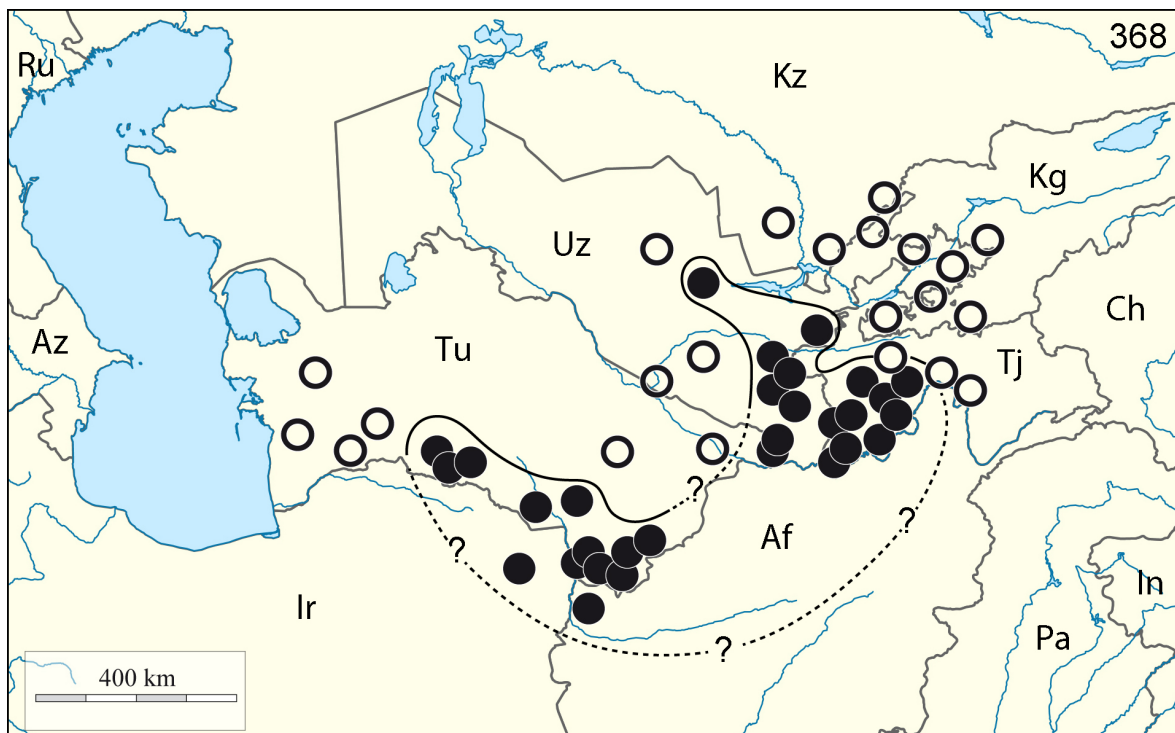


Fig. 368. Suggested range of *Anemesia*. Records of *Anemesia* spp. (●) and intensively sampled localities without those records (○). Range boundaries: relatively veracious (—) and assumed (---). Country abbreviations: Af = Afghanistan; Az = Azerbaijan; Ch = China; In = India; Ir = Iran; Kg = Kyrgyzstan; Kz = Kazakhstan; Pa = Pakistan; Ru = Russia; Tj = Tajikistan; Tu = Turkmenistan; Uz = Uzbekistan.

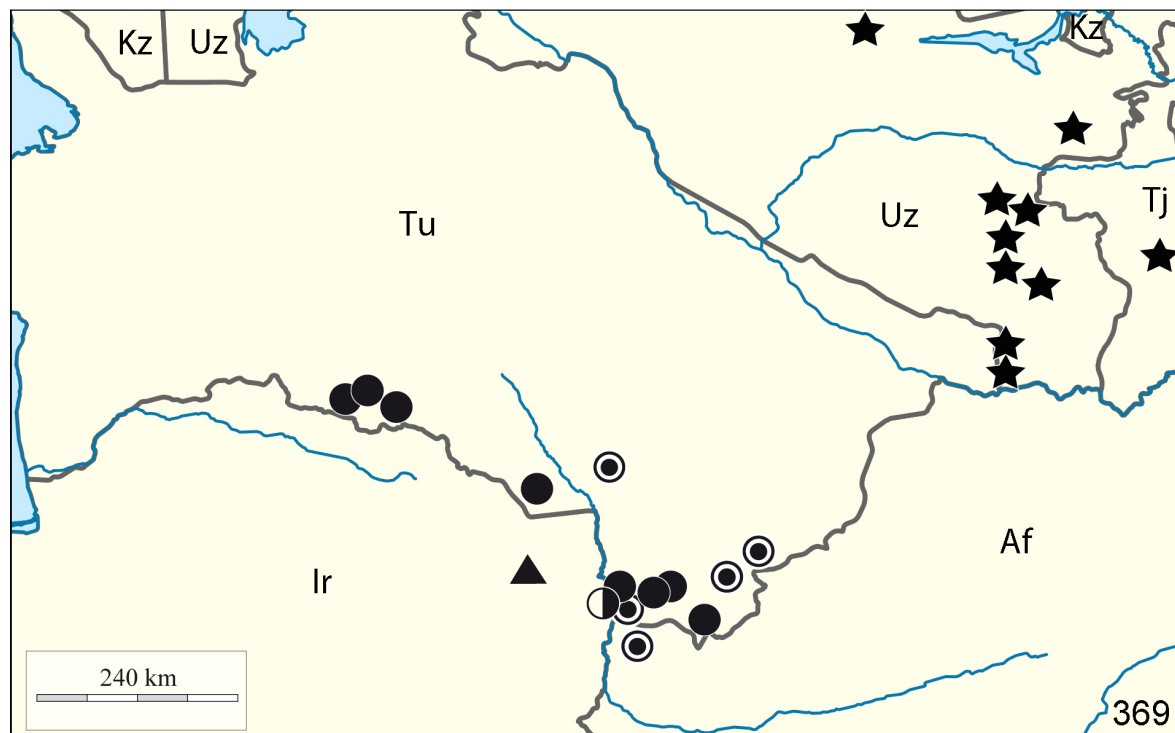


Fig. 369. Distribution of *Anemesia* spp. Records of *A. birulai* (Spassky, 1937) (●), *A. koponeni* Marusik, Zamani & Mirshamsi, 2014 (▲), *A. pococki* sp. nov. (◐), *A. tubifex* (Pocock, 1889) (◑) and *A. sogdiana* sp. nov. (★). Country abbreviations as in Fig. 368.

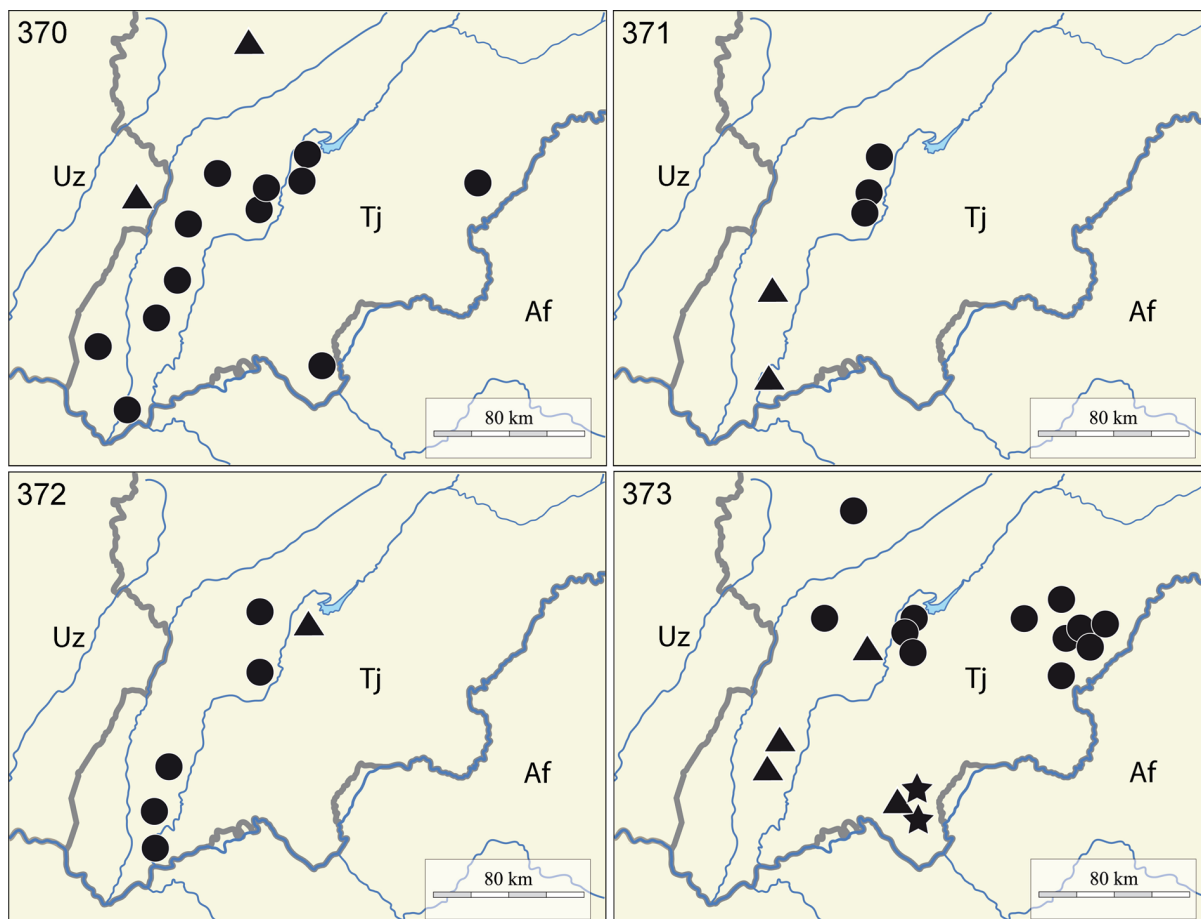
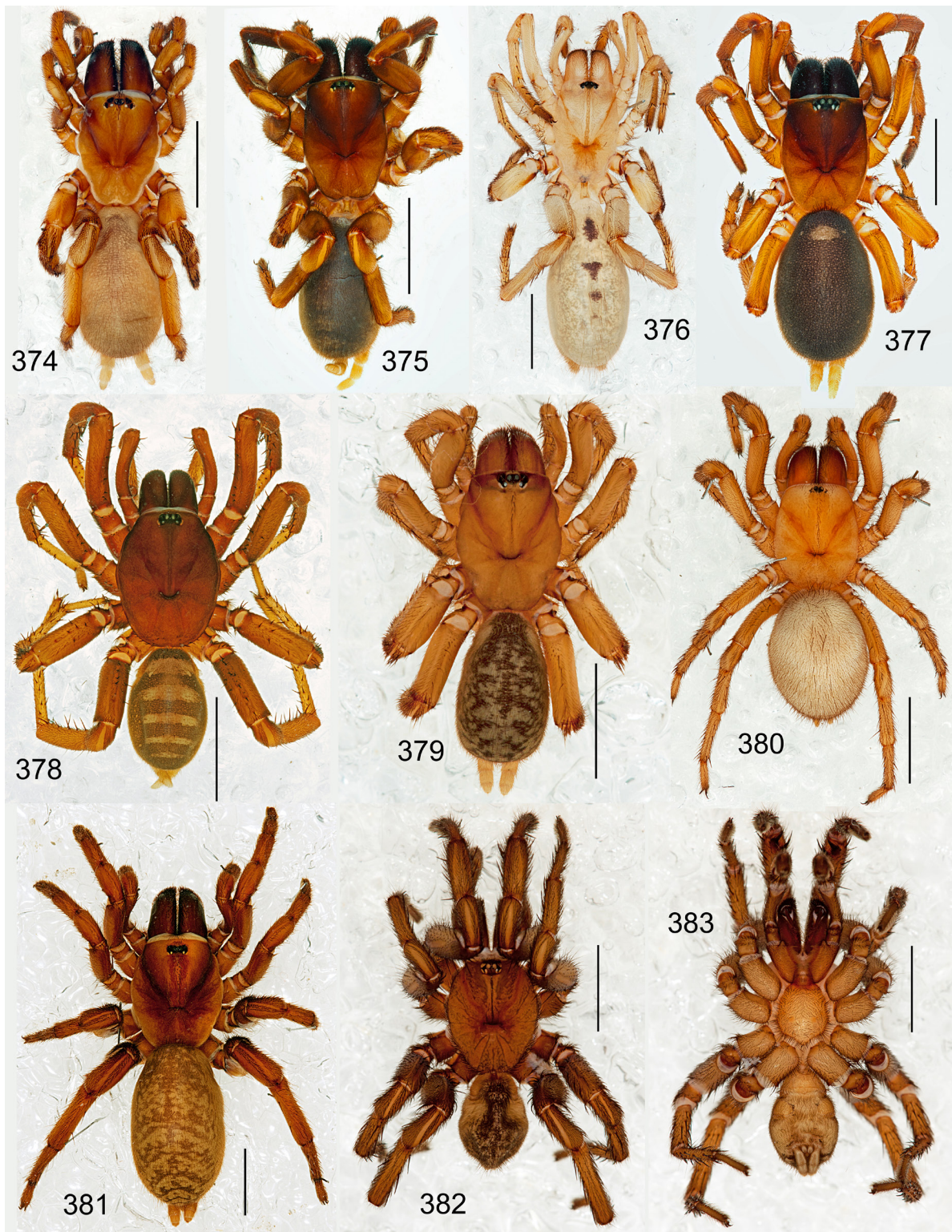
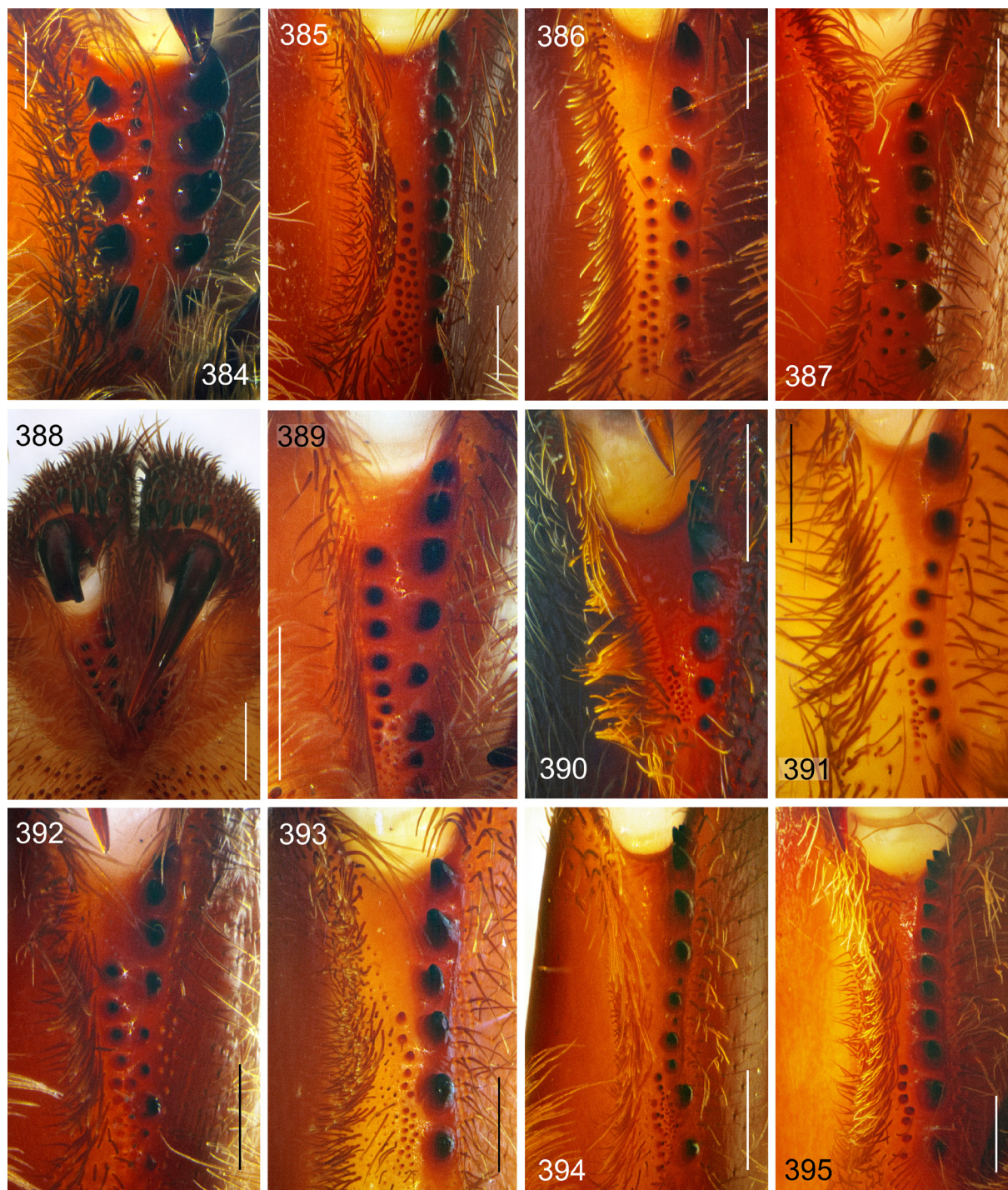


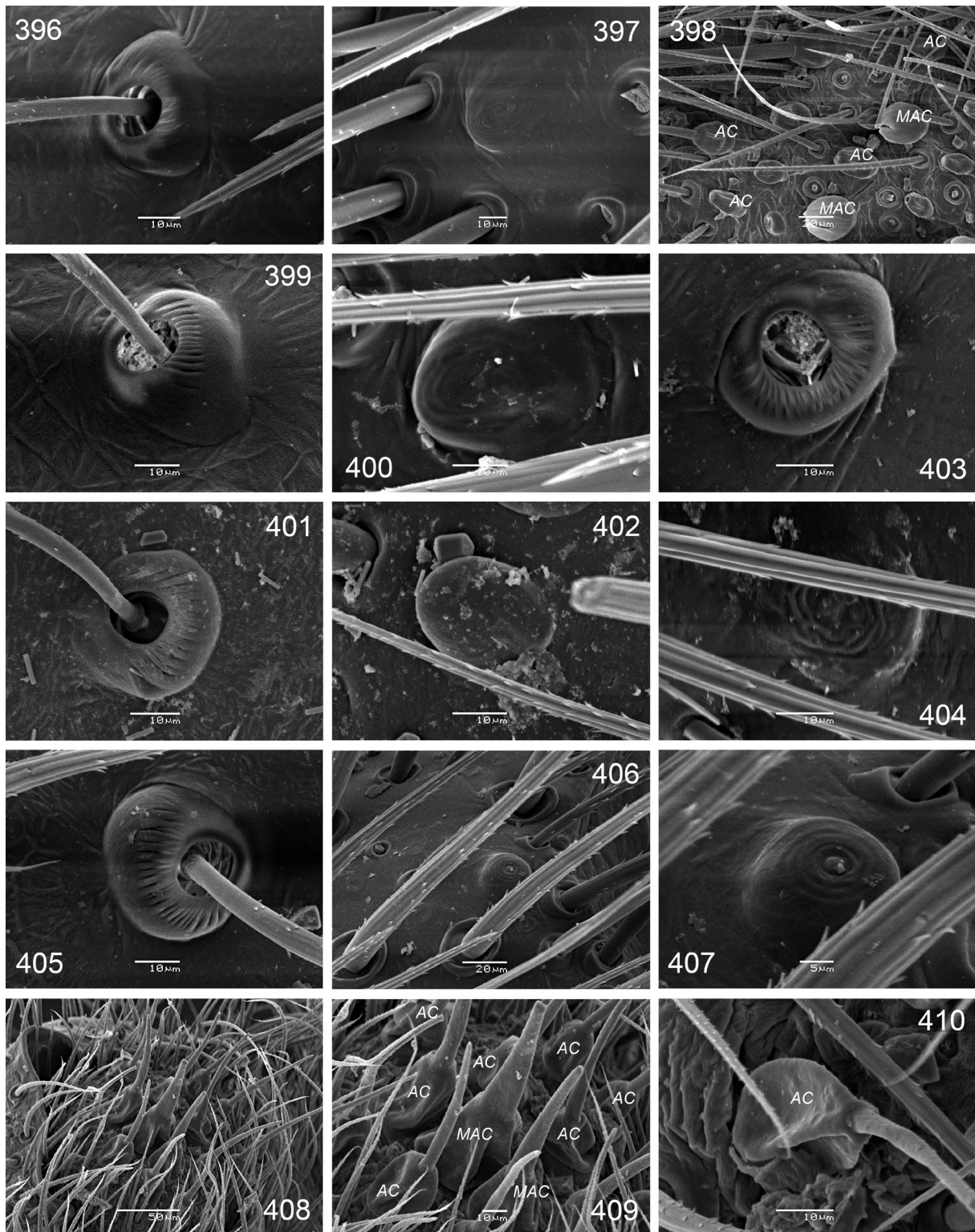
Fig. 370–373. Distribution of *Anemesia* spp. **370.** Records of *A. andreevae* sp. nov. (▲) and *A. oxiana* sp. nov. (●). Country abbreviations: Af = Afghanistan; Tj = Tajikistan; Uz = Uzbekistan. **Fig. 371.** Distribution of *Anemesia* spp. Records of *A. castanea* sp. nov. (▲) and *A. karatauvi* (Andreeva, 1968) (●). Country abbreviations as in Fig. 370. **Fig. 372.** Distribution of *Anemesia* spp. Records of *A. pallida* sp. nov. (●) and *A. parvula* sp. nov. (▲). Country abbreviations as in Fig. 370. **Fig. 373.** Distribution of *Anemesia* spp. Records of *A. incana* Zonstein, 2001 (▲), *A. infumata* sp. nov. (★) and *A. infuscata* sp. nov. (●). Country abbreviations as in Fig. 370.



Figs 374–383. Mygalomorph spiders, members of Cyrtaucheniiidae (374–380) and Nemesiidae (381–383); ♀♀ (374–377, 379–381) and ♂♂ (378, 382–383); habitus, dorsal (374–382) and ventral (383) views. **374.** *Cyrtauchenius terricola* (Lucas, 1846). **375.** *Acontius nimba* Zonstein, 2018. **376.** *Ancylotrypa elongata* Purcell, 1908. **377.** *Acontius kiriba* Zonstein, 2018. **378.** *Ancylotrypa* sp. aff. *zebra* (Simon, 1892). **379.** *Homostola zebrina* Purcell, 1902. **380.** *Angka hexops* Raven & Schwendinger, 1995. **381.** *Nemesia* sp. aff. *africana* (C.L. Koch, 1839). **382–383.** *Spiroctenus* sp. Scale bars: 5 mm.



Figs 384–395. Mygalomorph spiders, members of Ctenizidae (384), Euctenizidae (385), Cyrtaucheniidae (386–391) and Nemesiidae (392–395); ♀♀ (384–386, 388–391, 393–395) and ♂♂ (387, 392); cheliceral furrow, ventral views. **384.** *Cyrtocarenum cunicularium* (Olivier, 1811). **385.** *Myrmekiaphila torreya* Gertsch & Wallace, 1936. **386.** *Cyrtauchenius maculatus* (Simon, 1889). **387.** *Amblyocarenum walckenaeri* (Lucas, 1846). **388–389.** *Homostola zebrina* Purcell, 1902. **390.** *Acontius nimba* Zonstein, 2018. **391.** *Ancylotrypa elongata* Purcell, 1908. **392.** *Spiroctenus* sp. **393.** *Iberesia barbara* (Lucas, 1946). **394.** *Entypesa* sp. M (undescribed species). **395.** *Raveniola ferghanensis* (Zonstein, 1984). Scale bars: 0.5 mm.



Figs 396–410. Mygalomorph spiders, members of Cyrtaucheniidae (396–402) and Nemesiidae (403–410); ♀♀. Bases of trichobothria (396, 399, 401, 403, 405) and tarsal organ (397, 400, 402, 404, 406–407) of leg I, and details of PLS (398), PMS (408–409) and spigots (410); dorsal (396–397, 399–407), ventral (398), and apical (408–410) views. **396–398.** *Acontius nimba* Zonstein, 2018. **399–400.** *Ancylotrypa* sp. aff. *zebra* (Simon, 1892). **401–402.** *Cyrtauchenius* sp. (Algeria). **403–404.** *Entypesa* sp. (Madagascar). **405–410.** *Nemesia* sp. aff. *pannonica* Herman, 1879 (Turkey). Abbreviations: see Material and methods.