



## International Dragonfly Fund - Report

### Journal of the International Dragonfly Fund

1 -147

**Rosser W. Garrison & Natalia von Ellenrieder**

An annotated list of the types of Odonata housed at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.

*Published: 10.09.2019*

# 134

ISSN 1435-3393

The International Dragonfly Fund (IDF) is a scientific society founded in 1996 for the improvement of odonatological knowledge and the protection of species.  
Internet: <http://www.dragonflyfund.org/>

This series intends to publish studies promoted by IDF and to facilitate cost-efficient and rapid dissemination of odonatological data.

Editorial Work:	Rory A. Dow, Milen Marinov, Martin Schorr
Layout:	Martin Schorr
IDF-home page:	Holger Hunger
Printing:	Colour Connection GmbH, Frankfurt
Impressum:	Publisher: International Dragonfly Fund e.V., Schulstr. 7B, 54314 Zerf, Germany. E-mail: <a href="mailto:oestlap@online.de">oestlap@online.de</a>
Responsible editor:	Martin Schorr
Cover picture:	<b><i>Argia vivida</i></b>
Photographer:	Ken Tennessen

## **An annotated list of the types of Odonata housed at the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U.S.A.**

Rosser W. Garrison & Natalia von Ellenrieder

California Department of Food and Agriculture, 3294 Meadowview Road,  
Sacramento, California 95832, USA

Email: argiavivida@gmail.com, natalia.ellenrieder@gmail.com

### **Abstract**

The Odonata collection deposited at the Museum of Comparative Zoology (MCZ) includes specimens of 634 taxa labeled as types. Fifteen of these have been incorrectly labeled as types (pseudotypes) and eight are apparently lost, leaving a total of 611 types currently deposited at MCZ. From these, 489 represent primary name-bearing types (syntype/s, holotype, lectotype and neotype), 21 are probable primary types, and 101 are secondary types (paratype/s, paralectotype/s).

**Key words:** Odonata, dragonflies, damselflies, nomenclature, Hermann A. Hagen, Thomas Say, Hermann Burmeister, Philip. P. Calvert, Edmund de Selys Longchamps, Toussaint de Charpentier, Philip R. Uhler, Samuel H. Scudder, Eduard Eversmann, Wilhelm Gottlieb Schneider.

### **Introduction**

The large Odonata collection at the Museum of Comparative Zoology (MCZ) is of fundamental importance to students of the order as it contains type material of species described by Hermann A. Hagen, Thomas Say, Hermann Burmeister (Calvert 1898b), Edmund de Selys Longchamps, Toussaint de Charpentier, Philip R. Uhler, Samuel H. Scudder, Eduard Eversmann, Wilhelm Gottlieb Schneider and others. The Odonata type collection contains many old specimens, some dating back to before 1825, and in number of types is probably third to the Selys collection in Brussels at the Institut Royal des Sciences Naturelles (RBINS) and to the type collection at the British Museum (Natural History (BMNH)) in London. Kimmins (1966, 1968, 1969, 1970) compiled a type catalog of Odonata for the latter institution. No catalog exists for the important Selys collection at RBINS.

Although material from the MCZ has been used by several authors in preparing synopses and revisions of various groups, no type catalog has ever been published. By 1945, Nathan Banks, then curator at the MCZ, partially rectified the problem by applying red MCZ type labels to specimens in the entire collection that he considered to be types (Calhoun & Hawkins 2016). These small red labels have the printed word "TYPE", followed by a written MCZ number in ink. Where more than one specimen made up a series, a smaller number indicated the specimen number in that series. Our purpose here is to determine the status of all material so labeled by Banks and to

determine if these represent holo-, lecto-, paralecto-, para- or syntypes. Where an MCZ type number was applied to a specimen or series of specimens that are not types, we have labeled them as pseudotypes. To our knowledge, types of only five species (*Indocypha silbergliedi* Asahina, 1988; *Phylolestes ethelae* Christiansen, 1947; *Cora brasiliensis* Montgomery, 1967; *Nihonogomphus bequaerti* Chao, 1954; *Petalura hesperia* Watson, 1958) have been deposited at the MCZ since type labels were applied by Banks to the material examined there. Many male specimens of Zygoptera in the MCZ carry an accompanying handwritten label "penis drawn." These labels were added by Clarence Hamilton Kennedy and the ensuing figures were used in his PhD thesis (Kennedy 1919). Hagen acquired several types of Charpentier as is evidenced by his statement (Hagen 1861: 177) under *Diplax albifrons*: "I possess the male [of *Libellula albifrons* Charpentier, 1825] described and figured by Charpentier..." Many of Charpentier's syntypes lack locality data but we have quoted relevant passages from Charpentier's descriptions under each taxon. Many of Hagen's type specimens are accompanied by a small printed label "Hagen" and several also with another printed label "Mus. Berol. [= Berlin Museum or Museum für Naturkunde, Berlin, Germany]". These specimens, perhaps originally destined to be placed in that institution, were brought to Cambridge when Hagen assumed his duties at the MCZ in 1867. In some cases, we have found that Hagen divided his series of specimens leaving duplicates in Berlin. We have attempted to mention this when possible. Some of Hagen's types are present at the Museum für Naturkunde in Berlin and Turiault (2016, 2017, 2018) has provided type catalogs of the Calopterygidae, Isostictidae, Dictyriidae, Argiolestidae, Megapodagrionidae, Protoneurinae and Disparoneurinae for that institution.

As noted by Weaver (1993: 49), what is left of the Thaddeus Harris collection is housed separately from the general MCZ entomology collection. The Odonata portion of that collection occupies two drawers (Fig. 1). Many of the specimens are in poor condition and several show evidence of previous attacks by dermestids. Nevertheless, many of the specimens contained within were personally identified by Say as was noted by Hagen (1873a: 273) and Weaver. We consider many of the specimens in the Harris collection as holo- or syntypes of Say according to evidence provided by Say (1840) and by Hagen (1873a) in his paper analyzing the Odonata in that collection (e. g. *Calepteryx opaca* Say, *Lestes eurinus* Say, *Aeshna janata* Say). However, some of the odonate specimens housed in these two drawers cannot be considered as representing holo- or syntypes since they cannot be confirmed to have been the same ones before Say when describing these taxa. For example, Walker (1912: 134) designated the specimen in the Harris collection of *Aeshna clepsydra* as a neotype adding (1912: 135):

"Say's type which was formerly in the Museum of the Boston Society of Natural History no longer exists, and it is impossible to say with certainty which species of the *clepsydra* group it belonged to. It seems clear, however, that the species described here is the one which has the best right to retain Say's name, for the type locality is Massachusetts, and all the specimens of the *clepsydra* group that I have seen from that state, with a single exception, belong either to this species or to *Ae. verticalis*. One of the former is the single specimen labelled *clepsydra* in the Harris collection. This specimen was probably determined by Say and should be regarded as the neotype."





Figure 1: Odonata collection of Thaddeus Harris containing type material of Thomas Say.

The remaining type material — or specimens with an attached red type label — have not been segregated from the general Odonata collection. However, access to their label data, type registration, and in many cases, photographs, have been made available at the MCZbase: The Database of the Zoological Collections (<https://mcz-base.mcz.harvard.edu/SpecimenSearch.cfm>).

The present undertaking has been difficult because most of the type specimens in the MCZ are syntypes, and considerable detective work was necessary to determine the status of many specimens. Hagen, in keeping with his peers, did not designate types, although he (Hagen 1861: vi) indicated possible type material by adding an exclamation point (!) to "...every species contained in my own collection, or described by me from actual examination [*italics ours*]. Where an (!) has been added to the name of the author, I have seen the types which he described." Calvert (1898b) provided a detailed analysis and listing of the type material of Burmeister held at the MCZ and provided background information on Hagen's treatment of some of Burmeister's types purchased by him. We have quoted relative passages from that work under various specimens concerning their type status that may help future researchers. Calvert (1902b) attempted to list type repositories for all of the species of *Argia* ("As far as possible, the present location of the types of each species is given from personal knowledge and from the literature"); however, their entries were listed as "Types in Coll...." or "Type [♂ or ♀] in..." and we have not considered these as lectotype designations. Some repository designations are also incorrect (e. g. *Argion lugens* Hagen, 1861).

## Materials and methods

The structure of this catalog follows that of Garrison et al. (2003). In those papers in which authors did not specifically designate types, we have given benefit of the doubt to the author(s) when the word "type" was used in the original description. If only one specimen was available at the time of the description and no type was selected, we have considered that example the holotype. We have listed as syntypes specimens for which a lectotype has not yet to our knowledge been selected. Often, some specimens are part of a larger series with other syntypes housed in other institutions. For these cases, we have left lectotype designations for specialists revising those groups. Calvert (1908: xxviii), in the introductory part of the *Biologia Centrali-Americana*, labeled as types those specimens "...which have been figured on the Plate, the male preferably to the female, except where the latter alone was originally described....Where several specimens of the same species have been figured, that one which has furnished the principal figure or figures is the type." We agree with Kimmins (1968) in accepting these as holotype designations even though this was done soon after his species were described. No types were designated by Calvert (1909) in his treatment of the Odonata of the Neotropical region exclusive of Mexico and Central America although he did individually label such specimens that were principally figured in that work as types. The MCZ contains duplicate material from that work and we have listed them as syntypes quoting passages from Calvert (1909) when a series was used in drawing up his descriptions.

Classification follows for the most part Dijkstra et al. (2013). Families are listed alphabetically within each suborder. Species names are listed alphabetically under each family followed in parentheses by their original generic combination. Name-bearing types (holo- lecto- syntype(s)) are in **italic boldface**; allo-, para-, or paralectotypes are in *italic*. Entries of types deposited at MCZ according to their descriptions, but which could not be located during our visits, and specimens labeled as types by Banks which, based on label data, cannot be considered types since they were not



Figure 2: Label examples.

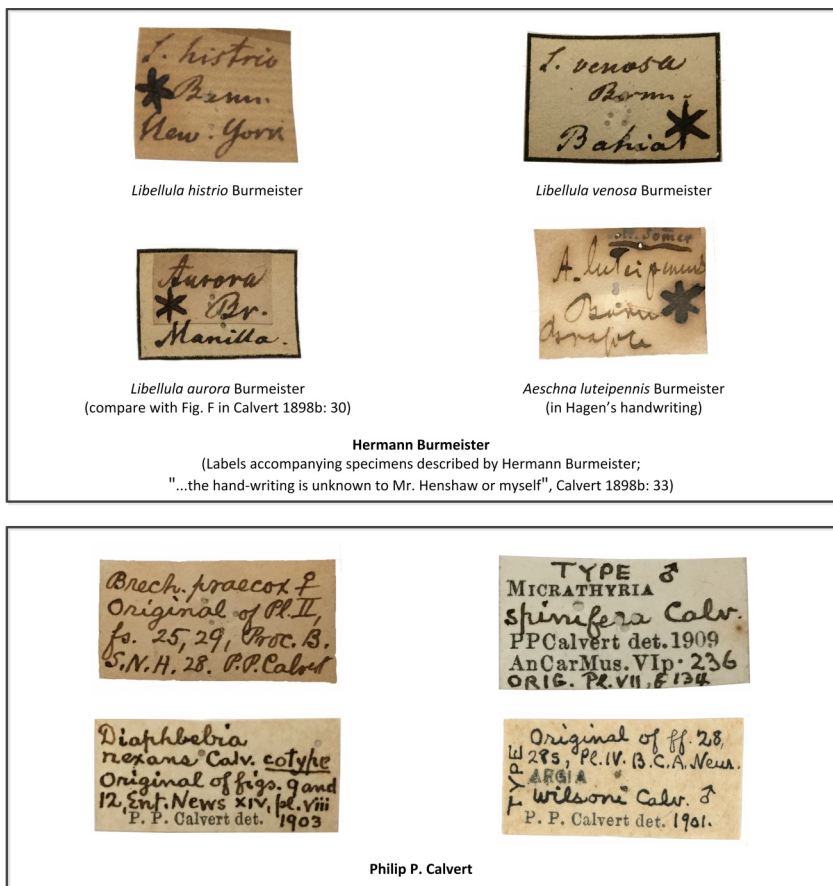


Figure 3: Label examples.

included in the original description (= pseudotypes), are enclosed in square brackets ([ ]). Orthography of labels is given in full (when decipherable) and each line is separated by a "/", followed by whether the label was handwritten, printed, stamped or penciled in brackets ([ ]). Separate labels are separated by a semicolon (;). We have not transcribed Banks' red type labels but have, instead, quoted each as "MCZ ENT [number]" at the end of each label entry. Several types in the MCZ carry a larger black bordered label usually with the abbreviated name of the species and author (also usually abbreviated) and also an asterisk (\*) indicating that Hagen considered the specimen(s) as part of the type series. Some of these labels were header labels in each unit containing the type material although in some cases, the label was attached to a particular specimen probably done in later years during examination and curation of Hagen's collection. We have quoted these labels when available since they may be relevant

to future students working on the collection. Examples of some of these labels as well as others are shown in Figures 2 and 3. We have endeavored to give exact spellings on labels even if these are at times inconsistent or incorrect. Annotations for each specimen, if any, follow, and finally after each entry we have given the current status of the name, either as "Currently [full name, author, date]" or "Currently a junior synonym of [current name, author and date]."

#### **Museum acronyms used include:**

**ANI** - Australian National Insect Collection, Canberra, AUSTRALIA

**ANSP** - Academy of Natural Sciences, Department of Entomology, Philadelphia, Pennsylvania, U. S. A.

**BMNH** - British Museum of Natural History, Department of Entomology, British Museum (Natural History), London, U. K.

**CAS** - California Academy of Sciences, San Francisco, California, U. S. A.

**CM** - Carnegie Museum of Natural History, Section of Entomology, Pittsburg, Pennsylvania, U. S. A.

**MCZ** - Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts, U. S. A.

**MLU** - Martin-Luther-Universität, Zoologisches Institut, Halle, GERMANY

**MNB** - Museum für Naturkunde, Berlin, GERMANY

**NHMW** - Naturhistorisches Museum Wien, Vienna, AUSTRIA

**RBINS** - Institut Royal des Sciences Naturelles de Belgique, Bruxelles, BELGIUM

**RMNH** - Naturalis (Nationaal Natuurhistorisch Museum; formerly Rijksmuseum van Natuurlijke Historie), Department of Entomology, Rijksmuseum van Natuurlijke Historie, Leiden, THE NETHERLANDS

**SMF** - Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt am Main, GERMANY

**UMMZ** - University of Michigan, Museum of Zoology, Ann Arbor, Michigan, U. S. A.

**ZMUC** - Universitets København, Zoologisk Museum, København, DENMARK

We added links to all the bibliographic references that are currently available on the internet, most at The Biodiversity Heritage Library (BHL) website; for others we have provided digital object identifiers (DOI's).

## **Results**

According to our study, the MCZ collection includes specimens of 634 taxa labeled as types. Fifteen of these have been incorrectly labeled as types (pseudotypes) and eight are apparently lost, leaving a total of 611 types currently deposited at MCZ. From these, 489 represent primary name-bearing types (syntype/s, holotype, lectotype and neotype), 21 are probable primary types (when we could not confirm nor deny their primary type status based on available evidence), and 101 are secondary types (paratype/s, paralectotype/s).



## List of Types

### ZYGOPTERA

#### AMPHIPTERYGIDAE

**montana** Hagen in Selys (**Anisoneura**) 1859a: 445 (11 reprint). Holotype ♂. "Himalaya. / Orient [?]; "Hagen [printed]". MCZ ENT 12098.

Currently *Philoganga montana* (Hagen in Selys, 1859).

#### ARGIOLESTIDAE

**grisea** Hagen in Selys (**Argiolestes**) 1862b: 40 (38 reprint). Holotype? ♂. "N. Holl."; "A. grisea"; "Hagen [printed]". MCZ ENT 12126.

Described from at least 1 ♂ from "Nouvelle-Hollande. (Collect. Hagen.)" Theischinger (1998: 614) in erecting his new genus *Griseargiolestes* designated "*Argiolestes griseus* (HAGEN in SELYS 1862) as the type species by original designation" but later Kalkman & Theischinger (2013: 3) assigned authorship (incorrectly) to Selys. Houston & Watson (1988: 66) stated that the holotype is at RBINS: "Type data: holotype, RIB [=RBINS] M [♂], from Australia (as Nouvelle-Hollande)." But we have seen no published information to support this. Currently *Griseargiolestes griseus* *griseus* Hagen in Selys, 1862.

**pusillissimus** Kennedy (**Archiargiolestes**) 1925: 292. Paratypes ♂, ♀. "West Australia / Thorey [handwritten]"; "Hagen [printed]"; "Archiargiolestes / pusillissimus ♂ [handwritten by Kennedy]"; MCZ ENT 15356 (♂) and 15357 (♀, same label data but "Archiargiolestes / pusillissimus ♀? [handwritten by Kennedy]").

Holotype and allotype were transferred to ANIC as per Watson (1977: 198): "Type.-Holotype male, Western Australia, no date, (G.) Thorey (previously in MCZ, Type No. 15356 (Kennedy 1925), but numbered 15357 when received on loan in 1958 and when lodged in ANIC in 1971; ANIC Type No. 9858); allotype female, data as for holotype, previously in MCZ, now in ANIC, bearing MCZ Type No. 15357, as indicated by Kennedy (1925)." Currently *Archiargiolestes pusillissimus* Kennedy, 1925.

#### CALOPTERYGIDAE

**aequabilis** Say (**Calepteryx**) 1840: 33. Syntypes 1 ♂, 1 ♀. ♂: "53."; "Sutton / Dr. Smith". ♀: "54."; "Sutton / Dr. Smith". MCZ ENT 26479.

Hagen (1873a: 274) stated: "The male, 53, and the female, No. 54 agree well with Say's description, and as he gives the locality Massachusetts, and adds, "a female specimen, also [italics are Hagen's] sent me by Dr. Harris," there is no doubt of the typical character of the specimens in the [Harris] collection." The ♂ lacks the abdomen, the ♀ the head. Currently *Calepteryx aequabilis* Say, 1840.

**albistigma** Hagen in Selys (**Hetaerina**) 1853: 45. Syntype ♀. "P[uerto]. Cabello"; "Hagen [printed]". MCZ ENT 12071.

Other specimens at Selys Collection, RBINS. Currently a junior synonym of *Hetaerina occisa* Hagen in Selys, 1853.

**amata** Hagen (**Calopteryx**) 1889: 244. Syntypes 2 ♂♂, 3 ♀♀. All with "Peterborough / L[ouis]. Cabot. 6.22 89."; "amata"; except for 1 syntype ♀ with same data but "June 18.87". MCZ ENT 12047.

Original description stated: "Dublin, New Hampshire, near Thorndike pond, 1300 ft. above sea level, 2 females, June 18, 1887, and 4 males and 2 females June 22, 1889, by Mr. Louis Cabot". Currently *Calopteryx amata* Hagen, 1889.

**americana** Fabricius (**Agrion**) 1798: 287. Syntypes 2 ♂♂. ♂: "coll. Huebner. Germ. / americana. Fabr. typ. Typ. Burm."; "Agr. americana / \* type Fabr. \*Burm. / coll. Hybner, later /coll. Germar"; "Hagen [printed]". ♀: same data but lacking first label. MCZ ENT 1858.

An explanation of these specimens, which may be Fabricius' types, was given by Calvert (1898b: 47) as follows. "Two males in the M. C. Z. have each this label "Agr. americana \* type Fabr. \* Burm. coll. Hybner, later coll. Germar" in Hagen's hand. One of these two has also "coll. Huebner. Germ. americana Fabr. typ. Typ. Burm." of which the words "americana Fabr. typ." are in a larger hand, the others in Hagen's. Both of these males lack the head and abdomen (except the first segment). They are referred to by Baron de Selys (Monog. Calopt. p. 133) "Comme il [Fabricius] a décrit cette espèce [americana] d'après des types de la collection Hybner, qui out été communiqués obligeamment à M. Hagen par M. Germar, il ne peut pas y avoir de doute sur son identité." Zimsen (1964: 623) listed 4 specimens "in America Dom. Hybner" in Kiel. Currently *Hetaerina americana* (Fabricius, 1798).

**amoena** Hagen in Selys (**Vestalis**) 1853: 25. Lectotype ♂. "Java", "Charp.", "V. amoena / \* Hag. / Not type / Bks [last part in Banks' hand]"; "Hagen [printed]". MCZ ENT 30907.

Lectotype designated by Liefinck (1965: 339) who also provided details concerning this specimen (1965: 340) but attributed authorship to Selys. However, the original description stated *Vestalis amoena*, Hagen. Currently *Vestalis amoena* Hagen in Selys, 1853.

**apicalis** Burmeister (**Calopteryx**) 1839: 827. Syntypes 2 ♂♂, 1 ♀. ♂: "apicalis / \* Burm. / Philadelphia"; Winthem [printed]; "Hagen [printed]"; "\* Burm. II / p. 827.8 [handwritten by Hagen]". ♀ same label data. ♀ same label data but with following label: "\* Burm. II p. 827.8 / Philadelphia, Pa. [handwritten by Hagen]". MCZ ENT 12049.

Currently a junior synonym of *Calopteryx dimidiata* Burmeister, 1839.

**atrata** Selys (**Calopteryx**) 1853: 16. Syntypes 2 ♂♂. ♂: "Hagen [printed]"; "C. atrata / China / \* Sel. Cal. p. 48.". ♀ same label data. MCZ ENT 12053.

According to Matti Hämäläinen (*pers. comm.*) the syntype series (Shanghai envir., or China, St[ev.]) at RBINS includes 4 ♂♂ and 2 ♀♀. Even though the original description did not mention specimens in Hagen's collection ("Chine, Japon. (Musées de Leyde, Britannique, coll. Selys, etc.)", we believe these specimens were part of the type series. Currently *Atracalopteryx atrata* (Selys, 1853).

**auripennis** Burmeister (**Calopteryx**) 1839: 827. Holotype ♀. "Agrio / auripennis / \* Brasil?"; "Winthem [printed]"; "photo, 1961 / Montgomery". MCZ ENT 1859.



The status of this specimen was discussed by Calvert (1898b: 49) who stated: "A female in the M. C. Z. with the pin-labels "Winthem" (printed) and" Agrio auripennis \* Brasil ?" (written) is probably the type; it agrees with the description of *Hetaerina auripennis* in de Selys' Monog. Calopt. p. 109." Currently *Hetaerina auripennis* (Burmeister, 1839).

**basalis** Hagen in Selys (*Hetaerina*) 1859a: 441 (6 reprint). Syntypes 11 ♂♂, 12 ♀♀. 1 ♂: "Pecos River/Texas"; "July / 2", "Hagen [printed]"; "Hetaerina / americana (Fabr.) / det by R.W. / Garrison 19[printed]80 ♂ [handwritten]. 10 ♂♂, 12 ♀♀: same label data but: ♀: June 2; 2 ♀♀: June 4; ♀: June 30; ♂, ♀: July 2; ♂: July 3; ♂: July 5; ♂: July 11; ♀: July 12; ♂: July 16; 2 ♂♂, 1♀: Aug. 9; ♀: Aug. 14; 4 ♂♂: Aug. 18; 3 ♀♀: without date. MCZ ENT 25960.

Currently a junior synonym of *Hetaerina americana* (Fabricius, 1798).

**basalis** Say (*Lestes*) 1840: 35. Syntype? ♂. "47.", "Salem / Pickering". MCZ ENT 26480.

Hagen (1873a: 275) stated: "All...belong to *Hetaerina americana*, and as Say gives the locality Massachusetts ["Inhabits Missouri, Indiana, and Massachusetts", Say 1840: 35], it may be that the type is among them." Currently a junior synonym of *Hetaerina americana* (Fabricius, 1798).

**basilaris** Selys (*Matrona*) 1853: 17. Paralectotype ♂. "M. basilaris / Shangai Chin. / \* Sel. Cal. p. 53."; "penis / drawn [Kennedy handwritten label]"; "Hagen [printed]". MCZ ENT 12054.

The lectotype ♂, designated by Matti Hämäläinen (Yu et al. 2015: 481), is at Selys Collection, RBINS. Currently *Matrona (Matrona) basilaris* Selys, 1853.

**borchgravii** Selys (*Hetaerina*) 1869: 658 (14 reprint). Syntypes 2 ♂♂. ♂: "P. Br."; "Hetaerina / Borchgravii / Selys / ♂ Tijuca"; "draw; photo / Montgomery / 1961". ♂: same data but second label reads: "H. Borchgravii". MCZ ENT 12072.

Currently *Mnesarete borchgravii* (Selys, 1869).

**californica** Hagen (*Hetaerina*) 1859a: 440 (6 reprint). Syntype ♂. "Nord. / Calif."; "River [undecipherable] / N. Calif."; on reverse side: "Pirkaluabinka [?] / Cr, Crb: Kamch: [?]; "Hagen [printed]"; "Hetaerina / americana (Fabr.) / det by R.W. / Garrison 19 [printed] 80 ♂ [handwritten]". MCZ ENT 12067.

Currently a junior synonym of *Hetaerina americana* (Fabricius, 1798).

**carnifex** Hagen in Selys (*Hetaerina*) 1853: 37. Paralectotypes 20 ♂♂, 1 ♀. "Neu Freiburg / Rio Brasilien"; "Hagen [printed]" (and variations of these labels). MCZ ENT 12063.

Lectotype designated by Jurzitza (1982). Currently a junior synonym of *Hetaerina longipes* Hagen in Selys, 1853.

**dimidiata** Burmeister (*Calopteryx*) 1839: 829. Holotype ♀. "dimidiata / Burm. \* / Kentucki"; "Winthem [printed]"; "Hagen [printed]"; "Burm. II. / p. 826.16". MCZ ENT 12048.

An account of this specimen was given by Calvert (1898b: 50): "One female in the M. C. Z. with the pin-labels "Winthem" (printed), "dimidiata Burm. \* Kentucki" and "Burm. II. p. 826. 16." Hagen's copy of B[urmeister], has no \* opposite this name, but in Psyche, v, p. 246, 1889, he quoted Burmeister's type." Currently *Calopteryx dimidiata* Burmeister, 1839.

**divina** Hagen in Selys (*Hetaerina*) 1854b: 112. Holotype ♂. "Hagen [printed]"; "Winthem [printed]"; "divina \* Hag."; "photo draw / Montgomery / 1961". MCZ ENT 15962.

Currently a junior synonym of *Hetaerina auripennis* Burmeister, 1839.

**dominula** Hagen in Selys (*Hetaerina*) 1853: 33. Syntype ♂. "Guyana"; "Hagen [printed]"; "Mus. Berol."; "dominula"; "photo. 1961 / Montgomery". MCZ ENT 12082.

Two other specimens, a ♂ ("Surinam") and a ♀ ("Surinam"), are probably not of the original type series: the original description lists "Guyane" as the only locality for this taxon. Abdominal segments 8-10 are missing. Currently *Hetaerina caja dominula* Hagen in Selys, 1853.

**dorothea** Williamson (*Psolodesmus*) 1904a: 249. Syntype ♂. "Psolodesmus / dorothea / (cotype) / Formosa". MCZ ENT 12059.

Garrison et al. (2003: 4-5) stated: "1 ♂, 1 ♀ syntypes. *Psolodesmus / dorothea / Formosa / Type* [label E.B. Williamson]. No type was specified in the original description based on "3 males and 2 females in my collection." A male and female of the type series both have handwritten labels by Williamson with the word "type." These were probably written at a later date." A lectotype should be designated from a syntype at UMMZ. Currently considered either a junior synonym or a subspecies of *Psolodesmus mandarinus* McLachlan, 1870.

**duplex** Selys (*Hetaerina*) 1869: 656 (12 reprint). Syntype ♂. "Bogota?"; "Het. duplex / De Selys"; "Hagen [printed]"; "photo 1961 / Montgomery". MCZ ENT 12080.

Two additional ♂♂ ("St. Fe de Bogota / Lindig. 1863") are probably not part of the original series. A lectotype should be selected from Selys Collection at RBINS. Currently *Hetaerina duplex* Selys, 1853.

**earnshawi** Williamson (*Mnais*) 1904b: 185. Syntypes 2 ♂♂. "Mnais / earnshawi / Burma / cotype / coll. A.R. Earnshaw". MCZ ENT 8976.

Garrison et al. (2003: 5) stated: "9 ♂♂, 3 ♀♀ syntypes. One pinned ♂: *Mnais/earnshawi*. Burma/Type. [label E.B. Williamson]. Eight other male and two female syntypes in original envelopes with following data: *Mnais earnshawi* (♂ or ♀) /Burma R.A. Earnshaw [all in pencil]," and "No type was specified in the original description consisting of 22 ♂♂ and 2 ♀♀, and the handwritten type label was probably added after the original description." A lectotype should be designated from the syntypes at UMMZ. Currently a junior synonym of *Mnais andersoni* McLachlan in Selys, 1873.

**elegans** Hagen in Selys (*Sylphis*) 1853: 9. Holotype ♀. "Hagen [printed]"; "Mus. Berl. [printed]"; "Sylphis / [undecipherable]"; "angustipennis"; "S. elegans \* / Mon. Cal. 20. / Mus. Berol. [this last label added after original description]". MCZ ENT 12046.

Currently a junior synonym of *Calopteryx angustipennis* Selys, 1853.

**globifer** Hagen in Selys (*Lais*) 1853: 27. Lectotype ♂. "Neu Freiburg Rio / Besckhe"; "L. globifer / \* Hag."; "Hagen [printed]"; "Draw; photo / Montgomery / 1961". Paralectotypes (8 ♂, 2 ♀) labels similar, but lacking second det. label of Hagen. MCZ ENT 12060.

Lectotype designated by Garrison (2006: 8). Currently *Bryoplathanon globifer* (Hagen in Selys, 1853).

*gloriosa* McLachlan in Selys (*Sapho*) 1873: 611 (58 reprint). Paralectotype ♀. "Hagen [printed]"; "Sapho / *gloriosa* Selys"; "Cameroons". MCZ ENT 12056.

Lectotype ♂ designated by Kimmins (1969: 305) at BMNH. Currently *Sapho gloriosa* McLachlan in Selys, 1873.

***hebe*** Selys (***Hetaerina***) 1853: 34. Syntype 1 ♀, possibly 1 ♂. ♀: "Bresil."; "Hagen [printed]"; "Mus. Berol. [printed]"; "photo 1961 / Montgomery". ♂: "d./2."; "caja"; "Hagen [printed]"; "photo; draw / Montgomery / 1961". MCZ ENT 12073.

One ♀ with labels similar to above and labeled "caja" (MCZ ENT 12073) is, we believe, *H. caja*; another ♂ and ♀ have different labels, though both are from Brazil, and may not be part of the type series. A lectotype should be selected from syntypes at Selys Collection, RBINS. Currently *Hetaerina hebe* Selys, 1853.

***holosericea*** Burmeister (***Calopteryx***) 1839: 828. Syntypes 3 ♂♂, 2 ♀♀. ♂: "A. fumipennis Br." in Burmeister's hand, but without border, and on the reverse side "C. holosericea / Burm. 828 / \* No. 13. / coll. Som[m]er" in Hagen's hand, "C. holosericea / \* Burm. II.828.13. / coll. Som[m]er / Java (error!) [handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 25959; ♀: "Java (error!) Aus Leiden 1864" in Hagen's hand. ♂: "Winthem" [printed]; "holosericea Br. Philadelphia" [handwritten]; ♂: "Winthem [printed]"; "C. holosericea \* Burm.\* Sel. [handwritten by Hagen]". ♀: "Winthem [printed]"; "C. holosericea ♀ \* Burm. \* Selys Cal. p. 29 [handwritten by Hagen]". ♂: "Winthem [printed]"; "Pensylvan" [handwritten]; "C. maculata \* Burm. [handwritten by Hagen]."

A discussion of these specimens was given by Calvert (1898b: 49): "Pinned to the bottom of the drawer below the above specimens is the following note in Hagen's hand: 'The 5 specimens (the ♀ from Leyden excepted) are Burm[eister]. types. The male labeled Java was presented to me by Mr. Sommer, and in the collect. label. C. fumipennis Br., which name was changed in the H[and]db[ook]., as he has done several times. Perhaps Sommer's specimen came from the Leyden Mus., what would explain the error. The types Winthem has Philadelphia on the label, not mentioned by Burm[eister].'"

The following specimens are at MCZ:

1 ♂ with two written pin-labels (1) "A. fumipennis Br." in B[urmeister].s hand, but without border, and on the reverse side "C. holosericea Burm. 828. \* No. 13 coll. Somer" in Hagen's hand, and (2) "C. holosericea \* Burm[eister]. II. 828. 13. coll. Somer. Java (error)" in Hagen's hand.

1 ♀ with the pin-label "Java (error!) Aus Leiden 1864", not a type, see below.

1 ♂ with pin-labels "Winthem" [printed], "holosericea Br. Philadelphia" [handwritten].

1 ♂ with the pin-labels "Winthem" [printed], "C. holosericea \* Burm. \* Sel. Hag." in Hagen's hand.

1 ♀ with the pin-labels "Winthem" [printed], "C. holosericea ♀ \* Burm. \* Selys Cal. p. 29" in Hagen's Hand.

1 ♂ "Winthem" (printed), "Pensylvan" [handwritten], "C. maculata \* Burm." in Hagen's hand; this male has clear spots in the dark portions of the wing. Currently considered a junior synonym of *Calopteryx maculata* (Palisot de Beauvois, 1807).

***hudsonica*** Hagen (***Calopteryx***) 1877: 22. Syntypes 1 ♂, 2 ♀♀. ♂: "Michipicoten / Lake Superior / Barnston 1862"; "hudsonica". ♀♀ same data as ♂. MCZ ENT 12050.

♂ with part of abdomen missing; a ♀ with abdomen and head missing. Currently a junior synonym of *Calopteryx aequabilis* Say, 1840.

*infecta* Calvert (**Hetaerina**) 1901: 38. Paratypes 1 ♂, 1 ♀. "Atoyac, / Vera Cruz. / May H.H.S. [printed]"; "HETAERINA ♂ [or ♀] / INFECTA CALV.[stamped]"; "cotype [handwritten]"/"; "P.P. Calvert det. [printed] 1900 [handwritten]". MCZ ENT 12077.

Holotype at BMNH (Kimmins 1969: 205. Currently *Hetaerina infecta* Calvert, 1901.

**longipes** Hagen in Selys (**Hetaerina**) 1853: 37. Syntypes 2 ♂♂. ♂: "Brazil."; "Mus. Berol. [printed]"; "Hagen [printed]"; "longipes"; "photo 1961 / Montgomery". ♂: same data except for Montgomery label. MCZ ENT 12064.

Caudal appendages of both ♂♂ missing; ♀ missing or in another collection. Currently *Hetaerina longipes* Hagen in Selys, 1853.

**longipes** Hagen (**Neurobasis**) 1887: 648. Holotype ♂. "N. Chinensis / var. longipes / Hag [handwritten by Hagen]"; "Kinioiari[?] / Mindai / Borneo.6.22.82 [handwritten in an unknown hand]"; "penis / drawn [handwritten by C. H. Kennedy]"; "longipes [handwritten]". MCZ ENT 35408.

Holotype status of this specimen was discussed by Orr & Hämäläinen (2007: 36-37). Currently *Neurobasis longipes* Hagen, 1887.

[*longistigma* Selys (*Sapho*) 1869: 650 (6 reprint). Pseudotype ♂. "Gaboon"; "Cleis / longistigma, Selys"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 12055.

Original description places the ♂ from "Le Vieux Calabar" (in Nigeria) at RBINS; the present MCZ ♂ is not a type. Currently *Umma longistigma* Selys, 1869.]

**moribunda** Hagen in Selys (**Hetaerina**) 1853: 42. Syntypes 2 ♂♂. ♂: "Surin[am]."; "Hagen [printed]"; "Mus. Berol."; "moribunda"; "photo. 1961 / Montgomery"; ♂ same data. MCZ ENT 12069.

The original description gives "Guyane. (Collect. Hagen, Selys.)", not Surinam. We cannot explain this discrepancy. Both specimens lack the caudal appendages. Garrison (1990: 221) examined probable syntypes at RBINS. Currently *Hetaerina moribunda* Hagen in Selys, 1853.

**mortua** Hagen in Selys (**Hetaerina**) 1853: 35. Holotype ♂. "Guyana"; "Mus. Berol. [printed]"; "Hagen [printed]"; "mortua"; "penis / drawn". MCZ ENT 12074.

Abdominal segments 4-10 missing. Original description cites "20-25 antecubitals" which tallies with this specimen. Currently *Hetaerina mortua* Hagen in Selys, 1853.

**occisa** Hagen in Selys (**Hetaerina**) 1853: 44. Syntypes 2 ♂♂, 1 ♀. ♂: "Venezuela / App [undecipherable]"; "Hagen [printed]"; "draw; photo / Montgomery / 1960". ♂ same data. ♀: same data but "Columbia / Burm.". MCZ ENT 12070.

According to St. Quentin (1970: 260 61) a possible syntype ♂ is housed at Museum für Naturkunde (MNB): "Als Herkunftort gibt Selys "Colombie, Venezuela (Collect. Hagen, Selys)"; ein ♂ mit der Etiquette von Selys "Venezuela" könnte als Cotype zu werten sein; Inv. – Nr. 95." Currently *Hetaerina occisa* Hagen in Selys, 1853.

**opaca** Say (**Calepteryx**) 1840: 32. Syntype ♂. "44 [handwritten]"; "Cambridge / June 1841. [handwritten]"; "Calepteryx. [handwritten]". MCZ ENT 26472.

The original description cited an unspecified number of ♂♂ from Massachusetts and added: "For this species, I am indebted to Dr. Harris." A series of ♂♂ and 5 ♀♀ is housed separately in the Harris collection. Hagen (1873a: 273–274) reports the following concerning these specimens:

"No. 44. ♂ ♂ ♂, *Calepteryx opaca* Say MSS. (Say's determ.). See No. 43.

Mr. Oakes, Ipswich; North Carolina, Prof. Hentz; New Jersey, Mr. Calverley, ♂; Cambridge, June 25, 1841, ♂♀ the female is numbered 46.

No. 43. ♂ ♂, *Calepteryx opaca*? Say MSS. var. ? (Say's determ.) Mr. Hentz, Northampton, June.

No. 46. ♀ ♀ ♀ ♀ ♀, *Agrion virgo*? Drury (Harris' determ.). *Cal. ? materna* Say MSS. (Say's determ.). Milton, June; North Carolina, Prof. Hentz; Dr. Smith, Sutton; New Jersey, Mr. Calverley.

Say, 1. c., 32, 2, gives the locality Massachusetts for his *C. opaca*, and adds, "for this species I am indebted to Dr. Harris." Of course the specimens No. 44 are types. The males, No. 43, are immature. All these specimens belong to *C. maculata*."

Hagen placed the following header label above these specimens: "Calopteryx maculata / Beauvois. / Hag. Syn. 57.4. / Harr. Cat. 44 ♂♂♂ *C. opaca*. \* / 43. ♂♂ 46 ♀♀♀♀♀ *C. materna*."

Currently a junior synonym of *Calopteryx maculata* (Palisot de Beauvois, 1807).

**pruinosa** Hagen in Selys (**Laïs**) 1853: 28. Syntypes 2 ♂♂. ♂: "A pruinosa MB / Brazil."; "penis / drawn"; "Hagen [printed]"; "Mus. Berol. [printed]"; "Draw; photo / Montgomery / 1961". ♂: "Brazil"; "Hagen [printed]"; "Mus. Berol. [printed]". MCZ ENT 12061.

Selys (1854b: 95) stated that "M. Hagen examine cinq males et cinq femelles du Musée de Berlin pris au Brésil par Sellow."; these 2 ♂♂ are very likely from that series, but a lectotype ♂ should be designated from the MNB. Currently *Mnesarete pruinosa* (Hagen in Selys, 1853).

*pruinosa* Selys (*Mnais*) 1853: 20. Paralectotype ♂. "M. pruinosa / Japon / Mus. Leyd. [?] 18 / 19 [?]", "Hagen [printed]". MCZ ENT 12057.

Lectotype ♂ designated by Lieffinck (1971: 108). Currently *Mnais pruinosa* Selys, 1853.

**pseudamericana** Walsh (**Hetaerina**) 1864: 223. Syntypes 1 ♂, 2 ♀♀. "H. pseudamericana ♂ [or ♀] / \* Walsh. 1864 [this date is probably the year Hagen received Walsh's paper, or syntypes. It is probably not the capture date] Rock Island"; "Hagen [printed]"; v"43 [♂] " or "44" or "46" [both ♀♀]. MCZ ENT 12413.

Currently a junior synonym of *Hetaerina americana* (Fabricius, 1798).

**pudica** Hagen in Selys (**Laïs**) 1853: 29. Syntypes 1 ♂, 1 ♀. ♂: "Agr. pudicum / Bras. [undecipherable]"; "Hagen [printed]"; "photo 1961 / Montgomery". ♀ "Brazil"; "Mus. Berol. [printed]"; "Hagen [printed]". MCZ ENT 12062.

Garrison (2006: 40) who revised the genus stated: "Hagen in Selys (1853: 29) mentions "Brésil (Ypanema). (Musées de Vienne et de Berlin.)", and in 1854b: 96: "La province d'Ypanema au Brésil, d'où Musée de Vienne l'a reçue par M. Natterer. — Le Brésil, d'après les exemplaires du Musée de Berlin par M. Sellow." St. Quentin (1970: 260) mentions 2 male syntypes in NHMW and I examined one male and female syntype in MNB. The male is labeled "Pudica/Hagen/Brasil

Sellow" and has abdominal segments 8-10 and appendages replaced by those of a probable *Hetaerina hebe* Selys; the female lacks abdominal segments 4-10. A pair of this species is in the Hagen collection at MCZ. The male is labeled "Agr. pudicum/Bras [undecipherable]"; the female is labeled "Brazil", "Mus. Berol [printed]". I am unsure if the pair are syntypes though they are listed as types in MCZ." We believe this pair are part of the type series, based on the "Mus. Berol." and "Brasil" labels. Currently *Mnesarete pudica pudica* (Hagen in Selys, 1853).

**rosea** Selys (*Hetaerina*) 1853: 31. Syntypes 1 ♂, 1 ♀. ♂: "Brazil Dohnr"; "Hagen [printed]"; "draw photo / Montgomery / 1961". ♀: "Brazil"; "Mus. Berol. [printed]"; "Hagen [printed]"; "rosea". MCZ ENT 12081.

Currently *Hetaerina rosea* Hagen in Selys, 1853. Other specimens (syntypes?) in RBINS (Garrison 1990: 224).

**rudis** Calvert (*Hetaerina*) 1901: 40. Paratype ♂. "San Geronimo, / Vera Paz. / Champion [printed]"; "HETAERINA ♂ / RUDIS CALV. [stamped] / cotype [handwritten] / P.P. Calvert det. [printed] 1900 [handwritten]". MCZ ENT 12078.

Lectotype ♂ at BMNH designated by Kimmins (1969: 306). Currently *Hetaerina rudis* Calvert, 1901.

**rupamnensis** Walsh (*Hetaerina*) 1864: 230. Syntype? ♂. "702"; "Hagen collection, H. tricolor Br. / rupamnensis Walsh! / Rock Island, Ill."; "Hetaerina titia (Drury) / ♂ / det. R.W. Garrison [printed] / 19 [printed] 80 [handwritten]". MCZ ENT 12068.

Garrison (1990: 227) reported that the type/s of *rupamnensis* was/were lost. There is no evidence to confirm or deny the status of this ♂ as a syntype. The determination label is in Hagen's hand, but there is no "\*" on the label, a character Hagen usually placed on type specimens, and he may have received this specimen after 1863. Currently a junior synonym of *Hetaerina titia* (Drury, 1773).

**sanguinea** Selys (*Hetaerina*) 1853: 31. Syntype? ♀. "[undecipherable]"; "sanguinea/type"; "Hagen [printed]". MCZ ENT 12076.

The handwritten "type" designation is in an unknown hand. This ♀ matches the original description of the (apparently) 1 ♀ in having 25 antenodals on one fore wing, but we have no further evidence to show this specimen to be a syntype. A lectotype should be designated from the syntypes at Selys Collection, RBINS. Currently *Hetaerina sanguinea* Selys, 1853.

**sanguinolenta** Hagen in Selys (*Hetaerina*) 1853: 35. Syntypes 4 ♂♂. ♂: "Brasilien / Borch[grave]."; "sanguinolenta"; "Hagen [printed]" [no MCZ ENT label, but certainly a syntype]. 3 ♂♂ syntypes: same data. MCZ ENT 12075.

These three syntypes are in poor condition and all lack the caudal appendages. The male noted above has the same labels as the 3 syntypes and should therefore be considered part of the type series. The appendages of the first ♂ noted above were illustrated by Garrison (1990: 243, fig. 39b). Currently a junior synonym of *Hetaerina hebe* Selys, 1853.

**simplex** Selys (*Hetaerina*) 1853: 30. Syntypes 4 ♂♂, 2 ♀♀. "M[inas]G[eracis]. / simplex / [undecipherable]"; "Hagen [printed]". MCZ ENT 12079.

A lectotype should be chosen from syntypes at Selys Collection, RBINS. Currently *Hetaerina simplex* Selys, 1853.

**strigata** Hagen (**Mnais**) 1853: 20. Lectotype ♂. "Japoni. / coll. Charp."; "Hagen [printed]"; "This was designated as Lectotype of / "Mnais strigata Hagen-Selys" which is a / ♂-form of Mnais pruinosa Selys [handwritten] Det. S. ASAHINA, 19[printed]76 [handwritten]". MCZ ENT 12058.

Lectotype designated by Asahina (1975: 406). Currently a junior synonym of *Mnais pruinosa* Selys, 1853.

**texana** Walsh (**Hetaerina**) 1864: 227. Syntype? ♂. "Pecos River / Texas"; "H. Texana / Walsh."; "Hagen [printed]". MCZ ENT 12066.

Garrison (1990: 199) reported that the type/s of *texana* was/were lost. The abdomen is missing on this specimen. There is no evidence to confirm or deny the status of this ♂ as a syntype but the detailed original description does not agree with this specimen although the type locality (Texas) tallies. Currently a junior synonym of *Hetaerina americana* (Fabricius, 1798).

**tricolor** Burmeister (**Calopteryx**) 1839: 827. Syntype ♂. "Winthem [printed]"; "Philadel / phia"; "Hagen [printed]"; "C. tricolor / \* Burm. II 827.7"; "Last 7 abdom. segs. are / apparently those of Het. carnifex. cf. description / & fig in Monog. Calopt. [in Calvert's hand]". MCZ ENT 1857.

This specimen now lacks the abdomen. A full account of its history was given by Calvert (1898b: 48) as follows: "One male in the M. C. Z. with the printed label "Winthem", the written labels "Philadelphia" and "C. tricolor \* Burm. II.827. 7", the latter in Hagen's hand. It agrees in part with the description of *Hetaerina tricolor* in Selys' Monog. Calopt., [1854b] p. 136, but the specimen has apparently been broken and repaired for the last seven abdominal segments do not agree with the description and figure of the Monographie, but belong apparently to *H. carnifex* Hagen. De Selys says (l. c.) of the description of tricolor: "Décrite d' après le mâle type, de Philadelphie (collection Winthem), et un couple du Musée de Vienne, reçus de l' Amérique septentrionale." St. Quentin (1970: 260) states: "Selys schreibt 1854, p. 137 (sep.): "Décrite d' après le mâle type, de Philadelphie (collection Winthem), et un couple du Musée de Vienne ... " Es liegen 2 ♂♂ und 1 ♀ mit Etiquetten vor die als Plesiotypen anzusehen sind; Inv.-Nr. 91." I have no assurance that this male was the only one before Burmeister at the time of the original description." Currently a junior synonym of *Hetaerina titia* (Drury, 1773).

**vulnerata** Hagen in Selys (**Hetaerina**) 1853: 40. Syntypes 2 ♂♂, 1 ♀. ♂ "Mexico"; "Mus. Berol. [printed]"; "Hagen [printed]". ♀: "A vulneratum MB / Mexico". 1 ♀: "Mexico"; "[?] scapula [undecipherable] / N.". MCZ ENT 12065.

Other specimens (syntypes?) at RBINS (Selys 1853: 41). Currently *Hetaerina vulnerata* Hagen in Selys, 1853.

**xanthostoma** Charpentier (**Calopteryx**) 1825: 5. Holotype ♀. "Hagen [printed]"; "Südl. / Frank. / reich [black-bordered yellow label]"; "C. xanthostoma \* Charp. / S. France. coll Chp."; "xanthostoma / Charp. [handwritten by Hagen]". MCZ ENT 12052.

Described from "Gallia meridionali [= Südliches Frankreich]." Maibach (1987: 163) in his revision of the Western European members of *Calopteryx* designated a ♂ neotype since he was unable to discover the unique ♀ described by Charpentier. As noted in our introduction, Hagen re-



ceived several types of Charpentier as is evidenced by his statement (Hagen 1861: 177) under *Diplax albifrons*: "I possess the male [of *Libellula albifrons* Charpentier, 1825] described and figured by Charpentier...". Currently *Calopteryx xanthostoma* (Charpentier, 1825).

**yakima** Hagen (*Calopteryx*) 1889: 248. Syntypes 3 ♂♂, 6 ♀♀. ♂: "Yakima R., W.T. / Lone Tree, June 30, '82 [printed]"; "Yakima". MCZ ENT 12051.

Other specimens with same labels, but one ♀ with locality label handwritten in ink. Original description originally based on 5 ♂♂ and 8 ♀♀. Currently a junior synonym of a subspecies of *Calopteryx aequabilis* Say, 1840.

## CHLOROCYPHIDAE

**aurantiaca** Selys (*Micromerus*) 1859a: 448 (14 reprint). Syntype ♂. "MAL / [A]CA [handwritten on small round label]"; "M. aurantia- / cus / \* Sel [handwritten by Hagen]"; "Hagen [printed]"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 12112.

The ♂ lacks the terminal abdominal segments and one wing is glued to the "penis drawn" label. According to Hämäläinen (*pers. comm.*) there is 1 syntype ♂ from Singapore and 2 syntypes ♂♂ from Malacca at Selys Collection, RBINS, and he suggests that the ♂ from Singapore be designated as lectotype since it is complete and well preserved. Currently *Libellago aurantiaca* (Selys, 1859).

[*biseriata* Selys (*Rhinocypha*) 1859a: 446 (11 reprint). Pseudotypes 4 ♂♂. "N. Borneo"; "Rhinocypha / biseriata, S."; "Hagen [printed]"; another ♂ with "Rhinocypha / biseriata / Selys / ♂ Borneo [yellow label]". MCZ ENT 12104.

One ♂ with abdomen missing, most of thorax eaten by dermestids. According to Hämäläinen (*pers. comm.*) there are 1 ♂ and 1 ♀ with Wallace's round label 'SAR' (= Saratoga) and another label 'Borneo, W.' at Selys Collection, RBINS, and he suggests that the ♂ in that institution be selected as lectotype. Currently *Helioocypha biseriata* (Selys, 1859).]

**bisignata** Hagen in Selys (*Rhinocypha*) 1853: 62. Holotype ♂. "Neelgherries [?] / Blue Mountains / west of Madras / Westermann"; "Hagen [printed]". MCZ ENT 12105.

ZMUC listed a ♂ in their collection from "India" as holotype and assigned authorship incorrectly to Selys. However, the data for the MCZ ♂ corresponds to that given by Hagen in Selys (1854b: 216): "Les Blue-Mountains, (*Neelgherries*) à l'ouest de Madras d'après un mâle communiqué par M. Westermann." indicating that Hagen based his description on this one ♂. Currently *Helioocypha bisignata* (Hagen in Selys, 1853).

**blandus** Hagen in Selys (*Micromerus*) 1853: 64. Paralectotype ♀. "Nicobar / min."; "Micromerus blandus"; "Hagen [printed]". MCZ ENT 12113.

Originally described from an unspecified number of ♂♂ and ♀♀. Repository of specimens was listed as "Musée de Copenhague," and a lectotype ♂ at ZMUC was designated by M. Hämäläinen (2002: 347): "SELYS LONGCHAMPS & HAGEN (1854: 236) state: "M. Hagen a examiné trois mâles de Nangkowry et quatre femelles de Petit Nikobar". Since only two males from "Nangkovri" and three females from "Nicobar min", [all having labels "Micromerus blandus Hag." and "Hagen del."] are available at ZMUC (Copenhagen), Hagen had apparently retained one

specimen of both sexes for his collection. However, according to data received from Dr Rosser Garrison, only the female syntype (Nr 12113) is now available at MCZ (Harvard)." and "This lectotype selection makes Nancowry Island [also called Nankauri Island] the type locality of *L. blanda*. The former syntype females from Little Nicobar belong to a new species *L. balus* sp. n. described below. From these syntypes I have studied only one female specimen (ZMUC), which bears old, handwritten labels "Nicobar min." / "Micromerus blandus Hag. ♀" / "Hagen det." and a more recent handwritten red label "TYPE Micromerus blandus Hagen 1854". [Two similarly labeled females are available at ZMUC; one further female at MCZ].". The MCZ paralectotype ♀ is currently *Libellago balus* Hämäläinen, 2002.

**colorata** Hagen in Selys (**Rhinocypha**) 1869: 664 (20 reprint). Syntypes 4 ♂♂, 2 ♀♀. Syntype 1 ♂: "Luzon / Semper / 1865"; "Hagen [printed]". Syntypes 3 ♂♂, 2 ♀♀: "Manilla / Semper": "Mani [illegible] / Semper"; abdominal appendages missing on two ♂♂; one ♂ with same data but with "penis / drawn" (abdomen now missing). ♀: "7"; "Manilla / Semper". MCZ ENT 12107.

Described from "Manille (par Semper). (Coll. Hagen et Selys.) Îles Philippines, Batjan."  
Cur-rently *Rhinocypha colorata* Hagen in Selys, 1869.

**cucullata** Selys (**Rhinocypha**) 1873: 492 (28 reprint). Paralectotype ♂. "Labuan"; "Rhinocypha / cucullata De Selys / ♂"; "303"; "Type [printed]"; "Hagen [printed]". MCZ ENT 12108.

Orr (2002: 291-292) designated a ♂ at Selys Collection, RBINS as lectotype. Three other paralectotype ♂♂ were also mentioned by Orr and the MCZ ♂ should also be considered a paralectotype. Currently *Rhinocypha cucullata* Selys, 1873.

[*cuneata* Selys (**Rhinocypha**) 1853: 60. Pseudotype ♂. "Himalaya / Brandt"; "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12101.

According to Selys (1854b: 207), the original description was based on 2 ♂♂ from "Thibet. (Collect. Selys)." Hämäläinen (pers. comm.) informed us that both syntypes are at Selys Collection, RBINS. Currently *Aristocypha cuneata* (Selys, 1853).]

**fenestrata** Burmeister (**Calopteryx**) 1839: 826. Holotype ♂. "Java \* / Agr. fene / strata [old handwritten label]"; "Rhinocypha [handwritten]"; "Winthem. [printed]"; "Hagen [printed]"; "R. fenestrata / \*Burm". MCZ ENT 1856.

Calvert stated (1898b: 47): "One male with the written pin-label "Java \* Agr. fenestrata", in the M. C. Z. It agrees with the description of *Rhinocypha fenestrata* in Selys' Monog. Cal., where, on p. 219, is the following note: "M. Rambur a cru que la *fenestrata* de M. Burmeister se rapportait plutôt à la *perforata*. C'est une erreur prouvée par l'examen du type de la collection Winthem". NOTE: The original heading for this species in Burmeister was "**C. fenestrata Wiedem.**" Selys (1853: 62) credited authorship to Burmeister but later (1854b: 216) to Wiedemann. There is no evidence that Wiedemann was the author of the name and we accordingly attribute authorship to Burmeister. Currently *Heliocypha fenestrata* (Burmeister, 1839).

[*finalis* Hagen in Selys (*Micromerus*) 1869: 665 (21 reprint). Pseudotype ♂. "Ceylon / Nictais [?]; "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12111.

The original description was based on a single ♂ from "Ceylan. N. B. Cet extrait d'une lettre

de M. Hagen indique une espèce distincte des autres par ses ailes inférieures jaunes." The holotype is at BMNH (Kimmins 1969: 309). Currently *Libellago finalis* (Hagen in Selys, 1869.)

**humeralis** Selys (*Rhinocypha*) 1873: 488 (24 reprint). Syntypes 2 ♂♂. ♂<sub>1</sub>: "Labuan"; "Rhinocypha / humeralis. Selys"; "Hagen [printed]". ♂<sub>2</sub>: "Hagen [printed]"; "Labuan / Borneo"; "Rhinocypha / humeralis / ♂ Labuan Selys". MCZ ENT 12016.

Described from "Labuan (Bornéo), après quatorze mâles tous semblables reçus par M. Higgins (Coll. Selys et Mac Lachlan)." According to Hämäläinen (*pers. comm.*), M.A. Lieftinck selected one of the 5 ♂♂ from Labuan at Selys Collection, RBINS, as lectotype, but this selection was never formally published. Currently *Rhinocypha humeralis* Selys, 1873.

**hyalinus** Selys (*Micromerus*) 1859a: 447 (13 reprint). Syntype ♂. "MAL[ACCA]. / 66 [handwritten on small round label]"; "Micromerus hyalinus / De Selys [handwritten]"; "M. hyalinus / \* Sel. [handwritten by Hagen]"; "Hagen [printed]"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 12115.

The original description cited "Malacca et Mont Ophir. Pris par M. Wallace (Collect. Selys.)." According to Hämäläinen (*pers. comm.*), 5 ♂♂ and 1 ♀ syntypes are at Selys collection. Two of the ♂♂ are from Mt Ophir and the rest from Malacca. A specimen at Selys Collection, RBINS, should be chosen as lectotype. Currently *Libellago hyalina* (Selys, 1859).

**lineata** Burmeister (*Calopteryx*) 1839: 826. Holotype ♂. "\*" / Java / lineata / Br"; "Winthem [printed]"; "Hagen [printed]". MCZ ENT 1855.

An account of this specimen was given by Calvert (1898b: 47) as follows: "One male with the printed pin-label "Winthem", and the written pin-label "\*" Java lineata Br.," in the M. C. Z. It agrees with the description in de Selys' Monog. Calopt., p. 237, of *Micromerus lineatus*, young male.,". Currently *Libellago lineata* (Burmeister, 1839).

**quadrimaculata** Selys (*Rhinocypha*) 1853: 60. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Rh. 4-macula- / ta / \* Sel. [handwritten by Hagen]"; "fenestrella / ♂ inde [handwritten]"; "i / st. [handwritten]"; "Hagen [printed]". ♂<sub>2</sub>: "75 / ? [handwritten]"; "Hagen [printed]". ♀<sub>3</sub>: "fenestrella [handwritten]"; "75 / ? [handwritten]"; "Hagen [printed]". MCZ ENT 12100.

The original description cited "Inde (Collect. Selys, Dale, etc.);" and later Selys (1854b: 204) notes that there were 6 ♂♂ and 4 ♀♀ from India ("L'Inde, après six mâles et quatre femelles envoyés par M. Stevens. Un mâle de Kaschmir, communiqué par le Musée de Vienne." According to Hämäläinen (*pers. comm.*), a specimen at Selys Collection, RBINS, should be chosen as lectotype. Currently *Aristocypha quadrimaculata* (Selys, 1853).

**semilincta** Selys (*Rhinocypha*) 1869: 491 (27 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Morotai/Mar. Lorquin / 1863. [handwritten probably by Hagen]"; "Hagen [printed]". ♀: "Bernstein / Batjan [printed]"; "Batjan//C / Mus. Leyd. 1864 [handwritten probably by Hagen]"; "Hagen [printed]". MCZ ENT 12109.

Described from "Gilolo (Musée de Leyde). — Moluques par M. Lorquin. (Coll. Selys.)." Lieftinck (1971: 111) notes that the types are lost: "The original specimens from "Gilolo" (Halmahera I., N. Moluccas) in the Leiden museum are no more in existence. Females examined by Hagen and de Selys are still represented in that collection from S. Halmahera, Batjan I. and Morotai

l., leg. Bernstein. — Chlorocyphidae. Specimens of either sex, labeled by de Selys himself and originating from Elbor, Gilolo and Batjan (N. Moluccas), are in de Selys' collection (IRSN), so that any selection of a lectotype should, I think, be made from one of these." The MCZ ♂ lacks both fore wings. Currently a subspecies of *Rhinocypha tincta* Rambur, 1842 or a valid species according to Hämäläinen (*pers. comm.*).

**silbergliedi** Asahina (*Indocypha*) 1988: 2. Syntypes 3 ♂♂, 1 ♀. ♂: "Haut Mekong, Laos, 7. VII., Kingdom Ward coll.". MCZ ENT 34977.

The name was originally spelled two ways in the original description: *silvergliedi* (incorrectly) in the text and *silbergliedi* in the figure legend. Asahina did not designate a holotype when describing this species. Since Asahina named this taxon after the late Dr. Robert E. Silberglied (1945-1982) the specific epithet was later corrected to *silbergliedi* by Asahina (1991: 54) and this change was further discussed by Zhang et al. (2010: 239). Currently *Indocypha silbergliedi* Asahina, 1988.

**stigmatizans** Selys (*Micromerus*) 1859a: 448 (13 reprint). Syntype ♂. "M. stigmati- / zans / ♂ / \* Sel. [handwritten by Hagen]"; "MT. / OPHIR [handwritten on small round label]"; "Micromerus Stigmatizans / ♂ Selys. [handwritten]"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 12114.

The original description cited "Malacca, Mont Ophir, Singapore. Pris par M. Wallace. (Collect. Selys)". According to Hämäläinen (*pers. comm.*), there is only one ♂ from Mt. Ophir at Selys Collection, RBINS and should be chosen as lectotype. Currently *Libellago stigmatizans* (Selys, 1859).

**trifasciata** Selys (*Rhinocypha*) 1853: 61. Syntypes 1 ♂, 1 ♀. ♂: "i / st", "trifasciata / ♂ / jin [?] indl"; "Hagen [printed]". ♀: "stes. [?] / i"; "trifasciata"; "Hagen [printed]". MCZ ENT 12102.

Original description was based on unspecified number of ♂♂ and at least 1 ♀ from "Inde.". According to St. Quentin (1970: 262), 2 possible syntype ♂♂ are housed at Museum für Naturkunde (MNB): "SELYS gibt als Herkunft an: "Inde (Collect. Selys; musée de Vienne)" und ergänzt die Angabe 1854, p. 209 (sep.): "L'Inde, d'après neuf mâles et quatre femelles envoyés par M. Stevens, et d'autres pris par M. de Huegel et communiqués à, M. HAGEN." Ein ♂ mit der Etiquette "HÜGEL" liegt vor, das als Plesiotypoid gewertet werden kann; Inv.-Nr. 160. According to Hämäläinen (*pers. comm.*), Selys Collection at RBINS includes 8 ♂♂ and 3 ♀♀, all with similar data from which a lectotype should be selected. Currently *Aristocypha trifasciata* (Selys, 1853).

**unicolor** Hagen in Selys (*Rhinocypha*) 1869: 665 (21 reprint). Holotype ♀. "Manilla / Semper"; "unicolor"; "Hagen [printed]". MCZ ENT 12110.

A discussion of the holotype was given by Hämäläinen (1989: 123). Currently *Cyrano unicolor* (Hagen in Selys, 1869).

**unimaculata** Selys (*Rhinocypha*) 1853: 61. Syntype ♂. "Rhinocypha / Rbr. [handwritten by Hagen]"; "R. unimacu- / lata / \* Sel. [handwritten by Hagen]"; "unimaculata / ♂ inde [handwritten]"; "i / St. [handwritten]"; "Hagen [printed]". MCZ ENT 12103.

According to St. Quentin (1970: 262), three possible syntypes, 2 ♂♂ and 1 ♀ are housed at Museum für Naturkunde, Berlin (MNB): "SELYS gibt als Herkunftort: ...Inde (Collect. Selys; musée de Vienne)" und ergänzt diese Angabe 1854, p. 211 (sep.): "L'Inde, d'après cinq males et une femelle

envoyes par M. Stevens, et d'après un couple pris par M. Huegel et communiqué à M. Hagen." Es liegen 2 ♂♂ und 1 ♀ mit der Etiquette "Hügel" vor und – da der Holotypus aus den Exemplaren von Stevens zu nehmen ist – als Plesiotypoiden zu werten sind; Inv.-Nr. 163. According to Hämäläinen (*pers. comm.*), only 1 feneral syntype ♂ from 'Inde' is at Selys Collection, RBINS and he suggests that this ♂, though feneral, should be selected as lectotype since it is in better condition than the ♂ in the MCZ. In addition, there are 5 ♂♂ and 3 ♀♀ at RBINS which do not belong to the type series. Currently *Paracypha unimaculata* (Selys, 1853).

## COENAGRIONIDAE

*aaroni* Calvert (*Neoneura*) 1903a: 139. Paratypes 1 ♂, 1 ♀. Both: "Tex. [printed]". MCZ ENT 12237.

Holotype (type number 9229) at Academy of Natural Sciences (ANSP). Calvert based his description on 14 ♂♂ and 8 ♀♀ all from the same locality (Texas). Currently *Neoneura aaroni* Calvert, 1903.

**aduncum** Hagen (*Agrion*) 1861: 79. Lectotype ♂, paralectotype ♀. ♂: "Cuba AD" [handwritten]; "Hagen [printed]". ♀: "Dohrn [in pencil] / Cuba.". MCZ ENT 12263.

Selys (1876a: 500; 83 reprint) stated: "NB. J'ai décrit le mâle d'après le type [*italics ours*] communiqué par le Dr Hagen." which we consider a lectotype designation. Currently *Nehalennia minuta minuta* (Selys, 1850).

*adustum* Williamson (*Acanthagrion*) 1916: 320. Paratype ♂. "Brit. Guiana / January 30, 1912"; "Acanthagrion / adustum ♂ / Wismar [both handwritten by Williamson]". MCZ 12303.

The holotype is at UMMZ (Garrison et al. 2003: 26). Currently *Acanthagrion adustum* Williamson, 1916.

**albistigma** Hagen in Selys (*Argia*) 1865: 402 (30 reprint). Syntypes 1 ♂, 2 ♀♀. "Montevideo"; "Mus. Berol. [printed]"; "Hagen [printed]"; the ♂ has an additional label: "A. albistigma / Hagen". MCZ ENT 12181.

The syntype ♂ is lacking the last four abdominal segments. Other specimens are present at Selys Collection, RBINS. Currently *Argia albistigma* Selys, 1865.

*amatoria* Calvert (*Protoneura*) 1907: 395. Paratypes 2 ♂♂, 1 ♀. "San Pedro, Hon. / E.B. Williamson / Bluffton, Ind. / Feb. 28, 1905". MCZ ENT 12240.

The holotype is at UMMZ (Garrison et al. 2003: 20). Currently *Protoneura amatoria* Calvert, 1907.

*amaurodytum* Perkins (*Agrion*) 1899: 66. Paralectotype ♀. "V [handwritten] / Molokai Mts., [printed] / 30000 + [handwritten] ft. / Perkins. 1893 [printed]"; "Gift of / Hawaiian / Committee / 1913 [printed]". MCZ ENT 8989.

The lectotype is at BMNH (Kimmins 1970: 182). Currently a junior synonym of *Megalagrion koelense* (Blackburn, 1884).

*amaurodytum* Race *peles* Perkins (*Agrion*) 1899: 67. Paralectotypes 1 ♂, 1 ♀: "Hawaii / Race *peles* / Perk. [handwritten by Perkins]"; "*peles*. [handwritten]"; "Gift of / Hawaiian / Committee / 1913 [printed]" (both specimens). MCZ ENT 8990.

The lectotype is at BMNH (Kimmins 1970: 189). Currently a junior synonym of *Megalagrion koelense* (Blackburn, 1884).

*amaurodytum* Race *wainaeum* Perkins (*Agrion*) 1899: 67. Paralectotypes 2 ♂♂. ♂<sub>1</sub>: "wainaeum [handwritten]"; "penis / drawn [handwritten by C. H. Kennedy]"; "Gift of / Hawaiian / Committee / 1913 [printed]". ♂<sub>2</sub>: "wainaeum [handwritten]"; "Waianae / Il 96 [handwritten]"; "Gift of / Hawaiian / Committee / 1913 [printed]". MCZ ENT 8991.

The lectotype is at BMNH (Kimmins 1970: 193). Currently a junior synonym of *Megalagrion koelense* (Blackburn, 1884).

*amelia* Calvert (*Neoneura*) 1903a: 138. Paralectotypes 4 ♂♂. ♂: Cubilguitz, / Vera Paz. / Champion. [printed]. ♂♂♂: "Livingston / Guatem Feb / H. Wilson, Ap 86 [handwritten]". All four ♂♂ with "NEONEURA / AMELIA Calvert / P.P. Calvert det. 1903 / B. C. A. Neur., p. 138 [printed]". MCZ ENT 12238.

The lectotype is at BMNH (Kimmins 1970: 176). Currently *Neoneura amelia* Calvert, 1907.

***ancilla*** Hagen in Selys (***Idioneura***) 1860b: 458 (30 reprint). Syntypes 3 ♂♂, 1 ♀. ♂<sub>1</sub>: "Brasilia / Mus. Berol."; "Hagen [printed]" (abdominal segments 4 10 missing). ♂<sub>2</sub>: "Winthem [printed]"; "ancilla / Hffmegg. / Brasil"; "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]", (abdomen missing). ♀<sub>3</sub>: "I ancilla / à envoyer"; "Charp [intricate black-bordered label]"; "Hagen [printed]". ♂<sub>4</sub>: "Bahia."; "I ancilla / à envoyer"; "ancilla / Mus. Berol" (last 4 abdominal segments missing). MCZ ENT 12235.

The original description is based on at least 1 ♂ and 1 ♀ from "Bahia, Brésil, Mus. de Berlin. (coll. Hagen et de Selys.)". Possible syntypes are at Selys Collection, RBINS (von Ellenrieder & Garrison 2007: 9) and another ♂ at MNB (Turiault 2018: 6). Morphology of the female pronotum matches current concept of the species. Currently *Idioneura ancilla* Hagen in Selys, 1860.

*anna* Williamson (*Enallagma*) 1900a: 455. Paralectotypes 1 ♂, 1 ♀. "En. Anna / type pr"; "Sheep Creek, / Wyoming / 7.23.99 \ E. B. Williamson [handwritten by Williamson]". ♀: "Sheep Creek, / Wyoming / 7.23.99 / E. B. Williamson / En. Pr. [handwritten by Williamson]". MCZ ENT 1623.

The original description was based on 8 ♂♂ and 3 ♀♀. No type was selected although the ♂ used for Williamson's illustration is at UMMZ and is listed by Garrison et al. (2003: 28). Garrison (1984: 25) mentions under Type data: "Enallagma anna: holotype ♂ and allotype from Sheep Creek, Albany Co., Wyo., 23 July 1899 (E. B. Williamson), in University of Michigan, Ann Arbor (Examined)." which we consider as a lectotype designation. Currently *Enallagma anna* Williamson, 1900.

***annexum*** Hagen (***Agrion***) 1861: 87. Syntype ♂. "Cumka"; "Sitka"; "Mus. [illegible]"; "Hagen [printed]". MCZ ENT 12270.

The original description was based on at least a pair from "Sitka (Eschschoolz; Berlin Museum)." Presumably a ♀ syntype also is present at MNB. The ♂ syntype is lacking abdominal appendages, rendering positive identification impossible. The ♀ syntype at MNB, if it exists, would be a better candidate for a lectotype because identification using the mesostigmal plates would be certain. Currently *Enallagma annexum* (Hagen, 1861).

***aspersum*** Hagen (***Agrion***) 1861: 97. Syntypes 3 ♂♂. "Amer. Sept. / Guex.". Two other syntype ♂♂: one with same data as syntype 1 ♂, the other ♂ with "Chicago / Sacken.". MCZ ENT 12274.

The original description was based on an unspecified number of ♂♂ from "New York; Bergen Hill, New Jersey (Guex); Chicago (Osten Sacken)." Currently *Enallagma aspersum* (Hagen, 1861).

**aurantinigrum** Calvert (**Tigriagrion**) 1909: 195. Syntype ♂, "43 [in pencil]"; "Chapada [printed]"; "Tigriagrion / aurantinigrum Calv. [handwritten] / PP Calvert det. 1909 / Ann Car Mus VI p. [printed] 197 [handwritten]". MCZ ENT 12297.

The syntype ♂ at MCZ lacks the last three abdominal segments. A lectotype should be chosen from the syntype series at CM. Currently *Tigriagrion aurantiacum* Calvert, 1909.

**bicellulata** Calvert (**Diargia**) 1909: 155. Syntype ♂, "145 [in pencil]"; "Chapada [printed]"; "7"; "Diargia / bicellulata Calv. [handwritten]" / PPCalvert. det. 1909 / AnCarMus. Vlp. [printed] 157 [handwritten]". MCZ ENT 12220.

The last three abdominal segments are missing from the syntype. A lectotype should be selected from the syntype series at CM. Currently *Argia bicellulata* (Calvert, 1909).

**bipunctulatum** Hagen (**Agrion**) 1861: 90. Lectotype ♂. "Neu Georgi / [illegible]"; "Hagen [printed]". MCZ ENT 12205.

A lectotype was designated by Garrison (1994a: 306). Another ♂ labeled "bipunctulatum / Charp." is not a type. Hagen strongly implies that he had only one ♂ at the time of the original description. The second ♂ has 12 antenodals on both fore wings, not 11 as stated in the original description. Currently *Argia bipunctulata* (Hagen, 1861).

**botacudo** Calvert (**Argia**) 1909: 148. Syntype ♂: "Chapada [printed]"; "149 [in pencil]"; "ARGIA [printed] / botacudo Calv. [handwritten] / P.P. Calvert det. 1909 / An Car Mus. VI p. [printed] 149 [handwritten]". MCZ ENT 12217.

The last three abdominal segments are missing from the syntype. A lectotype should be selected from the syntypes at CM. Currently *Argia botacudo* Calvert, 1909.

**caffrum** Burmeister (**Agrion**) 1839: 821. Paralectotype ♂: "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]"; "A. caffrum / Burm. Type / \* Coll. Somer". MCZ ENT 1860.

A lectotype was designated by Calvert (1898b:43) at MLU. Currently *Pseudagrion caffrum* (Burmeister, 1839).

**calidum** Hagen (**Agrion**) 1861: 93. Syntypes 2 ♂♂, 1 ♀, ♂<sub>1</sub> "Tampico, / T[erres]. Tempérées [handwritten by Hagen]"; "11. A. calida ♂ / à renvoyer"; "Hagen [printed]". ♂<sub>2</sub>: "Tampico. / t. tempérées, "Hagen [printed]"; "calida [handwritten]". ♀<sub>3</sub> "Agrion calidum\* / Neur. N. Am. P. 93. 38 / = Agrion extraneum [handwritten by Hagen]"; "Tampico. / t. tempérées"; "Hagen [printed]". MCZ ENT 12188.

Syntype 1 ♂ lacks the head, the second syntype ♂ lacks the posterior 4 abdominal segments but agrees with syntype 1. The female syntype described by Hagen does not appear to represent *A. calida* as noted by Hagen's label accompanying that specimen. The overall markings of this specimen corroborate Hagen's identification, but the mesostigmal plates are hidden by glue. This precludes a positive identification. Hagen's original description stated: "Tampico, Mexico (Saussure); California. I saw a male taken at the same place (Tampico), allied to this species, but the epistoma was brassy-green, the sides of the thorax had no middle black



line; the appendages destroyed. Is it a distinct species? The male from California is without head and appendages, and is, as yet, doubtful." The male referred to above is most likely a syntype male of *Argia oenea* as noted below under that name and as noted by Garrison (1994a: 321-322). Currently *Argia calida* (Hagen, 1861).

*calliphya* Race *microdemas* Perkins (*Agrion*) 1899: 71. Paralectotypes 2 ♂♂, 1 ♀: ♂<sub>1</sub>: "Kona, / Hawaii, [printed] 3000 [handwritten], ft. / Perkins. 1892 [printed]"; "Gift of / Hawaiian / Committee / 1913 [printed]"; "Race microdemas [handwritten]"; "A. calliphya [handwritten]". ♀<sub>2</sub>: "Kona, / Hawaii, [printed] "; "1500 [handwritten] ft. / Perkins. [printed] "; "9. [handwritten] 1892 [printed]"; "Gift of / Hawaiian / Committee / 1913 [printed]"; "microdemas [handwritten]". ♂<sub>3</sub>: "M. calliphya [handwritten]"; "M. / microdemas [handwritten]"; "microdemas [handwritten]"; West Maui Mts., [printed] 4000 [handwritten]; ft. / Perkins. V [handwritten] 189 [printed] 6 [handwritten]"; "Gift of / Hawaiian / Committee / 1913 [printed]"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 8992.

The lectotype is at BMNH (Kimmins 1970: 188). Currently *Megalagrion calliphya microdemas* (Perkins, 1899).

*calverti* Morse (***Enallagma***) 1895a: 208. Lectotype ♂. "Franktown, Nev. / June. S.W. Denton. [printed]"; "Enallagma / calverti / Morse / Type Dec. 1894"; "LECTOTYPE [printed] / Enallagma calverti / Morse / 24 Oct. 79' ♂ [handwritten] / des. [printed] R.W. Garrison [handwritten]". Five paralectotype ♂♂ with same data. MCZ ENT 48.

A lectotype was designated by Garrison (1984: 32): "*Enallagma calverti*: lectotype ♂ by present designation: Franktown, Washoe Co., Nev., no date (S.W. Denton) in Museum of Comparative Zoology, Cambridge, Type No. 6 (of 6 ♂♂)-48. (Examined)." Currently a junior synonym of *Enallagma boreale* (Selys, 1875).

*capreolus* Hagen (***Agrion***) 1861: 78. Syntypes 2 ♂♂. ♂<sub>1</sub> "Portorico"; "Mus. Berol. [printed]"; "Hagen [printed]"; "capreolus". ♂<sub>2</sub> "Brasilia"; "Winthem [printed]"; "Hagen [printed]"; "capreolus". MCZ ENT 1671.

Syntype 1 is missing the last four abdominal segments. Currently *Ischnura capreolus* (Hagen, 1861).

**Race? *cardenium*** Hagen in Selys (***Enallagma***) 1876a: 530 (113 reprint). Syntypes 11 ♂♂, 10 ♀♀. 8 ♂♂ syntypes: "10 / [blank or with a letter] ♂"; "Cuba / Poey 1865"; "Hagen [printed]". 2 ♂♂ syntypes: same locality data but "1866 (1)"; 3 ♀♀ syntypes: same locality data but "1864"; 6 ♀♀ syntypes with same locality data but "1865"; one ♂ syntype with "31/10 ♂"; "Gundlach / Cuba 1866". MCZ ENT 12272.

According to the original description, the other syntypes are at Selys Collection, RBINS. Currently *Enallagma coecum* (Hagen in Selys, 1876).

***carunculatum*** Morse (***Enallagma***) 1895a: 208. Lectotype ♂, 7 ♂♂ paralectotypes: "Franktown, Nev. / June. S.W. Denton. [printed]"; "Enallagma / carunculatum / Morse / Type, Dec. 1894"; "LECTOTYPE [printed] / Enallagma carunculatum / Morse ♂ / 24 Oct. [handwritten] / des. [printed] R.W. Garrison 1977". MCZ ENT 49.

A lectotype was designated by Garrison (1984: 37). Currently *Enallagma carunculatum* Morse, 1895.

**chapadae** Calvert (**Argia**) 1909: 146. Syntype ♂. "Chapada [printed]"; "ARGIA [printed] / chapadae Calv. [handwritten] / P.P. Calvert det. 1909 / An Car Mus. VI p. [printed] 147 [handwritten]". MCZ ENT 12216.

The head and posterior 7 abdominal segments are missing. A lectotype should be selected from among the syntypes at CM. Currently *Argia chapadae* Calvert, 1909.

**chararum** Calvert (**Acanthagrion**) 1909: 170. Syntype ♂. "Cuyaba [printed] C. [handwritten] / Brazil. [printed]"; "ACANTHAGRION [printed] / chararum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 172 [handwritten]". MCZ ENT 12281.

A lectotype should be chosen from the syntype series at CM. Currently *Acanthagrion chararum* Calvert, 1909.

**cheliferum rusticum** Calvert (**Acanthagrion**) 1909: 175. Syntypes 2 ♂♂, 1 ♀. "Bahia"; "ACANTHAGRION [printed] / cheliferum / rusticum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 176"; "rusticum". One ♂ has an additional label in Hagen's hand: "Agrion rusticum / Hagen". MCZ ENT 12279.

Calvert (1909: 175) introduced Hagen's ms name as follows: "Hagen had attached the manuscript name of rusticum to these Bahia examples, and this name may be employed subspecifically, if desired." Currently a junior synonym of *Homeoura chelifera* (Selys, 1876).

**chloridium** Charpentier (**Agrion**) 1825: 14. Syntype ♂. "Charp. [intricate black-bordered label]"; "chloridium Charp.". MCZ ENT 12460.

Described from "Silesia, Germania, etc." According to Calvert (1898b: 44), 1 ♂ and 1 ♀ syntypes are at MLU ("One male, one female under the white drawer-label "chloridium v. Ch." in B[urmeister].s hand, at Halle; no pin-labels). Currently a junior synonym of *Erythromma najas* (Hansemann, 1823).

**civile** Hagen (**Agrion**) 1861: 88. Lectotype ♂, paralectotypes 11 ♂♂, 5 ♀♀. "Pecos River / Texas"; "Aug / 17"; "Hagen [printed]". MCZ ENT 1676.

A lectotype was designated by Garrison (1984: 40): "Type data. Agrion civile: lectotype ♂ by present designation: "Pecos River, Texas [now thought to be near Roswell, Chaves Co., N. Mex. (Needham and Cockerell, 1903)], Aug. 17" no year (J. Pope), in Museum of Comparative Zoology, Cambridge, Type No. 14 (of 20 specimens from N.Y., Md., Washington, D.C., Tex., and Mexico)-1676 (examined)." Currently *Enallagma civile* (Hagen, 1861).

**civile** race **simile** Selys (**Enallagma**) 1876a: 515 (98 reprint). Lectotype ♂, paralectotype 1 ♂. "Merida"; "Hagen [printed]". MCZ ENT 12277.

A lectotype was designated by Garrison (1984: 40): "Type data. lectotype ♂ by present designation: "Merida" (Colombia?), no date, in Museum of Comparative Zoology, Cambridge, Type No. 2-12277 (examined)." Other paralectotypes are present at Selys Collection, RBINS. Currently a junior synonym of *Enallagma civile* (Hagen, 1861).

**claussenii** Selys (**Argia**) 1865: 386 (14 reprint). Syntypes 1 ♂, 1 ♀. Both syntypes: "M[inas]G[erai]s"; "A. claussenii"; "Hagen [printed]". MCZ ENT 12174.

A lectotype should be chosen from the syntypes at Selys collection. Currently *Argia claussenii* Selys, 1865.

**clausum** Morse (**Enallagma**) 1895a: 209. Lectotype ♂, 3 paralectotypes ♂♂. "Franktown, Nev. / June. S.W. Denton [printed]"; "Enallagma / clausum / Morse / Type Dec. 1894. MCZ ENT 50.

A lectotype was designated by Garrison (1984: 42): "Type data. lectotype ♂ by present designation: Franktown, Washoe Co., Nev., no date (S.W. Denton), in Museum of Comparative Zoology, Cambridge, Type No. 3 (of 4 ♂♂)-50 (examined). Currently *Enallagma clausum* Morse, 1895.

**coccinata** Calvert (**Telebasis**) 1909: 193. Paralectotype ♂. "Minas / Geraes"; "Agrion / dispar"; "Hagen [printed]"; "Telebasis / coccinata Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p [printed] 193 [handwritten]". MCZ ENT 12292.

The lectotype ♂ is at CM (Garrison 2009: 47). The paralectotype ♂ lacks its head. Currently a junior synonym of *Telebasis coccinea* (Selys, 1876).

**coccineum** Selys (**Erythrargion**) 1876b: 965 (255 reprint). Paralectotype ♂. "M[inas]G[erais]"; "Hagen [printed]"; "A. coccineum / p r. M. Hagen"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12285.

The lectotype ♂ is at Selys Collection, RBINS (Garrison 2009: 47). Currently *Telebasis coccinea* (Selys, 1876).

**coecum** Hagen (**Agrion**) 1861: 84. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Winthem [printed]"; "St. Thomas"; "A. coecum"; "Hagen [printed]". ♂<sub>2</sub>: "Winthem [printed]"; "S. Thomas [?]; "Hagen [printed]". ♀<sub>3</sub>: "Hagen [printed]"; "St. Thomas / [?] Mus [illegible]". MCZ ENT 12271.

Currently *Enallagma coecum* (Hagen, 1861).

**coecum** subspecies *novae-hispaniae* Calvert (**Enallagma**) 1907: 381. Paratype ♂. "Caracas / Venez / RMBartleman [printed]"; "USNM [in pencil]"; "ENALLAGMA / COEC. NOV.-HISP. [printed]"; "CALV [handwritten] / P.P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p.[printed] 381 (113) [handwritten]". MCZ ENT 12278.

The holotype is at BMNH (Kimmins 1970: 189). Currently *Enallagma novaehispaniae* Calvert, 1907.

**conditum** Hagen in Selys (**Erythromma?**) 1876a: 1305 (195 reprint). Syntypes 1 ♂, 1 ♀. ♂ "Maryland / Uhler 1860"; "187 [printed]"; "A. conditum". ♀: "May[?] / 28"; "Maryland / Uhler 1860". MCZ ENT 12282.

The original description is entitled: "Erythromma? conditum, Hagen mss." based on specimens from "Maryland: un couple pris M. Uhler; Washington, par M. Morrison. Coll. Selys, Hagen." The Washington specimen(s) is probably at Selys Collection, RBINS. Currently *Chromagrion conditum* (Hagen in Selys, 1876).

**cornicauda** Calvert (**Metaleptobasis**) 1909: 199. Holotype ♂. "[illegible] N. / Bahia"; "Hagen [printed]"; "Mus. Berol. [printed]"; "Gizzard / removed [printed]"; "Figured / C.H.K. [in pencil]"; "TYPE ♂ / Metaleptobasis / cornicauda Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 200 / Orig. Pl. VI, ff. 110, 111. [handwritten]". MCZ ENT 12293.

Currently *Aceratobasis cornicauda* (Calvert, 1909).

**credulum** Hagen (**Agrion**) 1861: 80. Syntypes 2 ♂♂, 2 ♀♀. All four specimens: "Sct. Thom.". MCZ ENT 1675.

Four ♂♂ and 3 ♀♀ are all labeled as types; 2 ♂♂, 1 ♀ are not labeled with locality; these may not be syntypes. Hagen's description indicates that the apex of 1 ♀ abdomen was lost, another ♀ "much mutilated", yet 2 ♀♀ in the series are perfect. Further, only 1 ♂ ("Winthem [printed]") has 12 postnodals as described by Hagen; all others have 13. We cannot be sure if all of these specimens are syntypes. Currently a junior synonym of *Ischnura ramburii* (Selys, 1850).

**croceipennis** Selys (**Argia**) 1865: 393 (21 reprint). Syntypes 1 ♂, 1 ♀. ♂: "P. Br.", "64 croceipennis / Bresil"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". ♀: same data, but "65". MCZ ENT 12185.

A lectotype should be selected from specimens at Selys Collection, RBINS. Currently *Argia croceipennis* Selys, 1865.

**croceum** Burmeister (**Agriion**) 1839: 819. Holotype ♂. "A crocea. / \* Br. / coll. Somer / Surinam", "Hagen [printed]". MCZ ENT 1861 (Fig. 4).

The holotype (Fig. 4) is in very poor condition. Only the thorax, 4 legs, and two right wing bases remain. The specimen was discussed by Calvert (1898b: 37-38): "One male in M. C. Z. with the label" A. crocea\* Br. coll. Somer. Surinam"; the words "coll. Somer." are in Hagen's hand De Selys, in describing this species as *Leptagriion croceum*, says (Bull. Acad. Belg. - 2 - xlii, p. 989, 1876) that his description is based on the "Type unique de Burmeister, actuellement coll Hagen. Le Dr. Hagen ayant en la bonté de me communiquer ce type précieux, qui est en très-mauvais état, j'ai pu le decuire avec soin et en prendre un dessin exact." De Selys was, fortunately, able to describe the wings, of which only the bases now remain, so that the condition of the type is still worse." Currently *Leptagriion croceum* (Burmeister, 1839). NOTE: Current examination of the thorax leaves no doubt that *Agriion croceum* is a member of the genus *Tuberculobasis* Machado, 2009 and is likely a senior synonym of *T. mammilaris* (Calvert, 1909) or *T. yanomami* (De Marmels, 1992).

**cultellatum** Selys (Hagen mss) (**Enallagma**) 1876a: 524 (107 reprint). Holotype ♂. "36 / ♂"; "Cuba / Poey / 1864". MCZ ENT 12262.

The original description was entitled: "**Enallagma cultellatum**, Hagen mss." based on 1 ♂ "Description d'après celle de MM. Hagen et Gundlach. Patrie: Cuba, en juillet, dans les marais, par M. Gundlach. Un mâle unique." The last 7 abdominal segments are glued to a card below the holotype. Currently *Neoerythromma cultellatum* (Hagen in Selys, 1876).

**cupida** Calvert (**Protoneura**) 1903a: 142. Holotype ♂. "Livingston / Guatem Feb. / H. Wilson / Ap. 85"; "PROTONEURA [printed] / cupida Calv. [handwritten] / P.P. Calvert, det. [printed] 1903 [handwritten] / B.C.A. Neur. p. [printed] 142 / Orig. of Tab. V, Fig 46, 47"; ♂♂, ♀ paratypes with same data. MCZ ENT 12242.

Currently *Protoneura cupida* Calvert, 1903.

**cuyabae** Calvert (**Acanthagrion**) 1909: 166. Syntype ♂. "Cuyaba [printed] C. [handwritten] / Brazil. [printed]"; "ACANTHAGRION [printed] / cuyabae Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. Vlp. [printed] 167 [handwritten]". MCZ ENT 12280.

A lectotype should be chosen from the syntype series at CM. Currently *Acanthagrion cuyabae* Calvert, 1909.

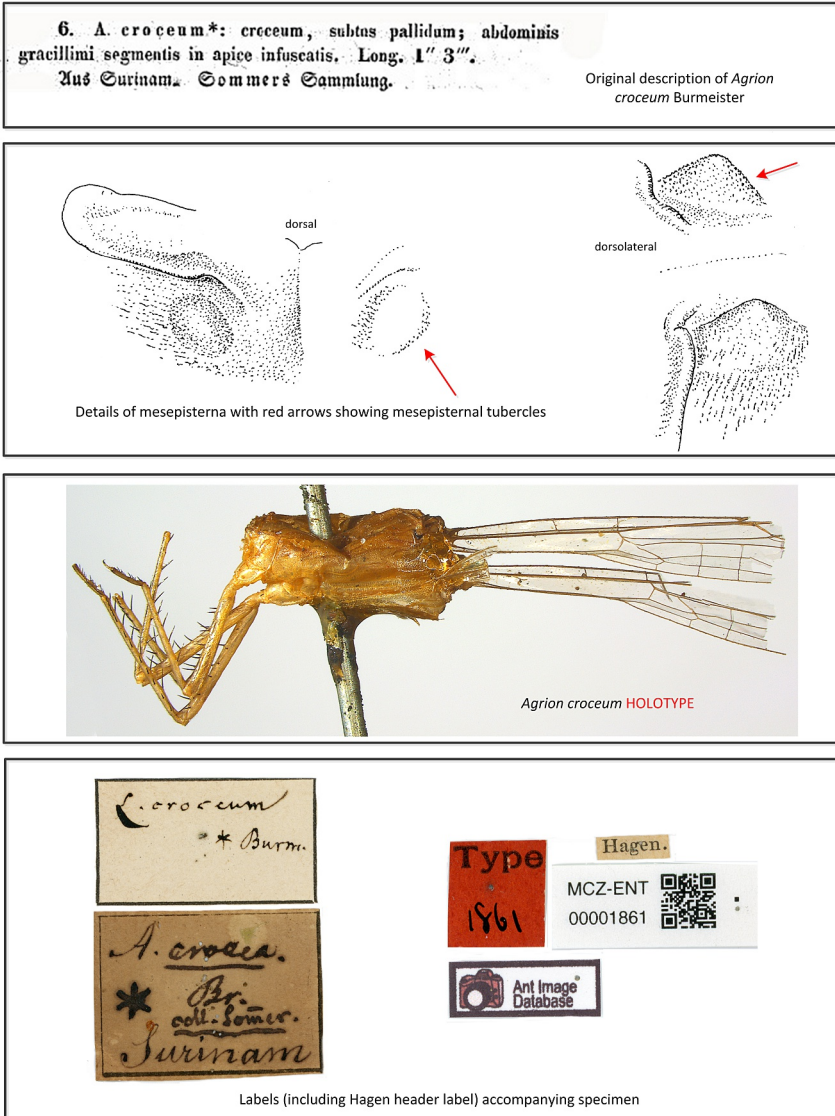


Figure 4: *Agrion croceum* Burmeister.

*cyathigerum* Charpentier (*Agrion*) 1840: 163. Syntype ♂. "Charp. [intricate black-bordered label]"; "cyathige- / rum Charp."; "Hagen [printed]". MCZ ENT 12457 (Fig. 5).

The description was based on a pair from "Silesia" and both sexes are illustrated. This specimen is probably 1 ♂ from the original syntypes although details of the wing venation (Fig. 5) do not match those of Charpentier's illustration (Fig. 5). It is broken beyond abdominal segment

3, but what may be the remaining abdominal segments are glued to a card and pinned next to the specimen. The following penciled note by B. Elwood Montgomery accompanies the abdominal segments: "found on bottom / box. Sept. 3, 1942 / abdomen of Charpentier's type? Probably." Currently *Enallagma cyathigerum* (Charpentier, 1840).

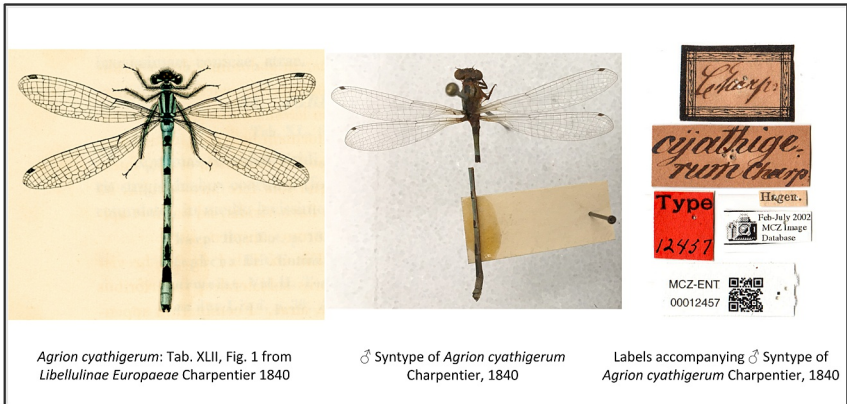


Figure 5. *Agrion cyathigerum* Charpentier.

**daeckii** Calvert (*Telagrion?*) 1903b: 36. Syntype ♂. "Enterprise / May [printed] 18 [handwritten] Fla. [printed]"; "Telagrion COTYPE ♂ / daeckii Calv. [handwritten] / P.P. Calvert det. [printed] 1903 / Ent. News XIV, p. 37 [handwritten]". MCZ ENT 12296.

Description based on 2 ♂♂, one from "Manumuskin, New Jersey, June 23, 1902, one male, by Mr. E. Daecke. Enterprise, Florida, May 18, one male, Museum of Comparative Zoology (Cambridge, Mass.)." The other syntype ♂ from New Jersey is at ANSP. Currently *Enallagma daeckii* (Calvert, 1903).

**damula** Calvert (*Ischnura*) 1902a: 126. Syntypes 2 ♂♂ (both with same data): "Zuni 7 / 7 / N. Mex. / Hensh."; "ISCHNURA [printed] / damula Calv. [handwritten] / P.P. Calvert, det. [printed] 1902 [handwritten] / B.C.A. Neur., p. [printed] 126 [handwritten]". MCZ ENT 12244.

Calvert (1908: xxix-xxx) designated as type 1 ♂ from Zuni, New Mexico, but there are 2 ♂♂ at MCZ. One ♂ is lacking the last 4 abdominal segments; the other is lacking the last 9 abdominal segments. Currently *Ischnura damula* Calvert, 1902.

**defixum** Hagen (*Agrion*) 1861: 80. Holotype ♂. "California [printed]"; "Hagen [printed]". MCZ ENT 1673.

Currently a junior synonym of *Ischnura ramburii* (Selys, 1850).

**demararum** Williamson (*Aeolagrion*) 1917: 244. Paratype ♂: "Georgetown / British Guiana / A & E. B Williamson / B. I. Rainey / Feb 18, 1912"; "Aeolagrion / demararum [both handwritten by Williamson]". MCZ ENT 12302.

The holotype ♂ and allotype ♀ are at UMMZ (Garrison et al. 2003: 29; Garrison 2009: 54). Currently *Telebasis demarara* (Williamson, 1917).

**demorsum** Hagen (**Agrion**) 1861: 81. Syntypes 1 ♂, 1 ♀. ♂: "Morelia [not Moretia as stated in the original description] / t.f. [printed]", "Hagen [printed]", "A. demorsum". ♀ with same locality data. MCZ ENT 1672.

Currently *Ischnura demorsa* (Hagen, 1861).

**dentiferum** Walsh (**Enallagma**) 1864: 236. Syntypes 1 ♂, 1 ♀. ♀: "55"; "Hagen [printed]"; "A. dentiferum ♀ / \* Walsh 1864 [this date may refer to the year Hagen received Walsh's paper, not the year of capture] / Rock Island. in coitu". ♂: "54"; "Hagen [printed]"; "A. dentiferum / \* Walsh [illegible] 4 ♂ / Rock Island [not in Hagen's hand]". MCZ ENT 12266.

Walsh (1864: 238) stated that he based his description on "Two ♂, two ♀, both pairs taken in coitu in June, not far from a sawmill.". Currently a junior synonym of *Enallagma signatum* (Hagen, 1861).

[*digiticollis* Calvert (*Telebasis*) 1902a: 118. Pseudotype ♂. Los Amates / Guatemala / E. B. Williamson / 1905 [handwritten by Williamson]"; "TELEBASIS [printed] / digiticollis Calv. [handwritten] / P.P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed] 384 [handwritten]". MCZ ENT 12290.

Only the ♀ (lectotype at BMNH, Kimmins 1970: 184) was known in 1902; the ♂ was first described by Calvert in 1907, and therefore it is not a type. Currently *Telebasis digiticollis* Calvert, 1902.]

**divaricatum** Calvert (**Oxyagrion**) 1909: 181. Syntype ♂. "143 [in pencil]"; "OXYAGRION [printed] / divaricatum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. Vlp. [printed] 182 [handwritten]". MCZ ENT 12252.

A syntype from the CM should be chosen as lectotype. Currently a junior synonym of *Oxyagrion microstigma* (Selys, 1876).

**dorsale** Burmeister (**Agrion**) 1839: 819. Syntype ♂: "A. dorsalis / \* Br. / Brasilia / coll. Sommer"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". MCZ ENT 1862.

Description based on 1 ♂, 1 ♀ ("♂ et ♀. Aus Brasilien. Sommers Sammlung"). A discussion of the ♂ was given by Calvert (1898b: 37): "One male in M. C. Z. with the label "A. dorsalis\* Br. Brasilia coll. Sommer"; the words "coll. Sommer" are underlined and were added by Hagen. This male agrees with de Selys' description (Bull. Acad. Belg. - 2 - xlii, p. 981, 1876) of *Leptagrion dorsale*, except that the labrum is black instead of "jaunatre". Currently *Aeolagrion dorsale* (Burmeister, 1939).

**doubledayi** Selys (**Agrion**) 1850: 209. Syntypes 1 ♂, 1 ♀. ♂: "Mus. Berol. [printed]"; "double-dayi / \*", "Hagen [printed]". ♀: "E. Doubleday. / St. Johns Bluff / E. Florida [all printed - possibly added sometime after 1850?]; "Mus. Berol. [printed]". MCZ ENT 12276.

Selys described this species from at least a pair according to the original description from "St. John Bluff, en Floride." Other specimens are probably present at Selys Collection, RBINS and, if so, a lectotype should be chosen from that institution. Currently *Enallagma doubledayi* (Selys, 1850).

**durum** Hagen (**Agrion**) 1861: 87. Syntypes 5 ♂♂, 4 ♀♀. ♂<sub>1</sub>: "Hagen [printed]"; "Louisiana / Schaum". 1 ♂, 1 ♀: same data as ♂<sub>1</sub>; ♂<sub>2</sub>, ♀: "Maryland (42) / Uhler 1852"; 1 ♂, 1 ♀: "Florida / ♂. Sacken / May 1854"; 1 ♂: "Florida / Norton". MCZ ENT 12269.

Currently *Enallagma durum* (Hagen, 1861).



**ebrium** Hagen (*Agrion*) 1861: 89. Lectotype ♂. "Chicago / Sacken"; "Hagen [printed]"; "A ebrium". MCZ ENT 12267.

The lectotype was designated by Garrison (1984: 50): "*Agrion ebrium*: lectotype ♂ by present designation: Chicago, Cook Co., Illinois, no date (Osten Sacken), in Museum of Comparative Zoology, Cambridge, Type No. 12267 (examined). Hagen (1861) indicated that he examined another livery much mutilated" specimen from New Orleans that may not have been *E. ebrium*. I could not find that specimen". Currently *Enallagma ebrium* (Hagen, 1861).

**eiseni** Calvert (*Enallagma*) 1895: 486. Paralectotype ♂. "Baja Purisima / Apr. 1889 / C.D. Haines / P.P. Calvert."; "Enallagma / Eiseni ♂ / n? sp. [all in pencil]". MCZ ENT 1677.

The original description included 5 ♂♂ from Baja Purisima among the type series. A lectotype was later designated by Calvert (1947: 605): "*Enallagma eiseni* n. sp., p. 486. (a) 17 a'; (b) la' Baja Purisima, April, '89, 1 a' Sierra San Lazaro, Sept., '94, 1 a' Mesa Verde, Oct., '93; (c) 2a' (heads lost) Baja Purisima, April, '89, la' Sierra San Lazaro, Sept., '94. I here designate 1 ♂ Baja Purisima in the California Academy of Sciences (C. A. S. 5599) as the lectotype of this species.". Currently *Enallagma eiseni* Calvert, 1895.

**evanescens** Calvert (*Oxyagrion*) 1909: 179. Syntype (sex?). "May [printed]"; "Chapada [printed]"; "OXYAGRION [printed] / evanescens Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 180 [handwritten]". MCZ ENT 12250.

A complete syntype from CM should be chosen as lectotype. The MCZ syntype lacks the abdomen. Currently *Oxyagrion evanescens* Calvert, 1909.

**exsulans** Hagen (*Agrion*) 1861: 82. Syntypes 5 ♂♂, 4 ♀♀. ♂<sub>1</sub>: "Virginia / Berkeley Springs / ♂. Sacken"; "Hagen [printed]". 3 ♂♂, 3 ♀♀: same data as ♂<sub>1</sub> (one pair has living color description in German by O. Sacken). 1 ♂ "Winthem [printed]"; "Philadelphia". 1 ♀: "July 12"; "Pecos River / Texas". MCZ ENT 12273.

This species was described from an unspecified number of ♂♂ and ♀♀ from: "Philadelphia; Berkeley Springs, Va. (Osten Sacken); Pecos River, Western Texas (Capt. Pope)." Currently *Enallagma exsulans* (Hagen, 1861).

**extraneum** Hagen (*Agrion*) 1861: 92. Holotype ♂. "14. A. extranea / ♂ / à renvoyer"; "Tampico / T[erres]. Tempérées". MCZ ENT 12187.

Hagen's brief description implies that he only had 1 ♂ from "Tampico, Mexico (Saussure)." Currently *Argia extranea* (Hagen, 1861).

**fissa** Selys (*Argia*) 1865: 401 (29 reprint). Syntypes 1 ♂, 1 ♀. "St. Fe de Bogota / Lindig 1863"; "Hagen [printed]". MCZ ENT 12189.

A syntype from Selys Collection at RBINS should be chosen as lectotype. Currently *Argia fissa* Selys, 1865.

**fontium** Hagen (*Agrion*) 1861:91. Syntypes 3 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "Virginia / Berkeley Springs / ♂. Sacken"; "Agr. fontium / Hag."; "Hagen [printed]". ♂<sub>2</sub>, 2 ♀♀: "Florida / ♂. Sacken / March 1854"; "Hagen [printed]". ♂<sub>3</sub>: "Georgia Abbot / Escher Zollickofer"; "A. blandum / nobis". MCZ ENT 12203.

This species described from an unspecified number of ♂♂ and ♀♀ from: "Berkeley Springs, Virginia (Osten Sacken); Georgia (Abbot); the variety from Florida (Osten Sacken)." Only the Virginia ♂ possesses a red MCZ ENT type label, but we are sure that the other 2 ♂♂, 2 ♀♀ are also part of the syntype series. Currently a junior synonym of *Argia tibialis* (Rambur, 1842).

**forceps** Hagen in Selys (**Peristicta**) 1860b: 442 (14 reprint). Holotype ♂. "Brasilia", "P. forceps"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Mus. Berol. [printed]"; "Hagen [printed]". MCZ ENT 12228.

The type is in poor condition: it lacks the caudal appendages, the abdomen is glued to the red MCZ ENT type label, and glue obscures most of the thorax and base of wings (Pessaca 2007: 212). Currently *Peristicta forceps* Hagen in Selys, 1860.

**fosteri** Calvert (**Argia**) 1909: 128. Syntype ♂. "Sapucay Paraguay / Nov. 1899 / W.T. Foster U.S.N.M."; "ARGIA [printed] / fosteri Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. Vlp [printed] 130[handwritten]". MCZ ENT 12211.

A lectotype should be selected from the syntype series at USNM. Currently a junior synonym of *Argia albistigma* Selys, 1865.

**frequentula** Calvert (**Argia**) 1907: 365. Paralectotypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Teapa / Tabasco / Jan. H. H. S[mith]. [printed]"; "ARGIA [printed] ♂ [handwritten] / FREQUENTULA Calv. / P.P. Calvert det. 1907 / B. C. A. Neur., 365 [printed]". ♀<sub>2</sub>: same data but with "♀ [handwritten]"; "Livingston / Guatem. Feb. / H. Wilson Ap 86. [handwritten]"; "ARGIA / FREQUENTULA Calv. / P.P. Calvert det. 1907 / B. C. A. Neur., 365 [printed]". MCZ ENT 12218.

The holotype is at UMMZ (Garrison et al. 2003: 30). Currently *Argia frequentula* Calvert, 1907.

**fumigata** Hagen in Selys (**Argia**) 1865: 394 (22 reprint). Holotype ♀. "Amer. merid. / Essequibo / Schmidt [handwritten]"; "Ayr [?] fumigatum. / 45 / à renvoyer [handwritten]". MCZ ENT 12198.

The original description of the holotype was comparative to *Argia thespis* Hagen in Selys, 1865 and stated "Essequibo (Guyane), Mus. de Copenhague, par Schmidt." Details of the holotype were illustrated in Garrison & von Ellenrieder (2015). Currently *Argia fumigata* Hagen in Selys, 1865.

**fumipenne** Burmeister (**Agrion**) 1839: 819. Holotype ♀. "Winthem [printed]"; "fumipeñis / Br. \* / Kentucki"; "Hagen [printed]". MCZ ENT 12182.

Currently *Argia fumipennis fumipennis* (Burmeister, 1839).

**funebre** Hagen (**Agrion**) 1861: 92. Syntype ♂. "Mexico Deppe / Mus. Berol. [handwritten]"; "13 [?] A. funebris / ♂ / à renvoyer [handwritten]"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". MCZ ENT 12180.

Hagen described only the ♂ from "Mexico (Deppe)" and provided venation statistics ("Fourteen postcubital cross-nervules") implying that there was only one ♂ at the time of his description. However, Turiault (*pers. comm.*) has sent us a photo of another ♂ of *Agrion funebre* at MNB with an inked label by Hagen "A. funebre. / Hag.\*". The specimen is accompanied by a printed red "Typus" label and a recently inked "3397=MEXICO, Deppe" label, both of which were likely

provided by a subsequent museum curator. Both MCZ and MNB specimens have 14 postnodal crossveins and it is likely that Hagen had both males at the time of the original description. Currently *Argia funebris* (Hagen, 1861).

*gaumeri* Calvert (*Argia*) 1907: 363. Paratype ♂. "Arg. Gaumeri / 4 antes cells / ♂ San Felipe / Guatemala / E.B. Williamson/1905 [handwritten]; "ARGIA / GAUMERI Calvert / P.P. Calvert det. 1907 / B. C. A. Neur., 363 [printed]". MCZ ENT 12170.

The holotype is at Field Museum, Chicago. Currently *Argia gaumeri* Calvert, 1907.

*gerhardi* Calvert (*Argia*) 1909: 130. Syntypes 1 ♂, 1 ♀. "Argia gerhardi ♂ / Chulumnani / Dec. 4, '98"; "ARGIA GERHARDI [printed] / Calv. [handwritten] / P.P. Calvert det. 1909 / AnCarMus. Vlp. 131 [printed]". ♀: "Chulumnani / Dec. 3, '98 ♀ ? / Argia gerhardi [handwritten]", same determination label as ♂. MCZ ENT 12213.

A lectotype should be chosen from the syntype series at ANSP. Currently *Argia nigrior* Calvert, 1909.

*gerhardi nigrior* Calvert (*Argia*) 1909: 132. Syntype ♂. "Argia ♂ 18 / 12 mi N.E. of Caraco / May 20, 99 / Gerhardi nigrior"; "ARGIA GERHARDI [printed] / nigrior Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. 13 [printed] 2 [handwritten]". MCZ ENT 12212.

A lectotype should be chosen from the syntype series at ANSP. Currently *Argia nigrior* Calvert, 1909.

*glaciale* Selys (*Agrion*) 1872: 41 (19 reprint). Syntypes 2 ♂♂, 1 ♀. All 3 syntypes: "Ft. Wilni / Maack."; "Hagen [printed]". MCZ ENT 12257.

The original description, based on an unspecified number of ♂♂ and ♀♀, from "Le nord d'Irkutzk, au fleuve Wilni (par 64°) dans la direction de Jakalyk, par Dr Maack. (Collect. Selys et Hagen.)." Selys cited Hagen as author but the description is Selys'. Further, Selys specifically states "Le type mâle... and additionally "Les examplaires décrites par le Dr Hagen..." Currently *Coenagrion glaciale* (Selys, 1872).

*gracilis* Morse (*Nehalennia*) 1895b: 274. Syntypes 15 ♂♂, 11 ♀♀. 6 ♂♂, 2 ♀♀: "Wellesley, Mass. [printed] / June 19, '95 [handwritten]"; "Nehalennia / gracilis / Type Morse". 9 ♂♂, 9 ♀♀, same data except "June 19, '95". MCZ ENT 53.

Currently *Nehalennia gracilis* Morse, 1895.

*hageni* Walsh (*Enallagma*) 1864: 234. Syntypes 3 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "102"; "Hagen [printed]"; "Agr. n. p. ♂ / Rock Island / Walsh / 1863". ♀<sub>2</sub>: same data as ♂, except with "♀" and "in coitu.". ♂<sub>3</sub> (teneral): "rock Island / Illinois / Walsh 1860"; "Hagen [printed]". ♂<sub>4</sub> and ♀<sub>5</sub>: "Agr. Hageni ♂ [or ♀] / \* Walsh 1864 [probably date Hagen received Walsh's paper or specimens] / Rock Island". MCZ ENT 12268.

Walsh (1862: 386) thoroughly described this species but gave it no name. Syntypes 1, 2, and 3 were probably sent to Hagen in 1863. Walsh later (1864: 234) named the species ("and in the unnamed species described by me (*Ill. Pseudoneur*, p. 386) for which I now propose the name of *Agr. Hageni*.....") and syntypes 4 and 5 were most likely sent to Hagen in 1864. We believe all five specimens are syntypes. Currently *Enallagma hageni* Walsh, 1864.

*hastulatum* Charpentier (*Agrion*) 1825: 20. Syntype ♂. "Charp. [intricate black-bordered label]"; "hastula- / tum Charp"; "Hagen [printed]". MCZ ENT 12455.

Described from "Silesia, Saxonia frequens.". Currently *Coenagrion hastulatum* (Charpentier, 1825).

*heterogamias* Perkins (**Agriion**) 1899: 77. Paralectotypes 5 ♂♂, 2 ♀♀. ♀<sub>1</sub>: "Makaweli / Kauai / 4. IV. 95. ♀ [handwritten]". ♂<sub>2</sub>: "Makaweli / Kauai 1000ft / Il. 97. [handwritten]". ♂<sub>3</sub>: "Mts. Waimea, / Kauai, [printed] 2000 [handwritten] ft. / Perkins. [handprinted] 5 [handwritten]". 1894. *heterogamias* [handwritten]"; "Megalagrion / heterogamias [handwritten]". ♀<sub>4</sub>: "Makaweli / Kauai 900ft / Il. 28 97. [handwritten]"; "heterogamias [handwritten]". ♂<sub>5</sub>: "Makaweli / Kauai 2000 ft / li. 97 [handwritten]"; "heterogamias [handwritten]". ♂<sub>6</sub>: "Makaweli / Kauai / 4. IV. 95. ♂ [handwritten]"; "heterogamias [handwritten]". ♂<sub>7</sub>: "Makaweli / Kauai 900ft / Il. 97. [handwritten]"; "heterogamias [handwritten]"; all syntypes with added label: "Gift of / Hawaiian / Committee / 1913 [printed]". MCZ ENT 8988.

The lectotype is at BMNH (Kimmins 1970: 186). Currently *Megalagrion heterogamias* (Perkins, 1899).

*heterostictum* Burmeister (**Agriion**) 1839: 820. Lectotype ♂. "Coll. Germar. / heterostictum / Type Br. / Burm. II.820.16 / Nov. Holl.". MCZ ENT 1674.

This specimen was discussed by Calvert (1898b: 40): "One male in M. C. Z. with the pin-label "Coll. Germar heterostictum Br. Type Burm. II, 820, 16. Nov. Holl."; the words 'Coll. Germar' and 'Type Burm. II, 820, 16.' are in Hagen's, the others in an unknown hand. This species is the *Ischnura heterosticta* of de Selys (Bull. Acad. Roy. Belg. - 2 - xli, p. 271, 1876) who remarks "Burmeister donne pour patrie: Nouvelle Hollande, d'après plusieurs males de la collection Germar. Quoiqu'il dise que le 10e segment est également pâle et que le ptérostigma des inférieures est tout blanc, je ne puis guère douter de l'identité." This remark is quite just, for the above cited male agrees with de Selys' description throughout and has the 8th and 9th segments, not the 10th, "pallidis," and the pterostigma of the hind wings barely darker in the centre." Houston & Watson (1988: 48) cited: "Type data: lectotype, MCZ M.\*, from Australia (as Neu = Holland), designation by Calvert, P.P. (1898)....". Currently *Ischnura heterosticta heterosticta* (Burmeister, 1839).

*hinei* Kennedy (**Argia**) 1918a: 258. Paratypes 3 ♂♂. ♂<sub>1</sub>: "Arizona, / C. U. Lot 35 [printed]"; "See Can. / 1918 / Ent. / C.H. K. [handwritten by Kennedy]"; "Argia solita K. [handwritten]" (the two from Fillmore, Calif.). ♂♂<sub>2,3</sub>: "Fillmore Calif. / Sespe Riv. / 7 - Aug. 1915 / Kennedy coll."; "hinei [both handwritten by Kennedy]", all three specimens with determination label: "Argia hinei Kennedy / det. By R. W. / Garrison 1980 ♂". MCZ ENT 16097.

The holotype ♂ and paratype ♀ are at UMMZ (Garrison et al. 2003: 31). Currently *Argia hinei* Kennedy, 1918.

*immundum* Hagen (**Agriion**) 1861: 93. Lectotype ♂. "Tampico/Terres chaudes."; "Hagen [printed]". Paralectotypes 3 ♂♂, 1 ♀. 1 ♂, 1 ♀: "same locality data plus "23. A. immundum / ♂♀ / à renvoyer". 2 ♂♂: same locality data as lectotype, also with color notes in German by Osten Sacken. MCZ ENT 12202.

A lectotype was designated by Garrison (1994a: 314-315). Currently *Argia immunda* (Hagen, 1861).

*impunctatum* Calvert (**Oxyagrion**) 1909: 188. Syntype ♀. "Chapada [printed]"; "OXY-AGRION [printed] / impunctatum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p.[printed] / 189 [handwritten]". MCZ ENT 12251.

The syntype ♀ lacks abdominal segments 2-10. A syntype at CM should be selected as lectotype. Currently *Oxyagrion impunctatum* Calvert, 1909.

*incolumis* Williamson & Williamson (*Telebasis*) 1930: 20. Paratype ♂. "Telebasis / incolumis / Paratype ♂ / Las Parres / Baja (207) / California / Mexico / Oct. 6, 1923 [handwritten by Williamson]"; "Gift of E. B. / Williamson [handwritten]". MCZ ENT 16306.

The holotype ♂ and allotype ♀ are at UMMZ (Garrison 2009: 80; Garrison et al. 2003: 32). Currently *Telebasis incolumis* Williamson & Williamson, 1930.

*inculta* Hagen in Selys (**Argia**) 1865: 400 (28 reprint). Holotype ♂. "Lima"; "18. A. inculta / ♂ / à renvoyer"; "Hagen [printed]". MCZ ENT 12183.

The holotype is somewhat teneral ("Très-jeune" according to the original description). Currently *Argia inculta* Hagen in Selys, 1865.

*iners* Hagen (**Argion**) 1861: 75. Syntypes 4 ♂♂, 7 ♀♀. 2 ♂♂, 1 ♀: "Louisiana / Schaum"; "Hagen [printed]". 1 ♀: "New York"; "Winthem [printed]". 1 ♂: "45 [printed]"; "Maryland (45) / Uhler. 1858"; "Hagen [printed]". 1 ♂, 5 ♀♀: "Washington / ♂. Sacken 1858"; "Hagen [printed]". MCZ ENT 12261.

Descriptions of the living colors are pinned beneath 3 specimens from Washington. Currently considered a junior synonym of *Ischnura ramburii* (Selys, 1850).

*infumata* Selys (**Argia**) 1865: 400 (28 reprint). Syntype ♀. "[undecipherable]. / P. [handwritten by Selys]"; "infumatum Selys / ♀ à envoyer / Para. [handwritten by Selys]"; "Hagen [printed]". MCZ ENT 12197.

Currently *Argia infumata* Selys, 1865.

*insipida* Hagen in Selys (**Argia**) 1865: 389 (17 reprint). Syntype ♂. "Guyana"; "insipidus"; "10. A. insipida ♂ / à renvoyer"; "Hagen [printed]"; "Mus. Berol. [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12179.

Garrison & von Ellenrieder (2015: 45) noted that: "Hagen's original description (1865) cites a range of measurements for the abdomen of males ("♂. Abdomen 28-31"), thus implying that he had at least two males. We have seen only one incomplete syntype male with last 4 abdominal segments missing at MCZ with the following label data: "Guyana", "insipidus", "10. A. insipida ♂ / à renvoyer", "Hagen [printed]", "Mus. Berol. [printed]", "Penis / drawn [written by C. H. Kennedy]". Currently *Argia insipida* Hagen in Selys, 1865.

*integricollis* Calvert (*Nehalennia*) 1913: 373. Paratype ♀. "Enterprise / May [printed] 17 [handwritten] Fla [printed]"; "Nehalennia ♀ / integricollis Calv. [handwritten by Calvert] / P. P. Calvert, det. [printed] 1913 [handwritten] / PARA- / TYPE [handwritten vertically on far-right side of label]". MCZ ENT 16098.

This ♀ was mentioned by Calvert (1913: 314) as one of the paratypes of his newly described species *Nehalennia integricollis* ("...while a fifth, from Enterprise, May 17, belongs to the Museum of Comparative Zoology, Cambridge, Mass.". Currently *Nehalennia integricollis* Calvert, 1913.

*interrogatum* Hagen in Selys (Hagen mss.) (**Argion**) 1876a: 1254 (144 reprint). Holotype ♀. "Saskatchewan / Hudsonia / Kennicott 1860."; "Hagen [printed]"; "this is the true type

of *Agrion interrogatum*. It was in the type series of / *A. resolutum* / R.W. Garrison 1980". MCZ ENT 12260.

The holotype was found in 1980 by Garrison to be amongst the type series of *Agrion resolutum* Hagen in Selys, 1876. This ♀ agrees in all respects with the description of Selys, in which it is stated that "les sept derniers segments manquent". Currently *Coenagrion interrogatum* (Hagen in Selys, 1876).

**interruptum** Charpentier (*Agrion*) 1825: 16. Syntype ♂. "Hagen [printed]"; "interruptum Charp"; "Charp [intricate black-bordered label]". MCZ ENT 12454.

Described from "Germania, in Silesia frequens est." Currently *Coenagrion pulchellum* (Vander Linden, 1825).

**irene** Hagen (*Agrion*) 1861: 74. Syntypes 6 ♂♂, 4 ♀♀. "Chicago / Sacken"; "Hagen [printed]". MCZ ENT 12286.

The original description includes specimens from "Chicago and Florida (Osten Sacken); Wisconsin and Illinois (Rob[er]t. Kennicott); New Jersey (Uhler); Maine (Packard)." The ♂ included with this series ("New Jersey / Uhler 1860") without a MCZ ENT type number is a specimen of *N. isthmica* Calvert. Currently *Nehalennia irene* (Hagen, 1861).

*isthmica* Calvert (*Telebasis*) 1902a: 118. Paratypes 2 ♂♂. ♂<sub>1</sub>: "Panama"; "TELEBASIS [printed] TYPE ♂ [handwritten] / isthmica Calv. [handwritten] / P.P. Calvert, det. [printed] 1902 [handwritten] / B.C.A. Neur., p. [printed] 119 [handwritten]". ♂<sub>2</sub>: similarly labeled, but 1) "Obispo. Hassl Exp. [handwritten] / Panama [printed]", and 2) Calvert's det. label without the designation, "TYPE ♂". MCZ ENT 12289.

Two of the three specimens that Calvert used in his description are at MCZ. Garrison (2009: 82) in his review of the genus *Telebasis* remarked concerning the type: "Calvert (1902a: 118) described three males in MCZ; two from 'Panama', the third from 'Obispo' (Panama). However I found only two males in the MCZ labeled as follows: "Panama", "TELEBASIS [printed] TYPE [written] / isthmica Calv. [written] / P.P. Calvert, det. [printed] 1902 [written] / B.C.A. Neur., p. [printed] 119 [written]"; and a second one similarly labeled, but: "Obispo. Hassl Exp. [written] / Panama [printed]", and Calvert's determination label (without type label), MCZ ENT 12289. Calvert (1908: xxviii) remarked that specimens which were principally figured were to be regarded as holotypes. Although the first specimen enumerated above is marked "TYPE" by Calvert, it was not the one figured. I believe that the third specimen, which was the one illustrated, is to be considered the holotype, and the two examined males, paratypes." Until the third specimen is found, we believe it best to consider these 2 ♂♂ paratypes. Currently *Telebasis isthmica* Calvert, 1902.

**jocaste** Hagen (*Mecistogaster*) 1869: 260. Holotype ♂ (Fig. 6): "M. jocaste / \* Hag. [handwritten by Hagen]"; "Sta. Fe de Bogota / Lindig 1862"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12121.

Currently *Mecistogaster jocaste jocaste* Hagen, 1869. NOTE: Machado & Soldati Lacerda (2017) resurrected *Platystigma Kennedy*, 1920 (type species: *Mecistogaster jocaste* Hagen, 1869 [by original designation]) but we have not followed their usage here.

**jocosa** Hagen in Selys (*Argia*) 1865: 408 (36 reprint). Lectotype ♂. "St. Fe de Bogota / Lindig 1863"; "A. jocosa Hag. / an A. cuprea var?"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". Paralectotype ♂, same locality label. MCZ ENT 12194.



**Figure 6: *Mecistogaster jocaste* Hagen, HOLOTYPE.**

The lectotype was designated and illustrated by Garrison & von Ellenrieder (2018: 18). Currently *Argia jocosa* Hagen in Selys, 1865.

*johanella* Calvert (*Argia*) 1907: 370. Paratypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Juan Viñas, Costa / Rica 3/18/02 M. Cary [handwritten by Calvert]". ♂<sub>2</sub>: Juan Vinas / Costa Rica / 3/18/02 / L. Bruner / U. S. N. M. [handwritten]". ♀<sub>3</sub>: "Juan Vinas / Costa Rica / 3/18/02 [handwritten]"; "L. Bruner / U. S. N. M. [handwritten]". All three with following det. label: "ARGIA / JOHANNELLA Calvert / P.P. Calvert det. 1907 / B. C. A. Neur., 370 [printed]". MCZ ENT 12204.

This species was originally described from Juan Viñas, Costa Rica, based on 37 ♂♂ and 23 ♀♀ which were stated to be at USNM. The USNM type collection online database (<https://natural-history.si.edu/research/entomology>) lists a ♂ "cotype" in their collection which is the holotype since it was the one figured. Currently *Argia johanella* Calvert, 1907.

***kellcottii* Williamson (*Ischnura*) 1898: 9.** Syntypes 2 ♂♂. ♂<sub>1</sub>: "Paratype / Round Lake / Whitley Co., Ind. / June 25, 1898 / E.B. Williamson, *Ischnura* / *kellcottii* ♂ [both handwritten by Williamson]". ♂<sub>2</sub>: "Paratype / Round Lake / Whitley Co., Ind. / June 25, 1898 / E.B. Williamson [handwritten by Williamson]". MCZ ENT 12245.

No type was designated in the original description based on an unspecified number of ♂♂ and ♀♀. Two ♂♂ and 1 ♀ syntypes are at UMMZ (Garrison et al. 2003: 33) and one of the ♂♂ carries a label later written by L. K. Gloyd: "Round Lake, Indiana / June 7, 1898 / E.B. Williamson and *Ischnura kellcottii*/Williamson/TYPER-pp.2 09-211/Ent. News Vol. IX 1898 Det. by. E.B. Williamson.". Currently *Ischnura kellcottii* Williamson, 1898.



*kennedii* Williamson (*Acanthagrion*) 1916: 314. Paratypes ♂♂. Both paratypes: "Cumoto / Trinidad / March 10, 1912, *Acanthag / kennedii* 2 ♂ [handwritten by Williamson]". MCZ ENT 12304.

The holotype is at UMMZ (Garrison et al. 2003: 33). Currently *Acanthagrion kennedii* Willimason, 1916.

***kokama*** Calvert (**Argia**) 1909: 132. Holotype ♂. "Equitos Peru [handwritten] / Staudinger."; "ARGIA [printed] TYPE ♂ / PP Calvert det.1909/AnCarMus. Vlp. [printed] 133 / Orig. Pl. IV, ff. 71, 71s [handwritten] ". MCZ ENT 12206.

Currently *Argia kokama* Calvert, 1909.

***kurilis*** Hagen in Selys (**Argia**) 1865: 400 (28 reprint). Holotype ♀. "Kurilische Id."; "Mus. Petrog"; "17. A. kurilis / ♀ / à renvoyer". MCZ ENT 12184.

A discussion of this specimen was given by Gloyd (1941: 131) who stated "♀ ex. Imperial Museum of St. Petersburg, now in Hagen coll., Museum of Comparative Zoology, Cambridge, Mass." The type locality for this specimen is considered to be in error. Currently considered a junior synonym of *Argia vivida* Hagen in Selys, 1865.

***lacrimans*** Hagen (**Argion**) 1861: 95 Syntypes 2 ♀♀. "Cordoba / Mexique / T[erres]. chau-des."; "Hagen [printed]"; "8. A. lacrimans ♀ / à renvoyer". MCZ ENT 12175.

The name was incorrectly amended to *Argia lacrymans* by Calvert (1902a: 88). Currently *Argia lacrimans* (Hagen, 1861).

***laterale*** Morse (**Enallagma**) 1895b: 274. Syntypes 11 ♂♂. "Wellesley, Mass. [printed] / May 23, 1895 [handwritten]"; "Enallagma / laterale / Morse"; 5 ♂♂ with same locality data, but "June 8, 95". MCZ ENT 54.

Currently *Enallagma laterale* Morse, 1895.

***lilacina*** Selys (**Argia**) 1865: 405 (33 reprint). Syntypes 1 ♂, 3 ♀♀. ♂: "M[inas]G[erais]"; "74 lilacina / [illegible]"; "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]". ♀: same data but with "75". 2 ♀♀: "Neu Freiburg / Beschke", (1 ♀ with label: "A. lilacina / De Selys"). MCZ ENT 12193.

A lectotype should be chosen from the syntype series at Selys Collection, RBINS. Currently *Argia lilacina* Selys, 1865.

Race? ***luctuosus*** Selys (**Mecistogaster**) 1860a: 20 (14 reprint). Syntype ♂: "P. Cabillo [handwritten]"; "M. ornatus / coll Selys [handwritten]"; "luctuosus / ♂ ad. [handwritten]"; "penis / drawn [handwritten by C. H. Kennedy]"; "Hagen [printed]". MCZ ENT 12122.

The original description included at least a "Très-adult" ♂ and a "Jeune" ♂: "Le mâle adulte de Puerto-Capello [sic!], par Appun; le jeune de Surinam, par Cordua. (Collect. Hagen.)." We do not know the whereabouts of the Surinam ♂. Currently a junior synonym of *Mecistogaster ornata* (Rambur, 1842).

***lunulatum*** Charpentier (**Argion**) 1840: 162. Syntype ♂. "Charp [intricate black-bordered label]"; "lunulatum / Charp."; "Hagen [printed]". MCZ ENT 12456.

The description was based on a pair from "Silesiae regionibus" and both were illustrated. Currently *Coenagrion lunulatum* (Charpentier, 1840).

**maculatum** Hagen in Selys (**Microstigma**) 1860a: 17 (11 reprint). Syntype ♂. "Essequibo / Schmidt"; "Microstigma / maculatum Hagen"; "M. obliquus[?] / coll. Hag."; "Hagen [printed]". MCZ ENT 12123.

The original description was based on at least 2 ♂♂ and 2 ♀♀ ("...Cayenne (♂ de la collect. Guérin), Santarem sur l'Amazone (♀ par M. Bates), Guyane, à Essequibo (♂), Surinam (♀ par Cordua), (Collect. Selys et Hagen, Musée de Berlin et de Copenhagen.). Other specimens are presumably present at Selys Collection, RBINS, a ♀ syntype is listed as present at MNB, and a ♂[?] syntype (Essequibo, Guyana) at ZMUC (<http://www.daim.snm.ku.dk/digitized-type-collection-details?catno=zmcuc00031505>). Currently *Microstigma maculatum* Hagen in Selys, 1860.

**medullaris** Hagen in Selys (**Argia**) 1865: 412 (40 reprint). Paralectotype ♂: "St. Fe de Bogota / Lindig 1863"; "A medullaris Hag."; "Hagen [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12177.

The description was based on at least 2 syntype ♂♂ ("Collect. Hagen, de Selys"). Garrison & von Ellenrieder (2018: 20) selected a lectotype as follows: "The description was based on at least two syntype males ("Collect. Hagen, de Selys"). One, the MCZ paralectotype, lacks the last four abdominal segments and the other, a complete male in the Selys collection (von Ellenrieder & Garrison 2007), is the one that we here designate as lectotype. Paralectotype ♂: "St. Fe de Bogota / Lindig 1863 [written]", "A medullaris Hag. [written]", "Hagen [printed]", "Penis / drawn [handwritten by C.H. Kennedy]". Type [printed] MCZ 12177 [handwritten], in MCZ; lectotype: same labels but "42. A. medullaris / ♂ [handwritten]; "medullaris / ♂ [handwritten]; "desseiné / Williamson [penciled]; "Desseiné par/Santos—3.x.64 [handwritten].", in RBINS." Currently *Argia medullaris* Hagen in Selys, 1865.

**mercuriale** Charpentier (**Agrion**) 1840: 159. Syntype ♂. "Charp [intricate black-bordered label]"; "mercuria- / le Heyer Charp / Lüneburg pent [?]."; "Hagen [printed]". MCZ ENT 12255.

The description was based on an unspecified number of specimens from "A claro Entomologo Lunaeburgensi, illustr. Heyer, sub illo nomine mecum communicatum, in regionibus degit." and both are illustrated. According to Heinrich Fliedner (*pers. comm.*), at least one additional syntype of *Agrion mercuriale* collected by Heyer is at MNB. Seehausen (2019) illustrates labels of syntypes (♂, ♀) of this name at NHMW. A history of the discovery and naming of this species is given by Fliedner (1998: 85). Currently *Coenagrion mercuriale* (Charpentier, 1840).

**minusculum** Morse (**Enallagma**) 1895a: 207. Syntypes 5 ♂♂. "Sherborn, Mass / July 16, 1894. [printed]"; "Enallagma / minusculum / Mors / Type, Dec. 1894". MCZ ENT 47.

Currently *Enallagma minusculum* Morse, 1895.

**modesta** Selys (**Argia**) 1865: 388 (16 reprint). Syntype ♂. "Tijuca / P.B."; "modesta / 70 Bresil"; "Hagen [printed]". MCZ ENT 12178.

A syntype at Selys Collection, RBINS, should be chosen as lectotype. Currently *Argia modesta* Selys, 1865.

**moestum** Hagen (**Agrion**) 1861: 94. Lectotype ♂, paralectotypes 2 ♂, 5 ♀. "July / 16"; "Pecos River / Texas"; "Hagen [printed]". MCZ ENT 12169.

The lectotype ♂ was designated by Garrison (1994a: 319). Currently *Argia moesta* (Hagen, 1861).

*molokaiense* Perkins (*Agrion*) 1899: 73. Paralectotype ♂. "Molokai Mts., [printed] / 3000 + [handwritten] ft. / Perkins. [printed] 6. [handwritten] 1893 [printed]"; "penis / drawn [handwritten by C. H. Kennedy]"; "Gift of / Hawaiian / Committee / 1913 [printed]". MCZ ENT 8993.

The lectotype is at BMNH (Kimmins 1970: 188). Currently *Megalagrion molokaiense* (Perkins, 1899).

***oculata*** Hagen in Selys (***Argia***) 1865: 409 (37 reprint). Lectotype ♂, paralectotype ♂ (missing abdominal segments 7-10): "La Guayra / [illegible] [in pencil]"; "Hagen [printed]". MCZ ENT 12200.

The lectotype ♂ was designated by Garrison & von Ellenrieder (2015: 55). Currently *Argia oculata* Hagen in Selys, 1865.

***orichalcea*** Hagen in Selys (***Argia***) 1865: 408 (36 reprint). Lectotype ♂, paralectotypes 2 ♂, 1 ♀. "Venezuela / Appun.", "Hagen [printed]"; "A. orichalcea. / A. cuprea partim / N. Am. N. p. 97.". 2 ♂ paralectotypes: "Columb [?] / App."; "Hagen [printed]". ♀: same as ♂, but with added label: "34. A. orichalcea / ♀ à renvoyer". MCZ ENT 12195.

The lectotype ♂ was designated and illustrated by Garrison & von Ellenrieder (2018: 18). Currently *Argia orichalcea* Hagen in Selys, 1865.

***ornatum*** Selys (***Agrion***) 1850: 203. Syntypes, 1 ♂, 1 ♀. ♂: "A. ornatum ♂ / Hildesheim [illegible]"; "Hagen [printed]". ♀: same data but "♀". MCZ ENT 12254.

Selys (1850: 205): "...on pourra facilement déterminer l' *A* [grion]. *ornatum*, dont la découverte et due à M. Heyer, de Lunebourg, que l'a envoyé à M. Hagen." and "Patrie. Hanovre, trouvé près de Hildesheim, par M. Heyer." Currently *Coenagrion ornatum* (Selys, 1850).

***ovigerum*** Calvert (***Enallagma***) 1909: 159. Holotype ♂. "St. Fe de Bogota / Lindig 1863."; "ovigerum"; "TYPE ♂ / Enallagma / ovigerum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 160 / Orig. Pl. VI, ff 123, 123S [handwritten]". MCZ ENT 12295.

The genital ligula is missing from the holotype. Currently *Mesamphiagrion ovigerum* (Calvert, 1909).

***pallidula*** Calvert (***Nehalennia***) 1913b: 373. Holotype ♂. "Haulover / March Fla [printed]"; "Needham / fig"; "Nehalennia / pallidula Calv. ♂ TYPE / Orig. of ff. 7, 11, Ent News 24, 313 [all written] / P.P. Calvert, det. [printed] 1913 [handwritten]". MCZ ENT 16099.

Currently *Nehalennia pallidula* Calvert, 1913.

*paya* Calvert (*Neoneura*) 1907: 393. Paratypes 3 ♂♂, ♂♂: "Livingston / Guatem Feb / H. Wilson, Ap 86 [handwritten]". ♂: "Puerto Barrios / Guatemala / James S. Hine / Columbus, O. / Mar. 4, 1905 ♂ / *Neoneura paya* [handwritten by Williamson]". All three with det. labels: "NEONEURA / *paya* Calv. [handwritten] / P.P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed] 393 [for the two Livingston ♂♂] 394 [handwritten]". MCZ ENT 12239.

The original description was based on 8 ♂♂ from Puerto Barrios, Guatemala (Hine, Ohio State University) and 1 ♂ from Section 11, Ferrocarril del Norte, Guatemala by E. B. Williamson. The original figures of the holotype by Calvert (Fig. 27, 38, Plate X) are from one of the Ohio State males. Currently *Neoneura paya* Calvert, 1909.

*peramans* Calvert in Skinner (*Protoneura*) 1902: 231. Paralectotype ♂. "Panima, / Guatemala. / Champion. [printed]"; "PROTONEURA / peramans Calv. [handwritten] / P. P. Calvert det. [printed] 1903 [handwritten] / B. C. A. Neur., p. [printed] 141 [handwritten]". MCZ ENT 12241.

von Ellenrieder & Garrison (2017: 32) discussed the history of the name as follows: "Syntypes ♂ and ♀. Guatemala, Vera Paz, Panima, [G.C.] Champion leg. [BMNH]. No type designation was made in Calvert's brief original description on the proceedings of a society meeting, in which only one male and one female in copula were mentioned. In his 1903 redescription Calvert listed 4 ♂ and 2 ♀, including the pair in copula mentioned in 1902, without any indication as to whether the male illustrated in figure 49 was the one collected in copula. In his 1970 catalog, Kimmins considered the specimen illustrated by Calvert in 1903 as holotype. At our request, Benjamin Price kindly checked the specimens deposited at BMNH, and the male illustrated by Calvert in 1903 with a holotype label from Kimmins was not taken in copula, for which reason it cannot constitute a type since it was not included in the original description. Therefore we here designate the male taken in copula mentioned in Calvert's (1902) original description (with a paratype label from Kimmins) as lectotype." NOTE: the original pair is apparently not at the ANSP according the Academy's online Entomology Type Collection database. Currently *Protoneura peramans* Calvert in Skinner, 1902.

*peterseni* Ris (*Oxyagrion*) 1908: 519. Paralectotype ♂. "Oxyagr. Peterseni Ris / Paratype [handwritten]". MCZ ENT 12440.

This species was described from a large series of 67 ♂♂ and 65 ♀♀ from "Prov. Mendocã und Pedregal, Zeiten vom 25. X. bis 26. III." A ♂ at SMF was designated as lectotype (von Ellenrieder & Muzón 2006: 215). At MCZ there is also a ♀ with a type label, which according to the label was collected on 14 November 1906, outside the range of dates given for the type series, and therefore we consider it is a pseudotype. Currently *Andinagrion peterseni* (Ris, 1908).

*pictum* Morse (*Enallagma*) 1895b: 274. Syntypes 1 ♂, 1 ♀: "Sherborn ♂ [or ♀] / Mass.:"; "Enallagma / pictum / Morse". MCZ ENT 55.

Currently *Enallagma pictum* Morse, 1895.

*piscinarium* Williamson (*Enallagma*) 1900b: 273. Holotype ♂. "E piscinarium / Trinity Fishpond / Wells County, Md. / July 4, 1898 / L.A. Williamson / coll Type". MCZ ENT 1863.

Described from a single ♂: "Franz Fishpond, Wells County, Indiana, July 4, 1898, L. A. Williamson. The specimen has been examined by Dr. Calvert and Mr. Hine. It is deposited in the Museum of Comparative Zoology. Cambridge, Mass."). Two wings and abdominal segments 2-6 are missing. Currently a junior synonym of *Enallagma geminatum* (Kellcott, 1895).

*pollutum* Hagen (*Agrion*) 1861: 33. Syntypes 3 ♂♂, 1 ♀. ♂<sub>1</sub>: "Florida / ♂. Sacken / März 1858"; "Hagen [printed]". ♂<sub>2</sub>, ♀<sub>3</sub>: same data as lectotype. ♂: "Florida / Norton"; "A. pollutum". MCZ ENT 12264.

Abdominal segments 4-10 of syntype ♂<sub>1</sub> are glued to the locality label beneath the specimen. Currently *Enallagma pollutum* (Hagen, 1861).

**positum** Hagen (**Agrion**) 1861: 77. Syntypes 3 ♂♂, 12 ♀♀. 3 ♂♂ (one with head missing, another lacking abdomen): "Savannah (A) / ♂. Sacken. 1854"; "Hagen [printed]". 9 ♀♀: same data (some with month of "Marz"). 1 ♀: "Dalton / Georgia / Sacken 1859". 2 ♀♀: "Washington / Sacken.". MCZ ENT 12287.

Description based on an unspecified number of ♂♂ and ♀♀ from "Savannah, Dalton, Georgia; Washington (Osten Sacken)" and Hagen further added: "The colors of the living insect were made known to me by Baron Osten Sacken. The male (from Dalton) is sometimes smaller, having 5 postcubital cross-nervules; but it can hardly be a distinct species. The adult female is black, pruinose, with the apex of the segments black-brassy." Currently *Ischnura posita posita* (Hagen, 1861).

**praetextatum** Hagen mss. (**Pseudagrion**) 1876b: 494 (204 reprint). Syntypes 3 ♂♂, 3 ♀♀. ♂<sub>1</sub>: "A. caesium nob. / Mus. [?] Pr. b / p [?]; "Prom. b. sp [?]". ♀<sub>2</sub>: "27B."; "Cap Krauss". ♂<sub>3</sub>: "1510."; "undecipherable] Hag. [handwritten]". ♂<sub>4</sub>: "Prom. b. sp [?]". ♀<sub>5</sub>: "Cap Dr[égé] [handwritten]". ♀<sub>6</sub>: "Prom. b. sp [?]; all with "Hagen [printed]" and "Mus. Berol. [printed]". MCZ ENT 12288.

Currently *Pseudagrion praetextatum* Hagen in Selys, 1876.

**praevarum** Hagen (**Agrion**) 1861: 88. Lectotype ♀. "Trojes del Oro"; "Hagen [printed]"; "Agr. praevarum". MCZ ENT 12275.

A lectotype was designated by Garrison (1984: 54): "Type data. *Agrion praevarum*: 2 ♂♂ from "Mexico", no date. "Type 12275", with posterior 4 abdominal segments missing. Also 1 ♀ from "Trajos Del Oro", Mexico, "Type 3-12275" with abdomen missing. Since identification by mesostigmal plates is certain, I have designated this specimen as the lectotype. In Museum of Comparative Zoology, Cambridge." Currently *Enallagma praevarum* (Hagen, 1861).

**prognatum** Hagen (**Agrion**) 1861: 83. Syntype. "Berkeley Springs, Va. (Osten Sacken)." Not found at MCZ.

A header label "A. prognata / \* Hag." in Hagen's hand and another inked label "Types/from Berkeley Springs" are without a specimen and Hagen later (1876a: 260 [16 reprint] gives "Coll. Hagen" as repository. Currently *Ischnura prognata* (Hagen, 1861).]

**pulchrum** Hagen (**Agrion**) 1840: 79. Syntype ♀. "A. pulchrum / Mus. Markl", "Hagen [printed]", MCZ ENT 12253.

According to the original description, likely described from 1 ♂ and 3 ♀♀ from "Gedani, Upsaliae. Habitat Regiomonti, Gedani, Upsaliae. In Prussia modo feminae duae repertae sunt. Possideo marem et feminam ex Museo Markl. [presumably the scientific collector Gabriel Marklin]." Currently a synonym of *Enallagma cyathigerum* (Charpentier, 1840).

**pulla** Hagen in Selys (**Argia**) 1865: 410 (38 reprint). Lectotype ♂: "Venezuela / Schneider"; "36. A. pulla ♂ / à renvoyer"; "Hagen [printed]"; "ARGIA [printed] Hagen's type [handwritten] / PULLA Hagen / P.P. Calvert det. 1907 / B.C.A. Neur. p. 364 [printed]". MCZ ENT 12196.

Lectotype ♂ was designated and illustrated by Garrison & von Ellenrieder (2015: 67) as follows: "*Argia pulla* Hagen in Selys: Lectotype ♂ by present designation: VENEZUELA [MCZ]. A paralectotype (designated by Calvert as "Paratype") with following label: "Venezuela / Appun". Currently *Argia pulla* Hagen in Selys, 1865.

**pumilio** Charpentier (**Agrion**) 1825: 22. Syntypes 3 ♂♂, 1 ♀. "Hagen [printed]"; "Charp. [intricate black bordered label]" (all 4 specimens). 1 ♂ with "pumilio. Charp.". MCZ ENT 12243.

Described from "Hungaria, in Italia superiore." Calvert (1898b: 39) reports on the pair in the MCZ as follows: "One male and one female on the same pin in M. C. Z. with the label "coll. Germ. pumilio Charp. Type Burm. II. 820, 12." in Hagen's hand, except the words ("pumilio Charp." Two females and one male under the white drawer-label pumilio Charp., in Burmeister's hand, at Halle." Currently *Ischnura pumilio* (Charpentier, 1825).

**putridum** Hagen (**Agrion**) 1861: 96. Syntypes 3 ♂♂, 3 ♀♀. 1 ♂, 1 ♀: "48 [printed]"; "Maryland (48) / Uhler 1858"; "Hagen [printed]". 1 ♂, 1 ♀: "Virginia / Berkeley Springs / ♂. Sacken."; "Hagen [printed]". 1 ♂, 1 ♀: "Upper Wisconsin / River Uhler / 1860"; "Hagen [printed]". MCZ ENT 12171.

Currently a junior synonym of *Argia moesta* (Hagen, 1861).

**resolutum** Selys (**Agrion**) 1876a: 263 (153 reprint). Syntypes 5 ♂♂, 4 ♀♀. ♀<sub>1</sub>: "Saskatchewan / Hudsonia / Kennicott 1860."; "A. resolutum." [both written by Hagen]. ♂<sub>2</sub>: same data as ♀<sub>1</sub> with added label: "abdominal segs. 7-10 not those of C. resolutum R. W. Garrison 1980". ♀<sub>3</sub>: same data as ♀<sub>1</sub>. ♂<sub>4</sub> & ♀<sub>6</sub>: "Ft. Resolution / Great Slave Lake / Kennicott 1860 [handwritten by Hagen]". ♂<sub>5</sub> & ♂<sub>7</sub>: "Ft. Resolution / Great Slave Lake / Kennicott 1862 [handwritten by Hagen]". ♂<sub>7</sub> & ♀<sub>8</sub>: "Red River / Kennicott. 1860 [handwritten]". All specimens with "Hagen [printed]". MCZ ENT 12258.

Currently *Coenagrion resolutum* Hagen in Selys, 1876.

**rufulum** Hagen (**Agrion**) 1861: 86. Holotype ♂. "Hagen [printed]"; "California"; "Mus [illegible]"; "A rufulum"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12247.

The holotype is missing abdominal segments 7-10. The locality "California" is in error (as later surmised by Hagen in Selys 1876a: 303 [59 reprint] who later thought the type locality to be Chile), as no species of *Oxyagrion* is known from the United States. Currently a junior synonym of *Oxyagrion rubidum* (Rambur, 1842).

**salvum** Hagen (**Agrion**) 1861: 85. Syntype ♂: "A. salvum / Hagen"; "Hagen [printed]". MCZ ENT 12284.

Garrison (2009: 94) in his review of the genus *Telebasis* provided the following information on the types: "Originally described from one ♂ and one incomplete ♀, I was unable to find the ♀, but the ♂ fits the original description". Currently *Telebasis salva* (Hagen, 1861).

**sancta** Hagen in Selys (**Profoneura**) 1860b: 462 (34 reprint). Holotype ♀. "Lagoa / Santa / Lund"; "P. santa"; "Hagen [printed]". MCZ ENT 12236.

The last 4 abdominal segments are missing. The status of the holotype female was discussed by Machado (1999: 37-38). The prothorax of the holotype was illustrated by Garrison et al. (2010: 359, Fig. 2382). Currently *Forcepsioneura sancta* (Hagen in Selys, 1860).

**sanguinalis** Calvert (*Telebasis*) 1909: 192. Paralectotype ♂. "Chapada [printed]"; "TELEBASIS / SANGUINALIS Calv. / PP Calvert def. 1909 / AnCarMus. VI p. 193 [printed]". MCZ ENT 12291.

The lectotype ♂ is at CM (Tennessee 2002: 209). Currently *Telebasis sanguinalis* Calvert, 1909.

*saucium* Burmeister (*Agrion*) 1839: 819. Paralectotype ♂. "Coll. Germar / saucium / Br. \* / Carolina / Type Burm. 819.10"; "Hagen [printed]". MCZ ENT 12246.

Described from 2 specimens ("♂ Aus Süd-Karolina, von Zimmermann; in Germars und der Hallenser Sammlung."). The other ♂, at MLU, was designated by Calvert (1898b: 39) as lectotype: "One male in the M. C. Z. with the pink pin-label "Coll. Germar saucium Br. \* Carolina. Type Burm. 819. 10." The words "saucium Br. \* Carolina" may be in Burmeister's hand, the others are in Hagen's. The tip of the abdomen of this male is in bad condition. One male (T[ype]) under the pink drawer-label "saucium \* Carol. Zm." in Burmeister's hand, at Halle. This specimen has been repaired at some time and the abdomen is fastened by its apex to the thorax. This species is the *Amphiagrion saucium* of de Selys (Bull. Acad. Roy. Belg. - 2 - xli, p. 285, 1876) who expressly adds "La description du male est faite sur le type de Burmeister que M. Hagen m a transmis." Currently *Amphiagrion saucium* (Burmeister, 1839).

*scintilla* Gloyd (*Protoneura*) 1939: 1. Paratype ♂. "Brazil / Abuna / 23-VII [handwritten]"; "coll. / Williamson [handwritten]"; "Protoneura / scintilla / PARATYPE ♂ [handwritten by Gloyd] / Det. L. K. Gloyd 19 [printed] 38 [handwritten by Gloyd]". MCZ ENT 23331.

The holotype is at UMMZ (Garrison et al. 2003: 23). Currently *Protoneura scintilla* Gloyd, 1939.

*scitulum* Rambur (*Agrion*) 1842: 266. Syntype ♂. "scitulum / Paris"; "Hagen [printed]". MCZ ENT 12256.

Original description cited specimens "Se trouve dans environs de Paris..." Most of the Rambur collection is at Selys Collection, RBINS. Thus, a lectotype should be selected from the syntype series in that collection. Currently *Coenagrion scitulum* (Rambur, 1842).

*sedulum* Hagen (*Agrion*) 1861: 94. Lectotype ♂. "Virginia / Berkeley Springs / ♂. Sacken"; "40. A. sedula ♂ / à renvoyer"; "Hagen [printed]". One paralectotype ♂: "Acq 8"; "Pecos River / Texas"; "41 A. sedula ♂? / Texas / à renvoyer"; "Hagen [printed]". MCZ ENT 12201.

A lectotype was designated by Garrison (1994a: 332). Currently *Argia sedula* (Hagen, 1861).

*serva* Hagen in Selys (*Argia*) 1865: 387 (15 reprint). Syntype ♂. "serva / ♂ / Brazil"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; "Mus. Berol. [printed]". MCZ ENT 12176.

The original description included at least 2 ♂♂ and 1 ♀ from "Brésil ♂ (Collect. Hagen); ♀ (par Sella) Mus. Berlin." The MCZ possesses 2 additional ♂♂ and 1 ♀ without red type labels. The first ♂ has a label that we cannot decipher, the second ♂: "A. serva / Brasilia", the ♀: "A. serva M/B / Brasilia" all in Hagen's handwriting. The latter two specimens are accompanied by the printed labels "Mus. Berol." and "Hagen". These may also be possible syntypes. Currently *Argia serva* Hagen in Selys, 1865.

*servum* form *resolutum* Selys (*Agrion*) 1876a: 1264 (154 reprint). Syntypes 4 ♂♂, 1 ♀. 2 ♂♂: "Ft. Resolution / NW Territ / Kennicott 1861". ♂, ♀: "Ft. Resolution / Gr. Slav. Lake / Kennicott 1862". Syntype ♂: "Ft. Resolution / H.B.T. [printed] / Juni". All with "Hagen [printed]". MCZ ENT 12259.

Currently a junior synonym of *Coenagrion resolutum* (Hagen in Selys, 1876).



**signatum** Hagen (**Argion**) 1861: 84. Syntypes 2 ♂♂, 1 ♂: "Louisiana Schaum". 1 ♂: "Argion signatum / Neu Georgia Escher."; "Hagen [printed]". MCZ ENT 12265.

Currently *Enallagma signatum* (Hagen, 1861).

*simulacrum* Calvert (*Skiallagma*) 1909: 176. Paralectotype ♂. "Cuyaba / Brazil. [printed]"; "Skiallagma / simulacrum Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 178 [handwritten]". MCZ ENT 12298.

The abdomen is glued to a card beneath the syntype; abdominal segments 7-10 are missing. The lectotype ♂ is at CM (Garrison 2009: 97). Currently *Telebasis simulacrum* (Calvert, 1909).

*smithiana* Calvert (*Argia*) 1909: 140. Syntype ♂. "Chapada"; "ARGIA / SMITHIANA Calv. / P.P. Calvert det. 1909 / AnCarMus. VI p. 141 [printed]". MCZ ENT 12214.

A lectotype should be chosen from the syntypes at CM. Currently *Argia smithiana* Calvert, 1909.

**solita** Kennedy (**Argia**) 1918a: 256. Holotype ♂. "ARIZONA / C.U. Lot 35 [printed]"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Tylee n. sp. / C.H. Kennedy"; "A. solita / Hag [crossed out, replaced with "Kenn."]. MCZ ENT 13624.

Currently a junior synonym of *Argia pallens* Calvert, 1902.

**sordida** Hagen *in* Selys (**Argia**) 1865: 387 (15 reprint). Syntypes 26 ♂♂, 1 ♀. "Neu Freiburg / Rio Beschke"; "Hagen [printed]". MCZ ENT 12172.

There are 5 ♂♂, 1 ♀, lacking MCZ type labels, but each has the same data as those marked with the red type label. They were probably part of the original type series. Currently *Argia sordida* Hagen *in* Selys, 1865.

**tarascana** Calvert (**Argia**) 1902a: 90. Paratype ♀. "3-30-1899 / Argia tarascana / Cal SN & M. C. R[hoads]. / Acambaro Mex / ♂♂ [handwritten]"; "ARGIA TARASCANA [printed] ♀ [handwritten] / Calv. COTYPE. / P.P. Calvert det. [printed] 1902 / B. C. A. Neur., p.91 [handwritten]". MCZ ENT 12210.

The holotype ♂ is at ANSP. Kimmins (1970: 192) designated a ♂ from Acambaro, Mexico, at BMNH that served as Fig. 51 ss as lectotype; this was followed by Garrison (1994a: 332) who illustrated the BMNH specimen. However, the ♂ that served as the principal figures representing this species (Figs. 51, 51 s) was from Cuernavaca (Morelos, O. W. Barrett collector) and is at ANSP and it, according to Calvert, should serve as the holotype. The BMNH specimen then becomes a paratype. The MCZ paratype female is in poor condition and is missing most of the thorax and is glued to a card. Currently *Argia tarascana* Calvert, 1902.

**terminale** Selys (**Oxyargion**) 1876a: 295 (51 reprint). Syntype ♂. "M[inas]G[erais]", "Hagen [printed]"; "terminale". MCZ ENT 12249.

A syntype at Selys Collection, RBINS, should be chosen as lectotype. Currently *Oxyargion terminale* Selys, 1876.

**thespis** Hagen *in* Selys (**Argia**) 1865: 397 (25 reprint). Syntypes 2 ♀♀, ♀<sub>1</sub>: "A. thespis. M.B. / Brasilia. Borch."; "Hagen [printed]". ♀<sub>2</sub>: "Brasilia / M.B."; "Hagen [printed]". MCZ ENT 12186.

The original description included at least 1 ♂, which is at Selys Collection, RBINS. A detailed dis-

cussion of this species is given in Garrison & von Ellenrieder (2015: 18). Currently *Argia thespis* Hagen in Selys, 1865.

**thisma** Calvert (**Argia**) 1909: 141. Syntype ♂. "Chapada [printed]"; "ARGIA [printed] / thisma Calv. [handwritten] / PP Calvert det. 1909 / AnCarMus. VI p. [printed] 142 [handwritten]". MCZ ENT 12215.

A lectotype should be selected from the syntype series at CM. Currently a junior synonym of *Argia lilacina* Selys, 1865.

**titicacae** Calvert (**Amphiagrion**) 1909: 203. Syntype ♂. "Puno, [handwritten] / Peru [printed] / Garmon [handwritten not "Garman" as stated in the original description]"; "AMPHIAGRION / TITICACAE Calv. / PP Calvert det. 1909 / AnCarMus. VI p. 206 [all printed]". MCZ ENT 12248.

A syntype from ANSP should be chosen as lectotype. Currently *Protallagma titicacae* (Calvert, 1909).

**translata** Hagen in Selys (**Argia**) 1865: 410 (38 reprint). Syntype ♂. "P. Cabello"; "Hagen [printed]". MCZ ENT 12199.

Garrison (1994a: 335) provided the following information concerning the type specimens: "The syntype lacks the last 7 abdominal segments. At least one other male and a female with the same data were available to Hagen at the time of the original description, but I cannot find those specimens. Pending their discovery, and due to the missing abdominal appendages, I am refraining from designating the syntype as lectotype.". Currently *Argia translata* Hagen in Selys, 1865.

**ulmeca** Calvert (**Argia**) 1902a: 80. Paratypes 1 ♂, 1 ♀. ♂: "Atoyac, Vera Cruz, Schumann. [printed]"; "ARGIA ULMECA [printed] ♂ [handwritten] / CALV. COTYPE / P.P. Calvert det. [printed] 1901 [handwritten], / B. C. A. Neur., p. [printed]". ♀: same data but "♀". MCZ ENT 12219.

The holotype is at BMNH (Kimmins 1970: 192). Currently *Argia ulmeca* Calvert, 1902.

**underwoodi** Calvert (**Argia**) 1907: 370. Paratype ♂. "Argia underwoodi / Carrillo Coata Rica / underwoodi ♂ / coll. Godman / listed BCA [handwritten]"; "ARGIA [printed] ♂ / underwoodi Calv. [handwritten] / P.P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed] 363 [handwritten]". MCZ ENT 12173.

The holotype is at BMNH (Kimmins 1970: 192). Currently *Argia underwoodi* Calvert, 1907.

**vagabundum** Perkins (**Agriion**) 1899: 75. Paralectotypes 2 ♂♂, 1 ♀. Paralectotype ♀<sub>1</sub>: "Kauai [handwritten]"; "A. vagabundum [handwritten], 5, [handwritten] 19". Paralectotype ♂<sub>2</sub>: "Mts. Waimea, / Kauai [printed] 6000 [handwritten] ft. / Perkins. [printed] 5, [handwritten] 1894 [printed]"; "vagabundum [handwritten]". Paralectotype ♂<sub>3</sub>: "Kauai [handwritten]"; "vagabundum [handwritten]". All three with: "Gift of / Hawaiian / Committee / 1913 [printed]". MCZ ENT 8994.

The lectotype is at BMNH (Kimmins 1970: 192). Currently *Megalagrion vagabundum* (Perkins, 1899).

**variabilis** Selys (**Argia**) 1865: 406 (34 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Vera Cruz / Salle", "57 variabilis"; ♀: "Vera Cruz / Salle", "61 variabilis". MCZ ENT 12192.

A lectotype should be selected from the syntype series at Selys Collection, RBINS. Currently *Argia variabilis* Selys, 1865.

**violaceum** Hagen (**Agrion**) 1861: 90. Lectotype ♂. "Virginia / Berkeley Springs / ♂. Sacken"; "A violatum"; "Hagen [printed]". The lectotype is pinned with a paralectotype ♀. Other paralectotypes 2 ♂♂, 3 ♀♀, 1 ♂, 2 ♀♀: same data as lectotype. 1 ♂, 1 ♀: "Maryland 944 / Uhler 1854". MCZ ENT 12191.

A lectotype ♂ was designated by Garrison (1994a: 313). Currently *Argia fumipennis violacea* (Hagen, 1861).

**viridulum** Charpentier (**Agrion**) 1840: 149. Syntype ♀. "Charp [intricate black-bordered label]", "viridulum / Charp.", "Hagen [printed]". MCZ ENT 12461.

Described from "Silesia" and both sexes are illustrated. Currently *Erythromma viridulum* (Charpentier, 1840).

**vidua** Hagen in Selys (**Argia**) 1865: 406 (34 reprint). Holotype ♂. "Cala. [printed]"; "California / Cap St. Lucas / Xanthus 1860"; "28. A. vidua / ♂ / à renvoyer". Paratype 1 ♀: "July 5"; "Pecos River / Texas"; "24. A. vidua / ♀ / à renvoyer"; "= immunda". MCZ ENT 12190.

The ♀, which Hagen referred to as *A. vidua* with doubt, was determined by L.K. Gloyd in 1935 to be *A. immunda*. We consider the statement by Hagen (1865: 407 (35 reprint)): "Le mâle type, du Cap Saint-Lucas (Californie [now Baja California], par Xanthus..." as holotype designation. Currently *Argia vidua* Hagen in Selys, 1865.

**vidua var. munda** Calvert (**Argia**) 1902a: 96. Lectotype ♂, paralectotypes 8 ♂♂, 2 ♀♀. Lectotype, 4 ♂♂, 2 ♀♀: "Arizona, / C.U. Lot 35. [printed]"; "munda". 4 ♂♂: "Rio Verde / Mexico / E. Palmer.". MCZ ENT 12209.

The lectotype ♂ was designated by Garrison (1994a: 320). According to Calvert (1902a: 104, footnote), the type locality for specimens from "C.U. Lot 35" is probably near the Graham Mountains in Arizona. Currently *Argia munda* Calvert 1902

*vidua var. plana* Calvert (**Argia**) 1902a: 96. Paratypes 3 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "ARGIA VIVIDA / PLANA CALV. ♂ / COTYPE. / P.P. Calvert det. [printed] 1901 [handwritten]"; "B. C. A. Neur., p. [printed]"; "Omitteme, / Guerrero, / 8000 ft. / July, H.H. Smith. ". ♂<sub>2</sub>: "ARGIA VIVIDA / PLANA CALV. ♂ / COTYPE. / P.P. Calvert det. [printed] 1901 [handwritten]"; "vidua / plana"; "Arizona, / C.U. Lot 35". ♂<sub>3</sub>: "Arizona, / C.U. Lot 35"; "Argia / dissoluta Ha"; "Argia ♂ / agrioides Calv, [handwritten] / Det. L.K. Gloyd 19 [printed] 35 [handwritten]"; "Argia nahuana / Calvert / det. by R.W. ♂ / Garrison 19 [printed] 80 [handwritten]". ♀<sub>4</sub>: "Arizona, / C.U. Lot 35"; "Argia ♀ / ? agrioides Calv. / Det. L.K. Gloyd 19 [printed] 35 [handwritten]"; "Argia nahuana / Calvert / det. by R.W. ♀ / Garrison 19 [printed] 80 [handwritten]". ♀<sub>5</sub>: "Arizona, / C.U. Lot 35"; "Argia vidua ? [handwritten]". MCZ ENT 12207.

The holotype is at BMNH (Kimmins 1970: 190). 1 ♂, 1 ♀ (C.U. Lot 35) represent *Argia nahuana* Calvert, 1902. Currently *Argia plana* Calvert, 1902.

**vulneratum** Hagen (**Agrion**) 1861: 86. Lectotype ♂. "Portorico Mor."; "Hagen [printed]"; "A. prosectum / Hag". MCZ ENT 12283.

The lectotype ♂ was designated by Garrison (2003: 103: "Hagen's syntypes consist of a mixed series; in order to preserve current concept of the name, I designate a [♂] labeled "Portorico Mor." "Hagen [printed]" "A. prosectum .... / Hag" MCZ 12283 as lectotype. The lectotype ♂ is pinned together with a ♀ of *T. vulnerata*. Three of the other four specimens from Cuba (Poey) are *T. dominicana*, and the last ♂, with a manuscript label *A. rubens*, from Essequibo is missing its appendages and its identity cannot be determined." Currently *Telebasis vulnerata* (Hagen, 1861).

**wilsoni** Calvert (**Argia**) 1902a: 75. Holotype ♂. "Livingston / Guatem Feb- / H. Wilson Ap. 85"; "TYPE [printed, vertically written on far left side of label] Original of ff 28 / 28s, Pl. IV. B. C. A. Neur. [handwritten] / ARGIA [printed] / wilsoni Calv. ♂ [handwritten] / P.P. Calvert det. [printed] 1901 [handwritten, Fig. 3]"; "Appendages illustrated / R. W. Garrison 1991". MCZ ENT 12208.

According to Garrison, direct comparison of the holotype of *A. wilsoni* with *Argia calida* (Hagen, 1861) shows both to be conspecific though this synonymy has yet to be published. Presently a junior synonym of *Argia calida* (Hagen, 1861).

## EUPHAEIDAE

**comes** Hagen (**Anisopleura**) 1880: lxiii (2 reprint). Holotype ♂. "Kooloo. / Carleton. [printed]"; "comes". MCZ ENT 12088.

Described from "Un mâle (en alcool) envoye d'Amballa (Indes orientales) avec d'autres insectes, mais il pourrait aussi provenir de la chaîne méridionale de Kooloo (Himalaya) qui se trouve à 200 milles plus aunord." Fraser (1934: 89) incorrectly attributed authorship to Selys and stated that the "Type [is] in the Selys collection, Brussels Museum." Currently *Anisopleura comes* Hagen, 1880.

**dispar** Rambur (**Euphaea**) 1842: 230. Syntype? ♂. "Dispar [handwritten]"; "Ramb. [handwritten]"; "Hagen [printed]"; "penis / drawn [handwritten by C. H. Kennedy]". MCZ ENT 12089.

The original description is based on at least one pair from "Indes.". Selys (1854b: 171) based his description on a pair from "Le plateau de Neelgherries (Inde)" adding: "Décrite d'après les types qui ont servi à M. Rambur" indicating that the types (3 ♂♂, 1 ♀: Matti Hämäläinen (*pers. comm.*) are at RBINS. Currently *Euphaea dispar* Rambur, 1842.

**fatime** Charpentier (**Agrion**) 1840: 132. Holotype ♀ (Fig. 7). "Turkey / v. Friv[aldsky] / 1838 [black-bordered yellow label, Figs. 2, 7]"; "E. fatime / Turkey / \* Charp. p. 132. pl. 45. / coll. Charp."; "Hagen [printed]". MCZ ENT 12083.

Described from "E Turcia" and the holotype ♀ illustrated (Fig. 7). Selys (1854b: 167) referred to this specimen: d'après la femelle jeune type, décrite par M. de Charpentier et envoyée par M. Frivaldsky" and again (1879a: 371 [25 reprint]): "Les types de la fatime normale, examinés par Hagen et par moi, proviennent de Turquie (type Charpentier)...". The pair of left wings is missing and the head is attached to a card point. Currently *Epallage fatime* (Charpentier, 1840).

**fatime** form **amasina** Selys (**Epallage**) 1879a: 371 (25 reprint). Syntypes 1 ♂, 2 ♀♀. ♂<sub>1</sub>: "Amasia"; "Epallage / fatima / Ch. / ♂ amasia"; "Hagen [printed]". ♀<sub>2</sub>: as for syntype 1, but with "♀". ♀<sub>3</sub>: "Amasia"; "Hagen [printed]". MCZ ENT 12085.

Selys (1879a: 372 [26 reprint]) wrote that he believed the Mermeriza specimens to represent typical *E. fatime* ("Le Dr Hagen doute qu'ils appartiennent à la vraie fatime. On pourrait don-

ner à cette forme le nom d'*amasina*. Les types de la *fatime* normale, examinés par Hagen et par moi proviennent de Turquie (type Charpentier), Grèce en Acarnanie (par Krüper) Mermeriza [our italics]; (par Schneider) et Chypres (par Ledrer)."). Other specimens are present at Selys Collection, RBINS. Currently a junior synonym of *Epallage fatime* (Charpentier, 1840).



Figure 7. *Agrion fatime* Charpentier.

***fatime* var. *anatolica*** Selys (***Epallage***) 1879a: 371 (25 reprint). Syntypes 3 ♀♀. ♀<sub>1</sub>: "Mermaeriza"; "E. Fatima / Mermeriza, As. min. / Loew. Schneid. \* Ack. Ent. Z. 1845.115"; "Hagen [printed]". ♀<sub>2</sub>: as for syntype 1, but "Asia min.". ♀<sub>3</sub>: "E. Fatima / Davas, Asia Minor / Loew. Schneid. \* / Ack. Ent. Z. 1845.115". MCZ ENT 12084.

This name was introduced for a specified number of small females under the description ("Addition") of *E. fatime* as follows: "Leur dimensions se rapprochent assez de celles de la petite femelle de Davas (Asie-Minure) à aile fortement enfumées dès le pterostigma, que j'ai nommée provisoirement *anatolica*." Of the three MCZ types listed here, only the last specimen (♀<sub>3</sub>, "Davas, Asia Minor") should be considered a syntype of the name *anatolica*; the other two represent typical examples of *E. fatime fatime*. Matti Hämäläinen (*pers. comm.*) found 1 ♂ (not a type) and 2 ♀♀ of *anatolica* at Selys Collection, RBINS. Currently a junior synonym of *Epallage fatime* (Charpentier, 1840).

***formosa*** Hagen in Selys (***Euphaea***) 1869: 660 (16 reprint). Holotype ♂. "Formosa / McLachlan / 1866"; "Hagen [printed]". MCZ ENT 12093.

Currently *Euphaea formosa* Hagen in Selys, 1869.

***impar*** Selys (***Euphaea***) 1859a: 441 (7 reprint). Syntypes 2 ♂♂. ♂<sub>1</sub>: "MT / OPHIR [round label]"; "Euphaea impar / pour vous Selys"; "wings / Photo / CHK"; "Hagen [printed]". ♂<sub>2</sub>: "MT/OPHIR / 54 [round label]"; "Penis / drawn [handwritten by C.H. Kennedy]"; "impar"; "Hagen [printed]". MCZ ENT 12090.

Matti Hämäläinen (*pers. comm.*) found 3 syntype ♂♂ (Mt. Ophir) and 1 syntype ♀ (Singapore) at Selys Collection, RBINS; one of these should be selected as lectotype. Currently *Euphaea impar* Selys 1859.

**indica** Selys (**Epallage**) 1853: 49. Syntype ♂. "E. India / \* Selys". MCZ ENT 12086.

Other specimens are located at BMNH and 2 ♂♂ and 2 ♀♀ syntypes are at Selys Collection, RBINS (Matti Hämäläinen, pers. comm.), from which a lectotype should be selected. Currently *Bayadera indica* Selys, 1853.

**lestoides** Selys (**Anisopleura**) 1853: 48. Syntype ♂. "lestoides"; "itis / i". MCZ ENT 12087.

Matti Hämäläinen (pers. comm.) noted that 5 ♂♂ and 2 ♀♀ syntypes are present at Selys Collection, RBINS, and one of those should be selected as lectotype. Currently *Anisopleura lestoides* Selys, 1853.

**limbata** Selys (**Dysphaea**) 1859a: 443 (9 reprint). Paralectotype ♂. "Dysphaea limbata / Selys / pour vous"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12097.

A lectotype ♂ was selected by Hämäläinen et al. (2015: 460) from one of the 5 ♂♂ and 2 ♀♀ syntypes that are at Selys Collection, RBINS. Currently junior synonym of *Dysphaea dimidiata* Selys, 1853.

**refulgens** Hagen in Selys (**Euphaea**) 1853: 53. Paralectotypes 2 ♂♂. Both: "Manil [undecipherable] / Semper"; "Hagen [printed]". MCZ ENT 12096.

A lectotype was designated by St. Quentin (1970: 261): "Als Herkunftsort gibt SELYS 1853 "Manille (Musée de Vienne)" und 1854b: 182: "Manille, d'après un mâle très-adulte pris par le baron HUEGEL, et communiqué par le Musée de Vienne à M. HAGEN." Es liegen 3 von HÜGEL gesammelte ♂ ♂ vor von denen 1 ♂ zum Lectotypus bestimmt wird die beiden anderen als Paratypoiden zu betrachten sind. Inv.-Nr. 127." Currently *Euphaea refulgens* Hagen in Selys, 1853.

[**splendens** Hagen in Selys (**Euphaea**). 1853: 52. Pseudotype? ♂. "Euph. splendens / Male[?] & jeune [handwritten]"; "Hagen [printed]". MCZ ENT 12095.

A lectotype was designated by St. Quentin (1970: 261): SELYS gibt als Herkunftsort der Type an: "Ceylan (Musée de Vienne ... )" und 1854b: 179: "d'après un mâle pris par le baron HUEGEL et communiqué à M. HAGEN par le Musée de Vienne". Es liegen zwei, von HÜGEL gesammelte, ♂♂ vor: Lectotypus und Paratypoid; Inv.-Nr. 125.". Currently *Euphaea splendens* Hagen in Selys, 1853.]

**subcostalis** Selys (**Euphaea**) 1873: 483 (19 reprint). Syntype ♂. "Labuan / Borneo"; "Euphaea / subcostalis Selys / ♂ Labuan". MCZ ENT 12092.

Described from "Labuan (Bornéo), Coll. Selys et Mac Lachlan d'après un grand nombre d'exemplaires reçus par M. Higgins." A specimen at Selys Collection, RBINS, should be chosen as lectotype. Currently *Euphaea subcostalis* Selys, 1873.

**tricolor** Selys (**Euphaea**) 1859a: 442 (8 reprint). Syntype ♂. "SAR [handwritten on small round label]"; "Sarawak [handwritten]"; "Euphaea / tricolor B. / ♂ Borneo [handwritten]". MCZ ENT 12091.

Described from "Saratoga [= lapsus pro Sarawak; van Tol & Norma-Rashid (1995: 136)], dans l'île de Bornéo. Prise par M. Wallace. (Collect. Selys.)". According to Hämäläinen (pers. comm.), there are 5 syntype ♂♂ of *E. tricolor* with Wallace's round label "SAR" (= Saratoga) at Selys Collection, RBINS and one of those syntypes should be chosen as lectotype. Currently *Euphaea tricolor* Selys, 1873.

**[variegata Rambur (*Euphaea*) 1842: 229.** Pseudotype ♂. "E. variegata / \*Rbr [handwritten by Hagen]" / "tricolor / \* B[u]rm[eister]. / Java [handwritten]"; "Hagen [printed]"; "Winthem. [printed]." MCZ ENT 12094.

Description based on an unknown number of ♂♂ "et indiquée de Java" and were from Coll. Serville. Selys (1854b: 179) in his extensive redescription of this species cited: "Java, d'après un grand nombre d'exemplaires mâles, parmi lesquels se trouvent les types de M. Rambur." The last seven abdominal segments of the MCZ ♂ are glued to the "tricolor" label and the left fore wing to a small triangular point. We strongly suspect that the Burmeister tricolor label mentioned above does not belong to this specimen and may, instead, have belonged to *Calopteryx tricolor* Burmeister (see above). Burmeister's examples of *Calopteryx holosericea* (see above) were also originally listed incorrectly from Java. Calvert (1898b) does not mention this specimen in his treatment of Burmeister's types. Currently *Euphaea variegata* Rambur, 1842.]

## LESTIDAE

**alacer Hagen (*Lestes*) 1861: 67.** Holotype ♂. "Pecos River / Texas"; "May 12"; "alacer"; "Hagen [printed]". MCZ ENT 8860.

Calvert (1901: 42-43) stated: "In 1899, I examined Hagen's type, a male from the "Pecos River, Texas" now in the Museum of Comparative Zoology at Cambridge, Mass.,.....The abdomen and both front wings of the type have been lost, so that a positive identification is no longer possible." Currently *Lestes alacer* Hagen, 1861.

**bipupillatus Calvert (*Lestes*) 1909: 95.** Syntype ♂. "Chapada [printed]"; "140 [penciled]"; "LESTES BIPUPILLATUS Calv. / PP Calvert det. 1909 / AnCarMus. Vlp. 96 [printed]". MCZ ENT 12294.

Description based on "13 ♂ and parts of 12 others, 6 ♀ and parts of 3 ♀ others, collector's number 140; 4 ♂ and parts of 3 others, collector's number 86. Carnegie Museum, Pittsburgh." (Calvert 1909: 96-87). Lectotype should be designated from a specimen at CM. Currently *Lestes bipupillatus* Calvert, 1909.

**[cingulatum Burmeister (*Lestes*) 1839: 323.** Paralectotype ♂ (missing?).

We have not found this specimen. Calvert (1898b: 46) listed a pair at MLU as types and added: "In the M. C. Z. is a male, whose last four abdominal segments are wanting, with a lilac pin-label "Coll. Gemar cingulatum Br. Type Burm. II. 823.28 Nov. Holl." in which the words here printed in italics are in Hagen's hand writing. While this male is of the same species, I see no reason to regard it as a type, and the same remark applies to a specimen, with the last seven segments lacking, which I saw in de Selys' collection in August, 1896, and which had a label written by Hagen "Agr. cingulatum Burm. type Nouv. Holl.," and a printed label Mus. Berol." Currently *Austrolestes cingulatus* (Burmeister, 1839).]

**concinna Hagen in Selys (*Lestes*) 1862a: 321 (37 reprint).** Syntypes 1 ♂, 1 ♀. Both syntypes: "Batavia"; "Lestes concinna ♂ / Hagen"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". MCZ ENT 12132.

Description based on at least 2 ♂♂ and 2 ♀♀ of which a pair is labeled from Batavia, a juvenile ♂ from China and a young ♀ from Manila. The latter two specimens are possibly at MNB. Currently *Lestes concinnus* Hagen in Selys, 1862.



**congener** Hagen (*Lestes*) 1861: 67. Syntype ♂. "Winthem. [printed]"; "New York"; "L. congener / Hagen". MCZ ENT 8859.

Original description mentioned: "New York, Texas (Friedrich)" as localities. The Texas specimen may be at Selys Collection, RBINS. Currently *Lestes congener* Hagen, 1861.

**disjuncta** Selys (*Lestes*) 1862a: 302 (18 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Me"; "190 [printed]"; "Hagen [printed]". ♀: "Chicago / Sacken"; "Hagen [printed]". MCZ ENT 12130.

Other syntypes are at Selys Collection, RBINS and BMNH. Currently *Lestes disjunctus* Selys, 1862.

**divisa** Hagen in Selys (*Lestes*) 1862a: 328 (44 reprint). Syntypes 3 ♂♂, 2 ♀♀. "Ceylon / Nietner"; "Hagen [printed]"; "Mus. Berol.". 1 ♂ with "Penis / drawn [handwritten by C.H. Kennedy]". 1 ♂, 1 ♀ with "L. divisa". MCZ ENT 12136.

Description based on an unspecified number of ♂♂ and ♀♀ from "Rambodde, Ceylan (Nietner). (Coll. Hagen.)." Currently *Indolestes divisa* (Hagen in Selys, 1862).

**elata** Hagen in Selys (*Lestes*) 1862a: 319 (35 reprint). Syntypes 3 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "Ceylon / Nietner"; "L. elata"; "Hagen [printed]"; "Mus. Berol [printed]". ♂<sub>2</sub>: labels as for syntype 1, but with "3.", and lacking "Penis / drawn [handwritten by C.H. Kennedy]". ♂<sub>3</sub>: labels as for syntype 2, but lacking "3.". ♀<sub>4</sub>: labels as for syntype 3. ♀<sub>5</sub>: "Tranquebar / A. ciliat[?]a / Fabr. ohns / Lund & Sch.". MCZ ENT 12134.

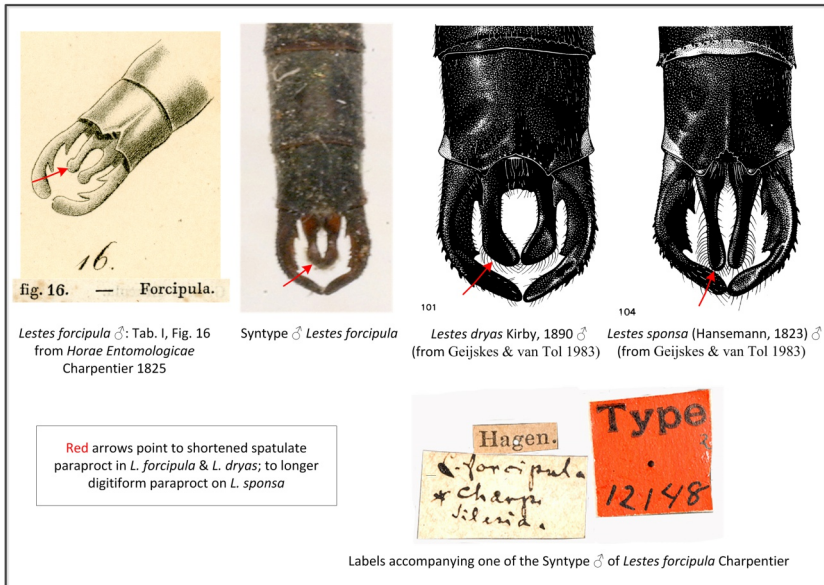
Description based on an unspecified number of ♂♂ and ♀♀ from "Ceylan à Rambodde, (Nietner). (Collect. Hagen.) Tranquebar, (Mus. Lund Schelstedt.)." Currently *Lestes elatus* Hagen in Selys, 1862.

**eurinus** Say (*Lestes*) 1840: 36. Holotype ♂. "20 [= Borders of pond, Milton, July, 1826]"; "Lestes / eurina / 20. Say. Hag. / July. 26. 1826 [all written by Hagen] / Collection T.W. Harris [printed] / Milton, Mass. [handwritten]", on left hand side is printed: "B.S.N.H.". MCZ ENT 26481.

Hagen (1873a: 275) stated: "Say describes the species from Massachusetts from Dr. Harris' specimen; of course the specimen in the collection is a typical one." Currently *Lestes eurinus* Say, 1840.

**forcipula** Charpentier (*Lestes*) 1825: 6. Syntypes 3 ♂♂, 1 ♀. All four specimens: "L. forcipula / \* Charp. / Silesia" [handwritten by Hagen]; "Hagen [printed]". MCZ ENT 12148.

Described from "Silesia, et in Hungaria frequentissimum est." Although Charpentier's name is currently considered a junior synonym of *Lestes sponsa* (Hansemann, 1823), these MCZ specimens represent the taxon currently going under the name *Lestes dryas* Kirby, 1890. No authentic Charpentier labels accompany any of the four specimens but Hagen's notation and presence of a "\*" after the name indicates that these likely represent Charpentier's original types. Selys (1840: 140) seems to have been the first author to consider *Agrion forcipula* Charpentier 1825 a junior synonym of *Agrion sponsa* Hansemann, 1823, and all Odonatologists have followed his example. Charpentier's 1825 original illustration of the male appendages of one of his types (Fig. 8) is consistent with a close-up of the appendages of one of the MCZ males (Fig. 8) and matches figures of the terminal appendages of *L. dryas*, but not those of *L. sponsa* (Fig. 8; the last two figures taken from Geijskes & van Tol 1983). Rambur (1842: 248) redescribed *Lestes forcipula* stating: "Cette spèce est évidemment celle décrite par M. Charpentier sous le nom de *Forcipula*, et



**Figure 8. *Lestes forcipula* Charpentier. SYNTYPE.**

dont il figure les appendices; elle est aussi mentionnée par M. de Selys comme une variété à grosse tête de la *Sponsa*, et don't il le parle comme de se trouvant pas en Belgique?". If these specimens are the only syntypes of *Lestes forcipula* Charpentier in existence, an application to the Commission to conserve the current concept of *L. dryas* Kirby, 1890 will be necessary.

***gracilis* Hagen in Selys (*Lestes*)** 1862a: 327 (43 reprint). Syntypes 5 ♂♂, 3 ♀♀. "Ceylon. Nietner"; "L. infelix"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; some syntypes with "Mus. Berol. [printed]". MCZ ENT 12135.

Description based on an unspecified number of ♂♂ and ♀♀ from "Ceylan, à Rambodde, par M. Nietner. (Collect. Hagen, Selys.)." Currently *Indolestes gracilis gracilis* Hagen in Selys, 1862.

***hamata* Hagen (*Lestes*)** 1861: 70. Syntypes? 3 ♂, 2 ♀. ♂<sub>1</sub>: "[locality label undecipherable]"; "hamata / \*"; "Hagen [printed]"; "hamata". ♂<sub>2</sub>, ♀<sub>3</sub>: labels as for syntype 1 but lacking "hamata / \*". ♂<sub>4</sub>, ♀<sub>5</sub>: "Florida / ♂. Sacken / Marz 1858"; "Hagen [printed]"; "hamata". MCZ ENT 8858.

The locality data on the five syntypes does not agree with that given in the original description: "Chicago, Illinois, par le baron d'Osten-Sacken. Washington (Collect. Selys et Hagen.)." Currently a junior synonym of *Lestes forcipatus* Rambur, 1842.

***henshawi* Calvert (*Lestes*)** 1907: 350. Paratype ♂. "St. Fe de Bogota / Lind, 1863"; "L. inversa / Hag."; "Lestes / henshawi Calv. [in Calvert's writing] P.P. Calvert, det. [printed] 1907 / B.C.A. Neur., p. [printed] 350."; "Hagen [printed]"; "L. inversa / Hag. [black bordered label]". MCZ ENT 12139.

Calvert (1907: 351) based his description on 2 ♂♂: "Costa Rica, Camino de La Palma between Guadalupe and El Alto (Biolley, coll. Kahl: 1 ♂ ).—Colombia, Sta. Fé de Bogota (Lindig, 1863, M. C. Z.: 1 ♂)". His Figure (Tab. X. fig. 1) is of the Camino de La Palma ♂ which is at CM and is therefore the holotype. Currently *Lestes henshawi* Calvert, 1907.

[*leda* Selys (*Lestes*) 1862a: 331 (47 reprint). Lectotype ♂: "Type<sub>2</sub>"; "Hagen [printed]"; "Neu Holland Melbourne Thorey. [probably written by Hagen]"; "L. Psyche [handwritten by Hagen]". MCZ ENT 12137. Not at MCZ.

According to Watson & Moulds (1979: 149) the entire type series of *Lestes psyche* (which was later found to include two specimens of *Lestes leda* Selys) was transferred to the Australian National Insect Collection ("Inquiry of MCZ indicated that four supposed types of *psyche* were preserved in the Hagen collection there, and resulted in the transfer of the four to ANIC."). A ♂ *L. leda* was designated as lectotype by Watson & Moulds as follows: *Lestes leda* Selys: Lectotype ♂, by present designation, in ANIC (Type No. 987S), "Neu Holland Melbourne Thorey.", "Type, 12137" in original MCZ register.... plus "*Austrolestes leda* (Selys) det. J. A. L. Watson, 1967." (white, printed) and "LECTOTYPE ♂ *Lestes leda* Selys 1862 desig. J. A. L. Watson 1979 A.N.I.C. Type No. 987S" (red, handwritten)." See under *Lestes psyche* below. Currently *Austrolestes leda* (Selys 1862).]

***leucopsallis*** Charpentier (***Agrion***) 1825: 5. Syntypes 2 ♂♂, 1 ♀. "Gallia / merid."; "L. leucopsallis / \* coll. Charp. / Libell. p. 140 pl. 35."; "Hagen [printed]". Other syntypes have only the second (Hagen's) handwritten label. MCZ ENT 12147.

Described from "Gallia meridionali." Currently a junior synonym of *Chalcolestes viridis* (Vander Linden, 1820).

***macrostigma*** Eversmann (***Lestes***) 1836: 246. Syntype ♀. "[undecipherable small handwritten label]"; "L. macrostigma / Kasan Russia / \* Eversm. Bull. Mosc. / 1836.IX."; "macrostigma / Evm"; "Hagen [printed]". MCZ ENT 12146.

Originally described based on an unspecified number of specimens "Volat Junio et Julio in provincia Orenburgensi frequens." Currently *Lestes macrostigma* (Eversmann, 1836).

***orientalis*** Hagen (***Lestes***) 1862a: 322. (38 reprint). Syntype ♀. "Ceylon / Nietner"; "Hagen [printed]". MCZ ENT 12133.

Description based on at least 1 ♂ and 1 ♀ from "Rambodde, île de Ceylon, par Nietner (Collect. Hagen et Selys.)". The ♂ may be at Selys Collection, RBINS. Currently *Sinhalestes orientalis* (Hagen in Selys, 1862).

***paedisca*** Eversmann (***Lestes***) 1836: 247. Syntypes 1 ♂, 1 ♀. "paedisca Eum. / forcipula / Charp."; "\*L. paedisca / Caras [?] Russia / Eversman."; "Hagen [printed]". MCZ ENT 12144.

Currently a junior synonym of *Lestes virens* (Charpentier, 1825).

***phallatum*** Charpentier (***Agrion***) 1825: 10. Syntype ♀. "phallatum Charp"; "Charp. [intricate black bordered label]"; "Hagen [printed]". MCZ ENT 12462.

Described from "Silesia, in Hungaria, in Austria." Currently a junior synonym of *Sympecma fusca* (Vander Linden, 1820).

**picta** Hagen in Selys (*Lestes*) 1862a: 314 (30 reprint). Syntypes 1 ♂, 1 ♀. "Brazil / Fischer"; "L. picta"; "Lestes [printed] / pictus Hag. [handwritten] / P.P. Calvert det. 1909 / An. Car Mus. Vlp. [printed] 161 / Orig. Pl. 1, f. 11; Pl. II, fs 27/28 [handwritten]". ♀: same label data. MCZ ENT 12145.

Abdominal segments 3-10 of the ♂ are missing, but the appendages of the syntype were illustrated by Calvert (1909). Calvert (1909: 101) adds under Habitat: "Brazil: no definite locality, 1 ♂, 1 ♀ each with two labels in Hagen's handwriting "Brazil Fischer" and "L. picta.". Museum of Comparative Zoology, Cambridge. Presumed types.". Currently *Lestes pictus* Hagen in Selys, 1862.

[*psyche* Hagen in Selys (*Lestes*) 1862a: 329 (45 reprint). Lectotype ♂: "Type<sub>4</sub>"; "Hagen [printed]"; "N: Hol:" [handwritten by Hagen]; "L. Psyche [handwritten by Hagen]". MCZ ENT 12137. Not at MCZ.

According to Watson & Moulds (1979: 149) the entire type series of *Lestes psyche* was transferred to the Australian National Insect Collection ("Inquiry of MCZ indicated that four supposed types of *psyche* were preserved in the Hagen collection there, and resulted in the transfer of the four to ANIC."). They provide the following notes on the type series:

"The four specimens include two species, one ♂ and one ♀ of the species described by Hagen as *psyche*, and two ♂♂ of the species described by Selys (1862, p. 47) as *Lestes leda*. The labelling is as follows:

1. "Type 12137" (red, MCZ label); "Hagen." (white, printed); "Nord Ost. ... v. Australi ..." [white, handwritten and difficult to interpret; probably Hagen's hand (Fig. 28)]; "L. Psyche\* Hag." [white, handwritten by Hagen (Fig. 29)]. Male specimen of *Austrolestes leda*, lacking head.
2. "Type<sub>2</sub> 12137" (red, MCZ label); "Hagen." (white, printed); "Neu Holland Melbourne Thorey." [white, handwritten, probably by Hagen (Fig. 30)]. Male specimen of *Austrolestes leda*, intact.
3. "Type<sub>3</sub> 12137" (red, MCZ label); "Hagen." (white, printed); "L. Psyche" [white, handwritten, Hagen's hand, but not identical to label on first type (Fig. 31)]. Female specimen of *Austrolestes psyche*, lacking segments 7-10 of abdomen, and tip of left hind wing.
4. "Type<sub>4</sub> 12137" (red, MCZ label); "Hagen." (white, printed); "N: Hol:" [white, handwritten (Fig. 32)]; "L. Psyche" [white, handwritten, Hagen's hand, similar to label on ♀ (Fig. 33)]. Male specimen of *Austrolestes psyche*, lacking segments 6-10 of abdomen.

Selys (1862) gave "Nouvelle-Hollande" as the locality for *psyche*, which agrees with the label on the fourth type. It, and probably also the female, must have been part of the type series of *Lestes psyche* Hagen in Selys. MCZ 12137. The label data of the other two males do not fit the type locality of *psyche*. However, they fit the localities given by Selys (1862) for *leda*: "Nouvelle-Hollande, Melbourne, cote nord-est"; the label on the first type can be interpreted as "Nord Ost Küste von Australien". Although Selys did not indicate that any of the type series of *leda* were in Hagen's collection, the close correlation between the text and label data, and the fact that these data do not apply to any other *Lestes* described in Selys (1862), indicate that the two males were part of the type series of *Lestes leda* Selys.

The lectotype designations follow.

*Lestes psyche* Hagen in Selys: Lectotype ♂, by present designation, in ANIC (Type No. 9863), "N: Holl:", "Type. 12137" in original MCZ register, other labels as given above, plus handwritten

red label "LECTOTYPE ♂ *Lestes psyche* Hagen in Selys 1862 desig. J. A. L. Watson 1979 A.N.I.C. Type No. 9863".

*Lestes leda* Selys: *Lectotype* ♂, by present designation, in ANIC (Type No. 987S), "Neu Holland Melbourne Thorey.", "Type, 12137" in original MCZ register, other labels as given above, plus "Austrolestes leda (Selys) det. J. A. L. Watson, 1967." (white, printed) and "LECTOTYPE ♂ *Lestes leda* Selys 1862 desig. J. A. L. Watson 1979 A.N.I.C. Type No. 987S" (red, handwritten)."

Currently *Austrolestes psyche* Hagen in Selys, 1862]

**scalaris** Calvert (**Lestes**) 1909: 93. Syntypes 2 ♂♂. ♂<sub>1</sub>: "Gundlach / Cuba 1866"; "scalaris", "Hagen [printed]"; "Lestes [printed] TYPE ♂ / scalaris Calv. [handwritten] / PP Calvert det. 1909 / An Car Mus. VI p. [printed] 95 / Orig. Pl. 1, figs. 6, 17, 18 [handwritten]". ♂<sub>2</sub>: "104/29 ♂"; "L. scalaris ♂ / [undecipherable]"; "Hagen [printed]"; "Calvert det. label". MCZ ENT 12140.

The syntype labeled by Calvert as TYPE is lacking abdominal segments 7-10. Currently a junior synonym of *Lestes scalaris* Gundlach, 1888.

**sellata** Hagen in Selys (**Lestes**) 1862a: 318 (34 reprint). Paralectotypes 2 ♂♂. ♂<sub>1</sub>: "Syria"; "Mus. Berol. [printed]"; "Hagen [printed]". ♂<sub>2</sub>: "Syria [undecipherable]"; "L. sellata"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; "Mus. Berol. [printed]". MCZ ENT 12142.

This species had a complicated history. According to the original description, *L. sellata* was described from at least 2 ♂♂ (one juvenile) from "Syrie et Egypte (Ehrenberg). (Mus. de Berlin et collect. Hagen.)" The ♀ was noted as "Inconnue" however the measurements accompanying the original description include abdominal measurements of a female ("Abdomen ♂ 31, ♀ 30. Aile inférieure 20."). Schmidt (1938: 136) studied three specimens, 1 ♂, 1 ♀ and an incomplete specimen lacking the abdomen, at MNB and illustrated the appendages of the complete male. He considered the specimens to be a distinct species close to *Lestes virens* (Charpentier, 1825). Lohmann (1993: 32) provided a brief history on the status of the name, considered three specimens, 1 ♂ and 2 ♀♀, to be syntypes, and designated the complete ♂ (the one illustrated by Schmidt) as lectotype. The specimen noted by Schmidt lacking the abdomen was, according to Lohmann, a misplaced syntype of *Lestes tricolor* Erichson in Schomburgk, 1848. Lohmann considered *L. sellatus* to be a junior synonym of *Xerolestes pallidus* (Rambur, 1842) and current usage seems to accept this synonymy although Lohmann believed the original type locality to be in error. The MCZ specimens were not mentioned in the foregoing publications and due to uncertainties surrounding the correct status of the name and type locality, we list the 2 ♂♂ as possible paralectotypes. The caudal appendages are lacking on both MCZ specimens. Currently a junior synonym of *Lestes pallidus* Rambur, 1842.

**stulta** Hagen (**Lestes**) 1861: 67. Holotype, sex unknown. "[undecipherable label]"; "California"; "L. stulta"; "Hagen [printed]". MCZ ENT 12131.

A female abdomen from another specimen (same species?) has been glued to the holotype; this structure was noted as lacking in the original description. Currently *Lestes stultus* Hagen, 1861.

**unguiculata** Hagen (**Lestes**) 1861: 70. Syntypes 5 ♂♂, 6 ♀♀. ♂<sub>1</sub>: "[undecipherable] / Guex.". ♂<sub>2-5</sub>, ♀♀<sub>6-11</sub>, all with same data as syntype 1, but 1 ♂, 1 ♀ with "St. Louis", and 1 ♀ with "Winthem [printed]", and "New York"; "Hagen [printed]". MCZ ENT 12129.

The original description cited "Chicago (Osten Sacken); Bergen Hill, New Jersey (Guex); New York; St. Louis (Engelmann); Wisconsin (Rob[er]t. Kennicott)". The New Jersey and Wisconsin specimens are apparently missing. Currently *Lestes unguiculatus* Hagen, 1861.

**vigilax** Hagen in Selys (**Lestes**) 1862a: 306 (22 reprint). Syntypes 2 ♂♂. ♂<sub>1</sub>: "NJ"; "New Jersey / Uhler 1860", "Hagen [printed]". ♂<sub>2</sub>: "Lestes vigilax' Uhler", "226 [printed]"; "N.J. [printed]"; "New Jersey / Uhler 1860". MCZ ENT 12138.

The original description cited "'New-Jersey (Uhler). (Collect. Hagen, et Mus. de Vienna. Collect. Selys.)". St. Quentin (1970) does not list this species in his type catalog of Odonata types in the NHMW. Other syntypes at Selys Collection, RBINS. Currently *Lestes vigilax*, Hagen in Selys, 1862.

**virens** Charpentier (**Agriion**) 1825: 8. Syntypes 3 ♂♂, 1 ♀. All 4 syntypes: "\* L. virens / coll Charp."; "Hagen [printed]". MCZ ENT 12143.

Described from "Lusitania" and "Mus. Berolin." as the type depository. Currently *Lestes virens* (Charpentier, 1825).

**vittata** Hagen in Selys (**Lestes**) 1850: 331. Syntype ♀. "L. vittata. Hag. / \* Revue de Odonata / p. 331 / Heyer. ? . Provence? [?] Beske [?]", "L. undulata"; "Hagen [printed]". MCZ ENT 12141.

Currently considered a junior synonym of *Lestes undulatus* Say, 1840.

#### MEGAPODAGRIONIDAE

**aurantiacum** Selys (**Heteragrion**) 1862b: 25 (23 reprint). Syntype ♀. "Von Heyer-Buenos Ayres [handwritten]"; "H. aurantiacum female [handwritten]"; black bordered label "H. aurantiacum female"; "Hagen [printed]". MCZ ENT 12159.

The original description was based on an unspecified number of ♂♂ and at least 1 ♀ from "Le Brésil (le docteur Clausen). Coll. Selys. Buénos- Ayres, (coll. Hagen.)". Hagen further expressed doubt as to the identity of the ♀ ("Il n'est pas sûr que les femelles n'appartiennent pas à l' H. consors."). Williamson (1919: 26-27), in his review of the genus stated: "This species was recorded from Bahia, Brazil and from Buenos Ayres by de Selys [1862b: 26 (24 reprint), 1886: 60], the specimens from Brazil in his collection, the specimens from Argentina in Hagen's collection. The latter material consists now of a single female, and there is no way of determining whether or not other specimens formerly existed." Williamson (1919) and von Ellenrieder & Garrison (2007) figured one of the Clausen ♂♂ at RBINS. Currently *Heteragrion aurantiacum* Hagen in Selys, 1862.

**berenice** Higgins (**Philogenia**) 1901: 136. Lectotype ♂. "Equitos Peru [handwritten] / Staudinger [printed]"; "penis / fig", "Gizzard / removed [printed]"; "Philogenia ♂ / berenice Higgins [all written] / P.P. Calvert det. [printed]"; and on right side of label, handwritten: "TYPE". MCZ ENT 16096.

*Berenice* was a Hagen ms. name used by Higgins in describing the gizzard of a ♂ at MCZ. We have accepted Calvert's (1924: 33) statement in his review of the genus: "Iquitos, Peru, Staudinger, two males in the Museum of Comparative Zoology, Cambridge, Massachusetts. The smaller of these is that whose gizzard was described by Miss Higgins and is therefore the type." as designation of a lectotype. The paraprocts and left cercus of the lectotype were illustrated by Calvert (1924). Currently *Philogenia berenice* Higgins, 1901.

**beschii** Hagen in Selys (**Heteragrion**) 1862b: 27 (25 reprint). Holotype ♂. "Brazil / Neu Freiburg Beschke / *Argya aurantiaca*"; "H. Beschii ♂"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; "H. Beschii / \* Hag.". MCZ ENT 12160.

Description based on a single ♂ from "Brésil, Nouvelle-Fribourg (Beschke)." Abdomen glued to point and pinned underneath specimen; holotype missing left cercus. The holotype (listed as lectotype) was illustrated by Lencioni (2013). Currently *Heteragrion beschii* Hagen in Selys, 1862.

**cassandra** Hagen in Selys (**Philogenia**) 1862b: 12 (10 reprint). Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Venezuela / Schneider"; "cassandra"; "Hagen [printed]"; "Ph. cassandra Hag / Original of fig. 4, p. 10; / fig. 27, pl. I, Trans. / Am. Ent. Soc. Vol. L. [handwritten] / P. P. Calvert det. [printed] 1924 [handwritten]", "Original of fig. 10 / Pl. V. B.C.A. Neur. / Philogenia ♂ cassandra Hag. [handwritten] / P. P. Calvert det. [printed] 1901 [handwritten]". ♂<sub>2</sub>: same data as for lectotype but missing last 4 abdominal segments, and "Penis / drawn [handwritten by C.H. Kennedy]". ♀ (3): "Venezuela / Appun 2"; "Hagen [printed]"; "cassandra"; "gizzard / removed [printed]". MCZ ENT 12150.

Currently *Philogenia cassandra* Hagen in Selys, 1862.

**chrysops** Hagen in Selys (**Heteragrion**) 1862b: 28 (26 reprint). Holotype ♂. "Venezuela / Appun."; "H. chrysops"; "H. chrysops / \* Hag."; "Hagen [printed]". MCZ ENT 12155.

Description based on a single ♂ from "Venezuela, Porto-Cabello. (Collect. Hagen.)" Williamson (1919: 34), in his review of the genus stated: "This species is known only from Porto Cabello, Venezuela. The type, or one of the type males, is in the Hagen collection." The holotype was illustrated by Williamson (1919). Currently *Heteragrion chrysops* Hagen in Selys, 1862.

**consors** Hagen in Selys (**Heteragrion**) 1862b: 27 (25 reprint). Syntypes 2 ♂♂. ♂<sub>1</sub> "Hagen [printed]"; "Winthem [printed]"; "Bahia"; "H. consors."; "Penis / drawn [handwritten by C.H. Kennedy]". ♂<sub>2</sub> "Mus. Berol. [printed]"; "tricolor / N. / Bahia"; "Hagen [printed]"; "consors". MCZ ENT 12153.

Currently *Heteragrion consors* Hagen in Selys, 1862.

**cristalina** Calvert (**Philogenia**) 1924: 35. Paratype ♂. "cristalina [handwritten]", "Philogenia / cristalina ♂ / Paratype / Cristalina / Colombia / Feb 16, 1917 [handwritten by Williamson]", "Gift of E. B. / Williamson [handwritten]". MCZ ENT 16305.

Holotype ♂ at UMMZ (Garrison et al. 2003: 14). Currently *Philogenia cristalina* Calvert, 1924.

**duodecima** Calvert (**Paraphlebia**) 1901: 60. Paratype ♂. "Sabo / Vera Paz / Guatemala / Champion [handwritten]"; "Gizzard removed [printed]"; "B.C.A. Neur. p. [printed]"; "PARAPHLEBIA [stamped] / duodecima Calv. [handwritten] / P. P. Calvert det. [printed] 1901 [handwritten]". MCZ ENT 12163.

The paratype lacks the last 3 abdominal segments. The holotype is at BMNH (Kimmins 1970: 197). Currently *Paraphlebia duodecima* Calvert, 1901.

**flavovittatum** Selys (**Heteragrion**) 1862b: 20 (18 reprint). Syntypes 1 ♂, 1 ♀. ♂: "M[inas] G[erais]."; "Pod. flavovittatum"; "H. flavovitta-tum / \* Sel."; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". ♀: labels as for ♂ but lacking third label. MCZ ENT 12154.



Description based on an unspecified number of ♂♂ and ♀♀ from "La province de Minas-Gérais, au Brésil (M. Clausen). Collect. Selys." Williamson (1919: 15-16) stated: "This species has been recorded from Minas Geraes, Brazil. There are a male and a general female in the Hagen collection, both imperfect. Each has a small label "Hagen", a small blue locality label, "MG" (Minas Geraes), and a large green species label; in addition, the male has a black-bordered species label, and a label by Kennedy "penis drawn." The male at Selys collection, figured by Menger (figures 119 and 120), bears identical blue and green labels. There is also at the Hagen collection a female with a small printed label "Hagen", a large white label on which is written "Lagoa Santa Lund", and another similar but larger label on which is written "Argya signata nob." The specimen is general and in poor condition, but I believe it is certainly *flavovittatum*." The last two abdominal segments are missing from the ♂. von Ellenrieder & Garrison (2007: 7) figured a syntype male from the RBINS; a lectotype should be chosen from that collection. Currently *Heteragrion flavovittatum* Selys, 1862.

**helena** Hagen (*Philogenia*) 1869: 261. Lectotype ♂, paralectotype ♂. "St. Fe de Bogota / Lindry 1862."; "Penis / drawn [handwritten by C.H. Kennedy]"; "helena"; "Hagen [printed]". MCZ ENT 12149.

We consider the statement by Calvert (1924: 20): "Of the two males which Hagen used when describing this species, the older one is to be regarded as the type..." as a lectotype designation. Currently *Philogenia helena* Hagen, 1869.

[*ictericum* Williamson (*Heteragrion*) 1919: 17. Paratype/s. MCZ ENT 12301. Not at MCZ.

Holotype ♂ at UMMZ (Garrison et al. 2003: 15). Paratypes possibly lost. Currently *Heteragrion ictericum* Williamson, 1919.]

[*inca* Calvert (*Heteragrion*) 1909: 108. Syntypes 1 ♂, 1 ♀. ♂: "Equitos, Peru [handwritten] / Staudinger [printed]"; "inca", "gizzard / removed [printed]"; "TYPE ♂ [handwritten] / HETERAGRION [printed] / inca Calv. [handwritten] / PP Calvert det. 1909 / An Car Mus. VI p. [printed] 110. / Orig. Pl. 111 f. 38 [handwritten]". MCZ ENT 12161. Not at MCZ.

We were unable to locate the types at MCZ that had recently been on loan. The MCZ records do not indicate that the loan was ever returned. Calvert (1909) did not specify a type in the original description. Currently *Heteragrion inca* Calvert, 1909.]

*macilentum* Hagen in Selys (*Heteragrion*) 1862b: 26 (24 reprint). Paralectotype ♂. "Venezuela"; "H. macilentum"; "Hagen [printed]". MCZ ENT 12157.

A peculiar history surrounds application of this name to specimens used in the original description. The original description was based on 2 ♂♂ and 1 ♀ from "Vénézuëla, Porto-Cabello (Appun); Brésil (Kummel.) Mus. de Vienne et collect. Hagen, Selys." The ♂ in the NHMW was designated as lectotype by St. Quentin (1970: 259: "Es liegt ein ♂ mit der Etiquette "Brasilia" und ein ♀ mit "Venezuela", beide mit Etiquetten von HAGEN vor: da kein Holotypus bestimmt wurde, ist das ♂ als Lectotypus gewählt worden; Inv.-Nr. 617."). A summary of the application of the name to specimens was given by De Marmels (2004: 442-443). Garrison examined and illustrated both the lectotype ♂ and this MCZ ♂, both of which were figured by De Marmels (2004). The lectotype ♂ was later (von Ellenrieder & Garrison 2007: 6) considered a junior synonym of *Heteragrion cinnamomeum* Hagen in Selys, 1862; the identity of the MCZ paralectotype ♂ is uncertain but

it does not appear to match any known species thus far known from Venezuela. The paralectotype ♀ is at Selys Collection, RBINS. The last 5 abdominal segments of the MCZ ♂ are broken and folded within paper, pinned under the specimen. Currently a junior synonym of *Heteragrion cinnamomeum* Hagen in Selys, 1862.

**mercenarium** Hagen (**Podagrion**) 1869: 261. Holotype ♂. "P. mercenarium / Hag."; "St. Fe de Bogota / Lindner. 1863"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12151.

The original description based on "Ein Männchen." The holotype was illustrated by De Marmels (2001) in his revision of the genus based on unpublished sketches by Nathan Banks. Currently *Teinopodagrion mercenarium* Hagen, 1869.

**mitratum** Williamson (*Heteragrion*) 1919: 39. Paratypes 2 ♂♂, 1 ♀. "Cristalina / Colombia / J.H. & E.B. Williamson / Feb. 18, 1917 ♂ [or ♀] / Heterag. mitratum". MCZ ENT 12300.

Holotype ♂ at UMMZ (Garrison et al. 2003: 16). Currently *Heteragrion mitratum mitratum* Williamson, 1919.

**ochraceum** Hagen in Selys (**Heteragrion**) 1862b: 24 (22 reprint). Syntype ♀. "Heyer"; "H. ochraceum ♀"; "Argya / cinnamomea ♀ / Hagen"; "Hagen [printed]". MCZ ENT 12156.

Hagen, in the original description, stated that he had not seen the ♂: "NB. Je n'ai pas vu le mâle...". Hagen's statistics of the expanded ♀ description fit the ♀ at MCZ and Williamson (1919: 24) also thought so. At least 2 poorly preserved ♀♀ are present at Selys collection, RBINS (von Ellenrieder & Garrison 2007: 8). We do not know the location of the ♂. Currently *Heteragrion ochraceum* Hagen in Selys, 1862.

**peregrinum** Williamson (*Heteragrion*) 1919: 51. Paratypes 3 ♂♂, 1 ♀. "Cristalina / Columbia / J.H. & E.B. Williamson / Feb. 12, 1917 ♂ [or ♀] / Heterag. peregrinum". MCZ ENT 12299.

Holotype ♂ at UMMZ (Garrison et al. 2003: 17). Currently *Heteragrion peregrinum* Williamson, 1919.

**quinta** Calvert (**Paraphlebia**) 1901: 60. Paratypes 2 ♂♂. "Panima, / Guatemala. / Champion. [printed]"; "Gizzard / removed [printed]"; "PARAPHLEBIA [stamped] / quinta Calv. [handwritten] / P. P. Calvert det. [printed] 1901 [handwritten]". MCZ ENT 12162.

The caudal appendages of the specimens are missing. The holotype is at BMNH (Kimmins 1970: 198). Currently *Paraphlebia quinta* Calvert, 1901.

**tricellulare** Calvert (*Heteragrion*) 1901: 63. Paratype ♂: "S. Geronimo / Guatemala, Champion [printed]"; "No 5. taken / with 4"; "HETERAGRION / TRICELLULARE CALV. [stamped] / P. P. Calvert det. [printed] 1901 / B. C. A. Neur. P. 63 [handwritten]". MCZ ENT 12158.

The holotype is at BMNH (Kimmins 1970: 198). Currently *Heteragrion tricellulare* Calvert, 1901.

**venale** Hagen in Selys (**Podagrion**) 1862b: 17 (15 reprint). Syntypes 2 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "P. venale ♂"; "Hagen [printed]"; "Gizzard / removed [printed]". ♂<sub>2</sub>: "Appun / Venezuela". ♀♀: same data as syntype 1, but one with "P. venale / Porto Cabello". MCZ ENT 12152.

Original description based on unspecified number of ♂♂ and ♀♀ from "Vénézuéla, Porto-Cabello, par Appun et Moritz. [Collect. Hagen]." De Marmels (2001: 84) in his revision of the genus stated: "Designation of lectotype (male).- not known to me" and "Repository of lectotype.- IRSN [RBINS]."

However, the repository of specimens from the original description is limited to the Hagen collection from which a lectotype should be selected. Currently *Teinopodagrion venale* (Hagen in Selys 1862).

#### PLATYCNEMIDIDAE

**acutipennis** Selys (*Platycnemis*) 1841: 246 (4 reprint). Syntype? ♀. "P. acutipennis ♀ / Province Selys."; "Hagen collection". MCZ ENT 12127.

The original description, based on at least a pair, was comparative ("Espèce très-distincte de l'espèce type Pl. platypoda, en ce qu'elle est plus petite, ses ailes plus étroites et le corps d'un rouge-clair presque sans taches chez le mâle, avec quelques stries dorsales chez la femelle. Habite le midi de la France."). Other specimens are probably present at Selys collection in RBINS, from which a lectotype should be designated. Currently *Platycnemis acutipennis* Selys, 1841.

**atripes** Needham & Gyger (*Prionocnemis*) 1941: 146. Holotype ♂, Allotype ♀. Both: "Mt. Apo, Mindanao / Phil. Islds. C.F. Clagg [printed]"; "Mainit. Riv. / 6,500 ft. Oct. [printed] 27 [handwritten]"; "P. NO 1"; "Det. by J.G. Needham [printed] / Prionocnemis / atripes N. & G. Type". MCZ ENT 23833.

The original description stated: "Type, male, Mindanao, Mount Apo, Mainit River, altitude 6,500 feet, October 27. Allotype, female, same locality, August 14. Both in the Museum of Comparative Zoology. Paratypes in the Museum of Comparative Zoology and in the Cornell University Entomological Collection." Currently *Igneocnemis atripes* (Needham & Gyger, 1941).

**caesia** Hagen in Selys (*Alloneura*) 1860b: 450 (22 reprint). Holotype ♂. "Ceylon / Nietner"; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; "[illegible label]". MCZ ENT 12230.

Described from one ♂ from "Ceylan, par M. Nietner. (Collect. Hagen.)" Currently *Elatoneura caesia* (Hagen in Selys, 1860).

**centralis** Hagen in Selys (*Alloneura*) 1860b: 449 (21 reprint). Syntypes 1 ♂, 1 ♀. Both: "Ceylon / Nietner"; "Hagen [printed]". MCZ ENT 12231.

The head, almost all of the abdomen, and most of the thorax of the syntype ♂ have been eaten by dermestids. Currently *Elatoneura centralis* (Hagen in Selys, 1860).

**elongata** Hagen in Selys (*Chlorocnemis*) 1863: 176 (32 reprint). Holotype ♂. "Guinea / Thonning"; "Argya elongata / Hagen"; "Hagen [printed]". MCZ ENT 12168.

Currently *Allocnemis elongata* (Hagen in Selys, 1863).

**eximia** Selys (*Calicnemis*) 1863: 160 (16 reprint). Syntype ♂. "Agrion / eximium / Ind. Or. Hul [=Hügel?] [handwritten]"; "Hagen [printed]". MCZ ENT 12164.

Described from an unspecified number of ♂♂ and ♀♀ from Indes orientales (Collect. Selys, Hagen, Mus. Brit. et de Vienne, par le baron de Hügel." Other specimens are probably present at Selys collection in RBINS, from which a lectotype should be designated. Currently *Calicnemis eximia* (Selys, 1860).

**frenulata** Hagen (*Disparoneura*) 1860b: 444 (16 reprint). Syntype ♂. "Suda[undecipherable] / C. b. esp. Tollin"; "penis drawn [hand written]"; "Hagen [printed]". MCZ ENT 12229.

Description based on at least 2 ♂♂ (1 juvenile) from Cap de Bonne-Espérance, par Tollin (Collect. Hagen.). Currently *Elatoneura frenulata* (Hagen in Selys, 1860).

**lacteum** Charpentier (**Agrion**) 1825: 11. Syntype ♀. "Charp [intricate black-bordered label]"; "lacteum Charp."; "Hagen [printed]". MCZ ENT 12459.

Described from "Germania, in Silesia frequens, in Hungaria." Currently a junior synonym of *Platycnemis pennipes* (Pallas, 1771).

**pennipes** race **pecchioli** Selys (**Platycnemis**) 1863: 166 (22 reprint). Syntype ♂. "P. pecchiolii ♂ / [illegible] var. platypoda? / [illegible] / Pecch."; "Hagen [printed]". MCZ ENT 12458.

Other specimens are probably present at Selys collection in RBINS, from which a lectotype should be chosen. Currently a junior synonym of *Platycnemis pennipes* (Pallas, 1771).

**serapica** Hagen in Selys (**Psilocnemis**) 1863: 171 (27 reprint). Paralectotypes 2 ♂♂, 2 ♀♀. "Nicobar / Mai. / Plat. serapica / Hagen ♂ (or ♂♀ pinned together, or ♀)"; "Hagen [printed]". One ♂ with "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12167.

The original description stated "Musée de Copenhague" as the depository, but Hagen may have brought some syntypes with him to MCZ. Lieftinck (1940: 294) designated a lectotype from the Natural History Museum of Denmark (<http://www.daim.snm.ku.dk/search-in-types>). One of the MCZ ♀♀ is an incomplete teneral and would seem to fit Hagen's description of 16 "♀ jeune. var. pallida". Currently *Copera vittata serapica* (Hagen in Selys, 1863).

**serrata** Hagen in Selys (**Hypocnemis**) 1863: 154 (10 reprint). Paralectotype ♂. "Manilla / Semper."; "Hypocnemis / serrata Hag."; "Hagen [printed]". MCZ ENT 12165.

Hämäläinen (1991: 178) in revising the (then) subgenus *Risioicnemis* designated a holotype from the RBINS ("Type material - *Hypocnemis serrata* Hagen, 1863. Holotype: male specimen with pin labels / 560 / 37 / *Hypocnemis serrata* Hg. Manilla / *Hypocnemis serrata* Hag. ♂ / Abdominal segments 1-7 are glued on paper marked: / *Hyp. serrata* corps manque / *Hypocnemis serrata* Hag. / . I have added a pin label: "Hypocnemis serrata Hagen, 1863. Holotype. Rev. M. Hämäläinen 1990". Holotype deposited in coll. Selys Longchamps at IRSN. At present the specimen lacks abdominal segments 8-10 and appendages." Hämäläinen was apparently unaware of a second complete male in the Hagen collection. Accordingly, the incomplete RBINS ♂ should be considered a lectotype and the MCZ ♂ a paralectotype. Currently *Risioicnemis serrata* (Hagen in Selys, 1863).

**solida** Hagen in Selys (**Nososticta**) 1860b: 457 (29 reprint). Syntypes 1 ♂, 1 ♀. Both: "N. Holl / Behr [small round label]"; "N [?]. solida / Adelaide"; "Hagen [printed]". MCZ ENT 12234.

Description based on at least 1 ♂ and 1 ♀ from "Adelaide (Nouvelle-Hollande), par le Dr Behr (Collect. Hagen.) Un mâle complet au Musée de Berlin." The original description stated that the last four segments of the abdomen are missing from the ♂ ("Abdomen grêle, noir; les deux premiers segments orangés; un demi-anneau basal jaune sux suivants jusqu'au 6e (l'extrémité manque). Une crête jaune aux segments médians de l'abdomen, presque nulle chez le mâle."). Watson & Theischinger (1984: 29) in their review of the genus stated: "*Nososticta solida* was described from a series that included at least one damaged male, lacking the terminal segments of the abdomen, and one female, both from Adelaide, in Hagen's collection, and an intact male in the collections of the Berlin Museum (Selys 1860)." We have not traced these

syntypes, but the ♂ referred to by Selys survives at MNB. It is conspecific with the insects here referred to as *N. solida*, but we have deliberately refrained from designating it lectotype, as Hagen's original description of the subgenus *Nososticta* (Selys 1860b: 456 [28 reprint]) specifically omitted comment on the male terminalia, suggesting that the Berlin ♂ was not consulted, despite its having been listed. Currently *Nososticta solida* Hagen in Selys, 1860.

**fenax** Hagen in Selys (*Alloneura*) 1860b: 448 (20 reprint). Syntypes 3 ♂♂, 1 ♀. "Ceylon / Nietner"; "Hagen [printed]". One syntype ♂ with additional "Penis / drawn [handwritten by C.H. Kennedy]", another with illegible handwritten label. MCZ ENT 12232.

Description based on an unspecified number of ♂♂ and ♀♀ from "Ceylan, par M. Nietner. (Collect. Hagen et Selys.)." Other specimens are probably present at Selys collection in RBINS. Currently *Elatoneura tenax* (Hagen in Selys, 1860).

**tendipes** Needham & Gyger (*Prionocnemis*) 1941: 147. Holotype ♂. "Mt. Apo, Mindanao / Phil. Isl. C.F. Clagg [printed]"; "Mainit. Riv. / 6,500 ft. Nov. [printed] 5 [handwritten]"; "P. No 1"; "Det. by J.G. Needham [printed] / Prionocnemis / tendipes N. & G. Type". Allotype ♀: same locality data, but dated Sept. 4. MCZ ENT 23832.

The original description stated: "Type, male, Mindanao, Mount Apo, Galog River, September 6 (C. S. Clagg). Allotype, female, same locality, September 4. Both in the Museum of Comparative Zoology. Paratypes in the Museum of Comparative Zoology and in the Cornell University Entomological Collection." Currently *Igneocnemis tendipes* (Needham & Gyger, 1941).

**valida** Hagen in Selys (*Metacnemis*) 1863: 161 (17 reprint). Holotype? ♂. "Bon. Cap. [?]; "Metacnemis / valida Hagen"; "penis drawn [printed]"; "Hagen [printed]"; "Mus. Berol. [printed]". MCZ ENT 12166.

The original description was based on a ♂ lacking abdominal segments 4-10 from "Cap de Bonne-Espérance. (Collect. Hagen.)." Pinhey (1980: 3-4) in his review of *Metacnemis* cited a syntype ♂ in the MNB as follows: "Type ♂ in ZMH. Pinhey (1963) recorded the only information on the type's labels as "2957; C.b.sp. Krebs." This presumably inferred that Krebs was the collector. "C.b.sp" is Latin abbreviation for Cape of Good Hope (Caput bonae spei). Ludwig Krebs collected insects in the "Cape Colony", mainly for ZMH in 1819-1823, which is one way of dating the capture without reference to the specimen number. From the description it appears that this ♂ was the only example available to Hagen in 1863, and he said the ♀ was unknown. Günther (in October, 1979) has kindly elucidated the anomaly. Firstly, he says that the type ♂ under Catalogue number 2957 has a red syntype label, probably applied by Erich Schmidt (1951) or else, as he suggests, by the ZMH entomology Curator of the time. In the main reference catalogue only one example was entered at first (the syntype) and this was changed later to five examples (3 ♂ 2 ♀), all under the same Catalogue number. Consequently, in 1951, Schmidt was able to see five specimens instead of the one ♂ examined by Hagen." Abdominal segments 4-10 are missing on the MCZ ♂ which is in agreement with the original description and suggests that this specimen may be the holotype of the name. Currently *Metacnemis valida* Hagen in Selys, 1863.

**westermanni** Hagen in Selys (*Alloneura*) 1860b: 447 (19 reprint). Holotype ♂. "Neelgherris / Blue mountains / west fo [?] Madras. / Westermann."; "1"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12233.

Description based on 1 ♂ from "Les montagnes bleues de Neelgherries, à l'ouest de Madras. Donnée à M. Hagen par M. Westermann." Fraser (1933: 271) incorrectly attributed authorship to Selys and stated that the "Type [is] in the Hagen collection." Currently *Phylloneura westermanni* (Hagen in Selys, 1860).

## PLATYSTICTIDAE

**aries** Needham & Gyger (*Drepanosticta*) 1941: 144. Holotype ♂, Allotype ♀. ♂: "Calog Riv. / 6,000 ft. Sept. [printed] 4 [handwritten]"; "Mt. Apo, Mindanao / Phil. Islds., C. S. Clagg [printed]"; "Det. By J. G. Needham [printed] / Drepanosticta / aries n. & g. / Holotype [handwritten]. ♀: "Calian, Davao Prov. / Mindanao, Phil. Islds. / C. S. Clagg [printed] 11-vii [handwritten]". MCZ ENT 23831.

Currently *Drepanosticta aries* Needham & Gyger, 1941.

**brucei** Calvert (*Palaemnema*) 1931: 75. Paratypes 2 ♂♂. "Cristalina [penciled] / COLOMBIA / J. H. & E. B. WILLIAMSON. / FEB 17 1917 [stamped] / Palaemnema brucei Calv. 2♂PARATYPE / 1931. Trans Am. Ent. Soc. LVII, p. 75 [handwritten by Calvert all on envelope flap]". MCZ ENT 21999.

The holotype is at UMMZ (Garrison et al. 2003: 18). Currently *Palaemnema brucei* Calvert, 1931.

**digna** Hagen in Selys (*Platysticta*) 1860b: 440 (12 reprint). Holotype ♂. "Ceylon / Nietner"; "D. digna"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12227.

Currently *Ceylonosticta digna* (Hagen in Selys, 1860).

**domina** Calvert (*Palaemnema*) 1903a: 137. Holotype ♂, paratype 1 ♀. ♂: "F. Sumichrast / Isth. of Tehuantepec [printed]"; "Palaemnema / domina Calv. [handwritten] / P. P. Calvert det. [printed] 1903 [handwritten] / B. C. A. Neur., p. [printed] 137 / TYPE. Original of Pl. / V, f. 42. [handwritten]"; "Penis Removed / Dec. 64 T. DONNELLY [handwritten]". ♀: same data label, "Palaemnema / domina Calv. [handwritten] / P. P. Calvert det. [printed] 1903 [handwritten] / B. C. A. Neur., p. [printed] 137 [handwritten]". MCZ ENT 12222.

The appendages of the holotype were accidentally destroyed shortly after the species was described and figured (Calvert 1903a: 137, footnote) and the genital ligula of the holotype is in a genital vial pinned with the specimen. Abdominal segments 4-10 are missing from the paratype ♀. Currently *Palaemnema domina* Calvert, 1903.

**hilaris** Hagen in Selys (*Platysticta*) 1860b: 439 (11 reprint). Syntypes 3 ♂♂, 1 ♀. All: "Ceylon / Nietner"; "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12226.

Description based on an unspecified number of ♂♂ and perhaps a single ♀ from "Ceylan, par Nietner. (Collect. Hagen, Selys)." Other specimens are probably present at Selys collection in RBINS. Currently *Ceylonosticta hilaris* Hagen in Selys, 1860.

**maculata** Hagen in Selys (*Platysticta*) 1860b: 437 (9 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Ceylon / Nietner"; "Agr. maculatum Nietner [remainder illegible]". ♀ with same locality label. MCZ ENT 12223.

Description based on at least a pair from "Ceylan, par Nietner. (Collect. Hagen, Selys)." Other specimens are probably present at Selys collection in RBINS. Currently *Platysticta maculata* (Hagen in Selys, 1860).

**melanostigma** Hagen (**Palaemnema**) 1860b: 436 (8 reprint). Holotype ♂. "P. melano / stigma / \* Hag. [handwritten by Hagen]"; "P. Cabello [handwritten]"; "Neonevra ? / melanostigma Hag [handwritten]"; "penis / drawn [handwritten by C. H. Kennedy]"; "Hagen [printed]". MCZ ENT 12221.

Further notes on the holotype are given by Banks in Calvert (1931: 69). Currently *Palaemnema melanostigma* (Hagen in Selys, 1860).

**montana** Hagen in Selys (**Platysticta**) 1860b: 438 (10 reprint). Syntypes 2 ♂♂, 1 ♀, ♂<sub>1</sub>: "Ceylon / Nietner"; "P. montana". ♂<sub>2</sub>: without def. label, and with "Penis / drawn [handwritten by C.H. Kennedy]". ♀: "P. montana / \* Hag. [handwritten by Hagen]"; "Ceylon / Nietner [handwritten]"; "Hagen [printed]". MCZ ENT 12225.

Description based on at least a pair from "Ceylan par M. Nietner. (Collect. Hagen et Selys)."

Other syntypes may be at Selys collection in RBINS according to the original description. Currently *Ceylonosticta montana* (Hagen in Selys, 1860).

**mutans** Calvert (**Palaemnema**) 1931: 63. Paratypes 2 ♂♂. "VENEZUELA / J. H. AND E. B. WILLIAMSON / W. DITZLER / TACHIRA / TACHIRA / APR 5 1920 [stamped] / Palaemnema mutans Calver[t; part of label torn off] / 2♂ [typewritten] / 1931. Trans Am. Ent. Soc. LVIII, p. 63 [handwritten by Calvert] PARATYPES [typewritten all on envelope flap]". MCZ ENT 22000.

The holotype is at UMMZ (Garrison et al. 2003: 19). Currently *Palaemnema mutans* Calvert, 1931.

**tropica** Hagen in Selys (**Platysticta**) 1860b: 438 (10 reprint). Syntypes 2 ♂♂, ♂<sub>1</sub>: "Ceylon / Nietner"; "[illegible label]". ♂<sub>2</sub>: with same locality label, "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". MCZ ENT 12224.

Description based on at least 2 ♂♂ from "Ceylan par M. Nietner. (Collect. Hagen et Selys)."

Other syntypes may be at Selys collection in RBINS according to the original description. Currently *Ceylonosticta tropica* (Hagen in Selys, 1860).

## POLYTHORIDAE

**beata** McLachlan (**Thore**) 1869: 28. Paralectotype ♂. "Pebas / Up. Amaz. / Hauxwell"; "Thore / beata, McL."; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]"; "Type [printed]". MCZ ENT 12118.

Montgomery (1967: 148) stated: "Type: ♂, Pebas, "on the Upper Amazons", Peru; J. HAUXWELL, coll. In Br. Mus., ex coll. MACLACHLAN. MACLACHLAN wrote, "I have seen many examples" and I have noted the following paratypes: 3 ♂♂ 3 ♀♀ in Br. Mus., 11 ♂♂ 2 ♀♀ in Belg. Mus., and 2 ♂♂ 2 ♀♀ in MCZ (one male labelled "Type/12118")." A lectotype ♂ selection was attributed to Montgomery by Kimmins (1970: 199) with the following comment: "Montgomery lists Type ♂ and paratypes in BM(NH), and in effect selected the example bearing a type label as the lectotype." Currently *Polythore beata* (McLachlan, 1869).

**brasiliensis** Montgomery (**Cora**) 1967: 153. Holotype ♂, Paratype ♀. ♂: "Cora Brasiliensis Hag / C. inca Sel. [handwritten by Hagen]"; "Brasilia/Thorey 1865 [handwritten by Hagen]"; "brasiliensis [handwritten]"; "Penis / drawn [handwritten by C.H. Kennedy]". ♀: "Brasilia/Thorey 1865 [handwritten by Hagen]"; "brasiliensis [handwritten]"; "Hagen [printed]". MCZ ENT 12119.



The holotype lacks the head and one of each pair of legs; pterothorax partially covered with transparent glue. Currently a junior synonym of *Cora inca* Selys, 1873.

**fasciata** Hagen in Selys (**Thore**) 1853: 70. Lectotype ♂, paralectotype ♀. ♂: "Hagen [printed]"; ♀: "Venezuela"; "Hagen [printed]". MCZ ENT 12116.

Montgomery (1967: 147) stated: "Type: ♂♀ (# 12116). Venezuela. In MCZ. There is no reason to doubt the identity of the ♂ type, although the locality label has been lost. In the original description there is no indication of the number of specimens, but the description included both ♂ and ♀, with the note, "Patrie: Venezuela. (Collect. Hagen; Selys)". We consider Montgomery's statement above ("...the ♂ type ...") as lectotype designation. The ♀ paralectotype lacks the head and abdomen. Other paralectotypes may be at Selys collection in RBINS. Currently *Euthore fasciata fasciata* Hagen in Selys, 1853.

**incana** Hagen in Selys (**Cora**) 1869: 679 (35 reprint). Syntypes? 3 ♂♂. ♂<sub>1</sub>: "Venezuela / Appun [handwritten by Hagen]"; "incana [handwritten]"; "Hagen [printed]"; "Montgomery / Type / July, 1961 [handwritten by B.E. Montgomery]". ♂<sub>2</sub>: "C. incana / \* Hag [handwritten by Hagen]"; "Venezuela / Appun [handwritten by Hagen]"; "incana [handwritten]"; "Hagen [printed]"; "penis / drawn [handwritten by C. H. Kennedy]"; "Montgomery / #2 / 8 July, 1961 [handwritten by B.E. Montgomery]"; "Cora cyane Selys [handwritten by G. H. Bick] / incana [penciled by G. H. Bick] 2 / def. G.H. Bick, 1984 [handwritten]". ♂<sub>3</sub>: "Venezuela / Appun [handwritten by Hagen]"; "incana [handwritten]"; "Hagen [printed]"; "Montgomery / #3 / July, 1961 [handwritten by B.E. Montgomery]". MCZ ENT 12120.

The original description was based on at least 1 mature ♂ and 1 juvenile ♂ from "Venezuela (par Appun). (Coll. Selys, Hagen)." Montgomery (1967: 144-145) has argued that the specimens in the MCZ cannot be considered as types: "Cora incana HAGEN. Type: ♂, APPUN. Venezuela. In Belg. Mus. Note discussion under *Cora cyane*. Although this species is attributed to HAGEN, it is stated quite definitely that it is based solely ("Chez le male ...") upon this specimen, "qui m'a ete donne par M. Hagen". Therefore, the specimens in M. C. Z., (type # 12120) are not types, even paratypes. The two types [the lectotype ♂ in BMNH and the other ♂ in RBINS] appear identical, and I am considering *incana* as a synonym of *cyane*. The reference to the discussion under *Cora cyane* above consists of the following: "Cora cyane SELY. Type: ♂, Venezuela. In Br. Mus. In the rather brief original description it is stated that the ♀ is unknown, and that the species occurs in Venezuela - "Patrie: Venezuela. (Collect. SELYS; HAGEN; Musee britannique)". In the "Monographie [Selys 1854b: 265]" there is a more detailed description of "♂ adulte", with brief reference to color variation in "♂ plus jeune", and the statement, "Cet exemplaire est plus grand que precedent". The distribution is indicated as "La republique de Venezuela et Puerto Cabello, d'apres exemplaires des Museum britannique et de M. HAGEN". It is also noted that "M. HAGEN possede d'autres exemplaires de differents ages; chez les plus jeunes la noir de l'arete mesothoracique est plus large". Finally there is a note "N. B. Chez le male plus grande, indique comme plus jeune format une race qui de vrait alors porter le nom de *Cora incana* (HAGEN)". From this it is evident that SELYS based his description of *cyane* upon only two specimens, one of which (in his own collection) was referred to *incana* HAGEN. This leaves the Br. Mus. ♂ as typical *cyane* and it must be considered the type. Of the *cyane-incana* series of specimens I have seen the following:..... five ♂♂ under the name *incana*, in MCZ, three of which carry four labels, "Venezuela/Typus", "Hagen", "Type / 12120", and "incana", and

two with three labels, "P. Cabello", "Hagen" and "incana". The series in M. C. Z., show considerable variation and some may be a different species." However, Montgomery misread "Typus" for "Appun" as noted above from our transcribed labels and Montgomery also marked the first ♂ as "Type." Furthermore, the original description of *C. incana* stems from 1869, not 1854 and it is evident that at least two ♂♂ must have been in Hagen's possession when drawing up the description. We have left the status of the three MCZ ♂♂ undetermined pending further study and comparison with material at RBINS. Currently a junior synonym of *Cora cyane* Selys, 1853.

*mirabilis* McLachlan (*Euthore*) 1878: 87. Paralectotypes 1 ♂, 1 ♀. Both: "Intaj / Ecuador"; "Euthore / mirabilis ML"; "penis / drawn"; "Hagen [printed]"; "Type [printed]". MCZ ENT 12117.

Montgomery (1967: 148) stated: "Euthore mirabilis MACLACHLAN. Types: ♂ ♀, Intaj, Ecuador. In Br. Mus., ex coll. MACLACHLAN. The type series consisted of 6 ♂♂ 6 ♀♀; of these the types and two paratypes of each sex are in the Br. Mus., and one of each sex in both the Belg. Mus. and MCZ. Those in MCZ (# 12117) and Belg. Mus., are labelled "type", but can only be paratypes." A lectotype ♂ in BMNH was later designated by Kimmins (1970: 199). Currently *Euthore mirabilis* McLachlan, 1878.

#### SYNLESTIDAE

**conspicua** Hagen in Selys (**Chlorolestes**) 1862b: 34 (32 reprint). Syntype ♂. "A conspicuum M.B. / Dregé Catal. no. 1508."; "Penis / drawn [handwritten by C.H. Kennedy]"; "Hagen [printed]". MCZ ENT 12124.

Description apparently based on 1 ♂ and 1 ♀ from "Cap de Bonne-Espérance, par Dregé et Krauss. Coll. Hagen, Selys"; the ♀ may be at Selys Collection, RBINS. Currently *Chlorolestes conspicuus* Hagen in Selys, 1862.

**ethelae** Christiansen (**Phylolestes**) 1947: 252. Holotype ♂, paratypes 1 ♂, 2 ♀♀. "Haiti / 1934 / M. Bates [printed]"; "La Visite & vic / La Selle Range / 5 7000 ft. / Sept. 16 23 [printed]". MCZ ENT 27733.

Both fore wings missing, tip of right hind wing glued to card pinned beneath holotype. Currently *Phylolestes ethelae* Christiansen, 1947.

**major** Selys (**Megalestes**) 1862a: 293 (9 reprint). Syntypes 2 ♂♂, 2 ♀♀, ♂<sub>1</sub>: "Megalestes / major D.S. / ♂", "ita[?]", "major"; similar labels on other syntypes. MCZ ENT 12128.

Other specimens may be at Selys collection, RBINS. Currently *Megalestes major* Hagen in Selys, 1862.

**umbrata** Hagen in Selys (**Chlorolestes**) 1862b: 37 (35 reprint). Syntypes 2 ♂♂. "from [?] b.p. [?]", "Mus. Berol. [printed]"; "Hagen [printed]". Another ♂ with no locality label and "Penis / drawn [handwritten by C.H. Kennedy]". MCZ ENT 12125.

Description apparently based on an unspecified number of ♂♂ from "Cap de Bonne-Espérance (Dregé). Coll. Hagen, Selys"; other specimens are probably present at Selys collection, RBINS. Currently *Chlorolestes umbratus* Hagen in Selys, 1862.

## ANISOPTERA

## AESHNIDAE

**adnexa** Hagen (**Aeschna**) 1861: 127. Holotype ♂. "Ae. adnexa Hag./\*Type Syn. 127. 17 [Hagen handwritten label]"; "45. / ♂ [Hagen handwritten label]"; "Cuba / Loew. [Hagen handwritten label]." MCZ ENT 12311.

Holotype incomplete, missing abdominal segments 4-10; Hagen (1861: 127) stated: "I have only examined a single mutilated specimen." Currently *Coryphaeschna adnexa* (Hagen, 1861).

**antilope** Hagen (**Aeschna**) 1874a: 354. Syntypes 1 ♂, 2 ♀♀. ♂: "G. antilope / \*Hag." [handwritten]; "Uhler [Hagen handwritten label]"; "Sept. / Druid / Hill. [handwritten]." ♀<sub>1</sub>: "Uhler / illegible. / Maryld ? [handwritten]." ♀<sub>2</sub>: "von S. Stevens / in London / Patria? / (of Amazon) [Hagen handwritten label]"; "Gomphaeschna / antilope (Hagen) / Det. L.K. Gloyd 1938." MCZ ENT 12325.

There is also a third ♀ with a red type label from Banks marked as syntype 2, which was not mentioned in the original description (Hagen 1874a: 356: "Hab. Druid Hill, near Baltimore, Md., by Mr. Uhler, one male and one female in very bad condition, probably from the same locality. One female in my collection without any locality, even the most general, from a merchant in Europe."), which does therefore not represent a type. Currently *Gomphaeschna antilope* (Hagen, 1874).

**bacchus** Hagen (**Anax**) 1867b: 48. Holotype ♀. "A. bacchus / \*Hag." [handwritten]; "Himalayah / Thorey [Hagen handwritten label]"; "Hagen [printed]". MCZ ENT 12306.

Currently a junior synonym of *Anax parthenope* (Selys, 1839).

**brevifrons** Hagen (**Aeschna**) 1861: 129. Lectotype ♂, paralectotype ♀. ♂: "A. brevifrons / \*Hag." [Hagen handwritten label]; "Mexiko [handwritten]"; "Acapulco / Mexico / Thorey. [Hagen handwritten label]". ♀: "Valpar. [Hagen handwritten label]"; "Winthem. [printed]"; "Hagen [printed]". MCZ ENT 8831.

In his description, based on 1 ♂ and 1 ♀, Hagen (1861: 129) stated: "Hab. Acapulco, Mexico; Valparaiso." Muzón & von Ellenrieder (2001: 147-148) designated the ♂ as lectotype and stated that "the record of *A. brevifrons* from Acapulco, Mexico (Hagen 1861) is here considered erroneous because this species has been never found again in this country...". Currently *Rhionaeschna brevifrons* (Hagen, 1874).

**chrysophthalmus** Charpentier (**Aeschna**) 1825: 33. Syntype ♀. "Brieg / Charp." [handwritten]; "Charp. [handwritten on intricate black bordered label]"; "Hagen [printed]". MCZ ENT 12319.

Currently a junior synonym of *Aeshna isoceles* (Müller, 1767).

**clepsydra** Say (**Aeshna**) 1840: 12. Neotype ♂. "Aeschna clepsydra Say / Hag Syn.122.5 / Harr. Cat. 45 ♂" [Hagen handwritten label]; "Massachusetts [handwritten; broken]"; "45 / ♂. [handwritten]." MCZ ENT 26468.

This specimen was designated a neotype by Walker (1912: 134). Currently *Aeshna clepsydra* Say, 1840.

**constricta** Say (**Aeshna**) 1840: 12. Neotype ♂. "constricta [handwritten]"; "Rhode Island / Illinois / Walsh. 1860 [handwritten]"; "1. [handwritten]"; "Hagen [printed]"; "Aeshna [printed] constricta [handwritten] / Say ♂ [handwritten] / det. by R. W. / Garrison 19 [printed]

80 [handwritten]"; "*Aeshna constricta* Say, / 1840 ♂ / NEOTYPE / des. Edmund M. Walker 1912 / (University of Toronto Studies, / Biological Series 11: 181) (R. / Garrison & N. von Ellenrieder / 2019)". MCZ ENT 36193.

This ♂ at MCZ was designated as neotype by Walker (1912: 181). Currently *Aeshna constricta* Say, 1840.

***crenata*** Hagen (***Aeschna***) 1856: 369. Syntypes 2 ♂♂. Both: "Ae. crenata [Hagen handwritten label]"; "Sib. or. [Hagen handwritten label]"; "Hagen [printed]". MCZ ENT 12322.

Currently *Aeshna crenata* Hagen, 1856.

***elacatura*** Needham (***Doloeschna***) 1907: 143. Holotype ♀. "Mindai, Borneo S.W. / June 1882. Grabowski. [handwritten]"; "*Doloeschna / elacatura / Ndm. / Type* [handwritten]". MCZ ENT 2002.

Currently *Oligoaeschna elacatura* (Needham, 1907).

***eremita*** Scudder (***Aeschna***) 1866: 213. Syntypes 6 ♂♂, 1 ♀, 3 ♂♂: "New Hampshire [printed] / Hermit Lake [handwritten] / Scudder 11/8. [handwritten]". 3 ♂♂, 1 ♀: "New Hampshire [printed] / Hermit Lake [handwritten] / Scudder 25/8/62. [handwritten]"; one of these ♂ with additional label "Appendages drawn / by S.N. Westergreen / May 1893. [handwritten]", another ♂ with additional label "*Aeschna / hermfica / Scudd/Tuckerman / Ravine Aug 62* [handwritten]". MCZ ENT 12317.

Description based on 14 ♂♂ and 2 ♀♀ from White Mts., August. Currently *Aeshna eremita* Scudder, 1866.

***fumosus*** Hagen (***Anax***) 1867b: 43. Holotype ♂. "A. fumosus / \* Hag. [Hagen handwritten label]"; "Ternate / Mus. Leiden / 1863. [Hagen handwritten label]"; "Hagen [printed]". MCZ ENT 12310.

Currently *Anax fumosus* Hagen, 1867.

***furcillata*** Say (***Aeshna***) 1840: 14. Holotype ♂. "Sutton / Dr. Smith. [Hagen handwritten label]". MCZ ENT 26470.

In the original description, Say (1840:15) stated "I have seen but the individual sent me for examination by Dr. Harris." and Hagen (1873a: 272) stated "Mr. Say described only the male from Massachusetts. He had seen only the individual sent for examination by Dr. Harris, and as the male in the collection is labelled u, it is doubtless the type." Currently *Gomphaeschna furcillata* (Say, 1840).

[*isocetes* Müller (***Libellula***) 1767: 125. Pseudotype 1 ♂. "Lüneburg. / H. Charp. [handwritten]"; "Charp. [handwritten on intricate black bordered label]"; "Hagen [printed]". MCZ ENT 12319.

Müller (1967) described *Libellula isosceles* from the estate of Frederiksdal, near Copenhagen, based on at least 1 ♂ and 1 ♀. Therefore, the specimen here labeled as type from Lüneburg in Germany cannot represent a type. Currently *Aeshna isosceles* (Müller, 1767).]

***grafiana*** Williamson (***Boyeria***) 1907: 1. Syntype ♂. "B. grafiana ♂ / Searchmont / Ontario Can / E. B. Williamson / B[uffton Ind. / Aug. 8, 1906 / Paratype [handwritten]". MCZ ENT 2004.

Description based on 14 ♂♂ and 2 ♀♀ without designation of a holotype; therefore, the specimen labeled as paratype at MCZ represents a syntype, and the specimen labeled as holo-

type by Williamson at UMMZ (Garrison et al. 2003: 42) is also a syntype which should be designated as lectotype. Currently *Boyeria grafiana* Williamson, 1907.

*jalapensis* Williamson (*Aeshna*) 1908: 307. Paratype ♂. "Aeshna / multicolor / jalapensis / Cotype / Williasn [handwritten]"; "Jalapa, Vera Cruz, / 4400 ft, 10-12.1906 / P.P. Calvert [printed] Sept [handwritten]"; "Jalapa Mexico / 11-IX-06 / Williamson [handwritten]". MCZ ENT 14036.

We consider Williamson's (2008: 307) statement "The types of *jalapensis* are one male in Dr. Calvert's collection, taken by himself, and the female in Mr. Godman's collection" as holotype and allotype designations respectively. Currently *Rhionaeschna jalapensis* (Williamson, 1908).

*janata* Say (*Aeshna*) 1840: 13. Holotype ♂. "Aeshna janata Say \* / Hag. Syn. 125.11. / Harr. Cat. 2. ♂♀ [handwritten]"; "Milton. [handwritten]"; "2. / ♂ [handwritten]". MCZ ENT 26469.

There are 1 ♂ and 1 ♀ under the species heading, but only the ♂ has a type label, and Say based the description on 1 ♂ from Massachusetts, stating (1840: 14) "Sent to me by Dr. Harris. I have not seen the female". Currently *Basiaeschna janata* (Say, 1840).

*jenseni* Ris (*Aeshna*) 1908: 523. Paralectotypes 1 ♂, 1 ♀. ♂: "Aeshna / n. sp. Paratype / jenseni Ris / 1/12/1906 / Pedregal [handwritten]". ♀: "Aeshna / n. sp. ♀ Paratype / jenseni Ris / 20/11/1906 / Pedregal [handwritten]". MCZ ENT 12323.

This is a manuscript name changed to *A. haarupi* by Ris later in 1908. This pair is part of the original type series; the lectotype is deposited at SMF (von Ellenrieder 2003: 102). Currently *Rhionaeschna haarupi* Ris, 1908.

*luteipennis* Burmeister (*Aeschna*) 1839: 837. Lectotype ♂. "coll. Somer /A. luteipennis / Burm. \* / Brasil [handwritten by Hagen according to Calvert 1898b: 837, Fig. 3]"; "Hagen [printed]". MCZ ENT 1873.

Burmeister based his description (1839: 837) on 1 ♂ "Aus Brasilien, in Sommer's Sammlung". The label agrees with the type information and Calvert (1898b: 34) considered this specimen to represent Burmeister's type. In his revision of the *Aeshna* (*Coryphaeschna*) *luteipennis* group of subspecies, Calvert (1941: 389) remarked: "In 1839, Burmeister described *Aeschna luteipennis* ♂ "Aus Brasilien, in Sommer's Sammlung." He had two specimens, according to Hagen (1867): "Ich besitze eine der beiden Typen Burmeister's aus Sommer's Sammlung." This specimen was seen by the present writer in 1897 at the Museum of Comparative Zoology, Cambridge, Massachusetts, and the existence of the other at Vienna was certified by Brauer in litt. July 15, 1898 (Calvert 1898b, pp. 53, 94) and (p. 392) "The type of this species is one of the two cotypes of Burmeister. As no lectotype has been designated, to the best of my knowledge, I select the cotype at the Museum of Comparative Zoology as the lectotype." Currently *Remartinia luteipennis luteipennis* (Burmeister, 1839).

*microstigma* Schneider (*Aeschna*) 1845: 113. Holotype ♀. "Ae. microstig - / ma / \*Schn [handwritten]"; "microstig- / ma Schneider / Kleinasien [handwritten, Fig. 2]"; "Kellemisch [handwritten]"; "Löw. [handwritten]". MCZ ENT 12326.

Description based on a single ♀ from Kellemisch, which is now missing abdominal segments 7-10. Currently *Callaeschna microstigma* (Schneider, 1845).

**multicolor** Hagen (**Aeschna**) 1861: 121. Lectotype ♂, paralectotypes 2 ♀♀. Lectotype ♂: "multicolor / Hagen. [handwritten]"; "Pecos River / Texas [handwritten]"; "Aug / 10 [handwritten]"; "Photo. Williamson / Pecos River / No. 4 [3] [handwritten]"; "Aeschna multicolor / Hagen 1861 / LECTOTYPE [handwritten]. Paralectotype ♀; "Pecos River / Texas [handwritten]"; "Aug / 8 [handwritten]"; "Photo. Williamson / Pecos River / No. 2 [1] [handwritten]"; "Hagen [printed]. Paralectotype ♀<sub>2</sub>: "Ae. multicolor / \* Hag. [handwritten]"; "Pecos River / Texas [handwritten]"; "July / 13 [handwritten]"; "Photo. Williamson / Pecos River / No. 3 [2] [handwritten]"; "Hagen [printed]. MCZ ENT 8833.

Hagen's description was based on a mixed series (Williamson 1908: 301) including an unspecified number of specimens; to preserve the name application von Ellenrieder (2003: 88) designated the ♂ at MCZ as lectotype. A third ♀ labeled as type of *A. multicolor* at MCZ (from "Upper Missouri") is a ♀ of *Aeshna interrupta* Walker. Currently *Rhionaeschna multicolor* (Hagen, 1861).

**mutata** Hagen (**Aeschna**) 1861: 124. Holotype ♀. "Ae. mutata / \* Hag. [handwritten]"; "A. mutata! / Hag. [handwritten]"; "9 [handwritten]"; "Photo. Williamson / No. 1 [handwritten]"; "Hagen [printed]"; "Led. / J. / 3. [handwritten]"; "Hagen [printed]"; "probably multicolor / Hag. / def. By P.P. Calvert / 1899 [handwritten]". MCZ ENT 8832.

According to the original description the holotype was deposited at NHMW. However, Calvert (1905a: 184) stated: "Dr. Anton Handlirsch has also written me from the Vienna Museum (25. x. 1904): Von *Aeschna mutata*, Hagen, besitzen wir keine Type", and considered the MCZ ♀ to represent the holotype. Currently *Rhionaeschna mutata* (Hagen, 1861).

**nevadensis** Walker (**Aeshna**) 1908: 382. Syntypes 2 ♂♂. 1 ♂ with "Aeschna / nevadensis / type Walker [handwritten by Walker]"; both with "Reno, Nev. / Morrison, 1878. [printed]." MCZ ENT 12316.

Walker (1908) described the species in a key without providing number of specimens or locality information and later (Walker 1912: 112) stated under "Material examined": Nevada: Reno, 1878 (H. K. Morrison, M. C. Z., 8 ♂). Only two of these, kindly lent me by Mr. Samuel Henshaw, were studied in detail, and the venational characters given above are based on these two specimens alone." Later (Walker 1958: 62) he stated that the original description was based on eight specimens all from Reno, Nevada, and seemed distinct enough to deserve subspecific rank, but since then "decided to drop the name *nevadensis* from the Canadian list, since it shows no constant differences from *A. interrupta lineata*.... it seems to be indistinguishable from *lineata* of the prairies." Currently a junior synonym of *Aeshna interrupta lineata* Walker, 1908.

**palmata** Hagen (**Aeschna**) 1856: 369. Holotype ♂. "Ae. palmata / \* Hag. [handwritten]"; "A. palmata n.sp. [handwritten]"; "Kamtschatka [handwritten]"; "Hagen [printed]". MCZ ENT 12315.

Currently *Aeshna palmata* Hagen, 1861.

**panybeus** Hagen (**Anax**) 1867b: 42. Holotype ♂. "panybeus / Hagen [handwritten]"; "A. gibbosulus Rb? / A. Panybeus Hag. [handwritten]"; "A. panybeus / \* Hag. [handwritten]"; "Rosenberg [printed] / Panybie [handwritten] / Celebes. [printed]." MCZ ENT 12309.

Lieftinck (1942: 509) provided further information on the type locality of the holotype: "The type of *panybeus* has been collected by VON ROSENBERG at the same time as numerous other

dragonflies from North Celebes, labelled "Ayer Pann", "Gorontalo", "Limbotto", "Panybie" etc. / "Rosenberg"– without particular indication of locality or date."and: "Panibi (or Panybi) is, or was, a little native village on the shore of Lake Limboto, distr. Gorontalo, Minahasa, North Celebes". C. B. H. VON ROSENBERG stayed at Limboto from Aug. 28th till Sept. 6th, 1863, and at Panibi from Sept. 7th –15th...." Currently *Anax panybeus* Hagen, 1867.

**parisinus** Rambur (**Anax**) 1842: 185. Syntype ♂. "parthenope / Selys. [handwritten]"; "Ramb. [handwritten]"; "Hagen. [printed]". MCZ ENT 12305.

The description was based on 1 ♂ and 1 ♀, without providing any locality. Currently a junior synonym of *Anax parthenope* (Selys, 1839).

**picta** Charpentier (**Aeshna**) 1840: 112. Syntypes 1 ♂, 1 ♀. "Charp. [handwritten on intricate black bordered label]"; "Lüne- / burg. / Heyer. [handwritten]"; "Hagen. [printed]". MCZ ENT 12318.

Description based 1 ♂ and 1 ♀ from "Germania media, Silesia". Currently considered a junior synonym of *Aeshna juncea* (Linnaeus, 1758).

**propinqua** Scudder (**Aeshna**) 1866: 214. Syntype 1 ♂. "B. S. N. H. [printed on left margin] / A. propinqua / Scud. [handwritten] / White Mountains, N. H. / Bequest of C.A. Shurtleff [printed] / 908 [handwritten on right side]"; "W. M. Aug. 28 / 62 [handwritten]"; "Ag. [handwritten]"; "North American [handwritten]"; "Aeshna juncea / (Linnaeus) ♂ / det. by R.W. / Garrison 1980 [printed]". MCZ ENT 12314.

This species was described based on 3 ♂♂ and 1 ♀ from the White Mountains, collected in August. This syntype is a ♂ of *Aeshna juncea* (Linnaeus, 1758). Walker (1958) considered the type series to be mixed, including specimens of *Aeshna interrupta* Walker, 1958, *Aeshna juncea* (Linnaeus, 1758), and *Aeshna verticalis* Hagen, 1861, from which it is currently considered a junior synonym.

**reticulosa** Selys (**Allopetalia**) 1873c: 514 (reprint 70). Holotype ♀. "Mertens [handwritten]"; "patr. ignota / voyage de / Mertens [handwritten]"; "Hagen [printed]". MCZ ENT 12324.

Description based on 1 ♀ from "Amérique méridionale. Musée de St.- Pétersbourg, provenant du voyage du capitaine Mertens." Currently *Allopetalia reticulosa* Selys, 1873.

**septentrionalis** Burmeister (**Aeshna**) 1839: 839. Holotype ♀. "A. septentrionalis / coll. Somer. Burm. type [handwritten]." MCZ ENT 12312.

Description based on 1 ♀ "Aus Labrador, in Sommer's Sammlung." Calvert (1898b: 54) remarks concerning the holotype: "One female in the M. C. Z. with the pin-label, "A. septentrionalis Burm. type coll. Somer" in Hagen's hand, has lost the last three abdominal segments....." Currently *Aeshna caerulea septentrionalis* Burmeister, 1839.

**serrata** Hagen (**Aeshna**) 1856: 370. Holotype ♂. "serrata / Hagen [handwritten]"; "Ae. serrata / \* Hag. [handwritten]"; "Desert / Kirgis [handwritten]"; "illegible-gain [handwritten]". MCZ ENT 12321.

Description based on 1 ♂ from "Kirgisiensteppe". Currently *Aeshna serrata* Hagen, 1856.

**sitchensis** Hagen (**Aeshna**) 1861: 119. Holotype ♂. "sitchensis / Hagen. [handwritten]"; "Ae. sitchensis / \* Hag. [handwritten]"; "Sitka [handwritten]"; "Hagen [printed]". MCZ ENT 12313.



Description based on 1 ♂ from "Russian America, Sitka (Collection of Hagen)". Currently *Aeshna sitchensis* Hagen, 1861.

**speratus** Hagen (**Anax**) 1867b: 46. Holotype ♂. "speratus / Hagen. [handwritten]"; "A. speratus / \* Hag. [handwritten]"; "1524. Erichson \* n. sp. / Catalogue. 1841 / Cap. de. Spa. Drège / A. speratus \* Hag [handwritten]"; "1524 [handwritten]"; "Hagen [printed]." MCZ ENT 12307.

Description based on 1 ♂: "Ein Männchen meiner Sammlung am Cap der guten Hoffnung von Drège gesammelt. In dem 1842 von Erichson herausgegebenen Verkaufs-Catalog der süd-afrikanischen Insekten Drège's ist es unter Nr. 1524 als *Aeshna* nov. spec. angeführt". Currently *Anax speratus* Hagen, 1867.

**strenuus** Hagen (**Anax**) 1867b: 34. Holotype ♀. "strenuus / Hagen [handwritten]"; "type A. strenuus / Verh. Z. Bot. Hagen / p. 34 1867 / Ges. Wien / = A. junius [handwritten]"; "Oahu [handwritten]." MCZ ENT 12308.

Description based on 1 ♀ from Oahu. Currently *Anax strenuus* Hagen, 1867.

**verticalis** Hagen (**Aeshna**) 1861: 222. Syntypes 2 ♂♂. ♂<sub>1</sub>: "Washington / o. Sacken. [handwritten]"; "Hagen [printed]"; ♂<sub>2</sub>: "A. verticalis / Hag. [handwritten]"; "New York / Calverly"; "Hagen [printed]". MCZ ENT 8834.

Description based on 2 ♂♂ "Hab. Washington (Osten Sacken); New York (Calverly)." No type was selected by Walker (1912: 150) in his revision of the genus *Aeshna*: "Type- ♂, Mus. Comp. Zoology." Currently *Aeshna verticalis* Hagen, 1861.

**vinosa** Say (**Aeshna**) 1840: 13. Holotype ♂. "Cambridge / Aug. 15. 1832. [handwritten by Hagen, Fig. 2]"; "Neuraeschna vinosa Say \* / Hag. Syn. 130.24 / Harr. Cat. 71. ♂ [handwritten by Hagen, Fig. 2]"; "71. / ♂ [handwritten]." MCZ ENT 26471.

Described from Massachusetts based on 1 ♂ sent to Say by Harris. Currently *Boyeria vinosa* (Say, 1840).

**viridis** Eversmann (**Aeshna**) 1836: 242. Syntype ♀. "A. viridis. / Eversm. [handwritten]"; "Aeshna viridis Evm ♀ / appendicibus / mutilatus [handwritten]"; "Evm / Kasani [handwritten]"; "Hagen [printed]." MCZ ENT 12320.

Description based 1 ♂ and 1 ♀ from "provincia Casanensi mense Julio et Augusto". Currently *Aeshna viridis* Eversmann, 1836.

## AUSTROPETALIIDAE

**apicalis** Selys (**Phyllopetalia**) 1858: 619 (359 reprint). Holotype ♂. "P. apicalis / \* Sel. [handwritten]"; "P. apicalis. / De Selys / à renvoyer [handwritten]"; "Valdivia [handwritten]"; "Hagen [printed]." MCZ ENT 12397.

Currently *Phyllopetalia apicalis* Hagen in Selys, 1858.

**stictica** Hagen in Selys (**Phyllopetalia**) 1858: 617 (357 reprint). Holotype ♂. "P. stictica / \* Hag. [handwritten by Hagen, Fig. 2]"; "P. stictica. / Hagen / à renvoyer [handwritten by Hagen]"; "Valdivia [handwritten]. MCZ ENT 12396.

Currently *Phyllopetalia stictica* Hagen in Selys, 1858.

## CHLOROGOMPHIDAE

*magnificus* Selys (*Chlorogomphus*) 1854a: 99 (80 reprint). Paralectotype 1 ♀. "Chlorogomphus / Sel. [handwritten]"; "C. magnifi - / cus / \* Sel. [handwritten]"; "Inde? [handwritten]"; "Chlorogomphus / magnificus ♀ / Sumatra / pronporus [handwritten]"; "Hagen [printed]". MCZ ENT 12389.

Originally described from Sumatra based on an unspecified number of specimens in "Muséé de Leyde. Collect. Selys, Hagen." The lectotype ♀ is at RMNH (Liefstinck 1971: 99). Currently *Chlorogomphus magnificus* Selys, 1854.

## CORDULEGASTRIDAE

*annulatus immaculifrons* Selys (***Cordulegaster***) 1858: 595 (335 reprint). Syntype ♂. "Cordulegaster / Leach [handwritten]"; "C. annulatus . ♂ / var. immaculifrons. / Galloprov. Selys. [handwritten]"; "58 [handwritten]"; "np. [handwritten]"; "Hagen [printed]". MCZ ENT 12390.

Described from an unspecified number of ♂♂ and ♀♀ from the center of France, Spain, Italy, Austria and Tanger in Africa. The MCZ syntype is missing abdominal segments 7-10. *Cordulegaster annulatus immaculifrons* is currently considered a junior synonym of *Cordulegaster boltonii* (Donovan, 1807).

*bidentatus* Selys (***Cordulegaster***) 1843a: 109. Syntype ♂. "C. bidentatus / \* Sel. [handwritten]"; "C. bidentatus ♂ / Belgia Selys [handwritten]"; "39. [handwritten]"; "Hagen [printed]". MCZ ENT 12392.

Description based on unspecified number of ♂♂ and ♀♀ from "Colouster près de Liège (Belgique)." This species was described twice in 1843: the first description (Selys 1843a: 109) appearing in "Note sur quelques Libellules d'Europe. Annales de la Societe Entomologique de France, Série 2(1): 107-109" dated on the cover 3 May 1843; the second (Selys 1843b: 155) "Nouvelles additions aux Libellulidées de la Belgique de 1840 à 1843. Serie 1 10 (8): 149-163 is dated, according to the journal title page, as 5 August, 1843. The latter publication states under *Cordulegaster* the following" BIDENTATUS. (Nobis. Soc. Entom. de France, avril 1843)." Currently *Cordulegaster bidentata* Selys, 1843.

*dorsalis* Hagen in Selys (***Cordulegaster***) 1858: 607 (347 reprint). Holotype ♀. "C. dorsalis / \* Hag. [handwritten]"; "dorsalis [handwritten]"; "Sitka [handwritten]"; "Cumka. [handwritten]"; "Hagen [printed]". MCZ ENT 12394.

Description based on 1 ♀ from "Sitka (Amerique russe)", at the Museum of St. Petersburg. As noted by Gloyd (1941: 131) for *Argia kuirilis* Hagen above, the type locality for this specimen is considered to be in error. Currently *Cordulegaster dorsalis dorsalis* Hagen in Selys, 1858.

*erroneus* Hagen in Selys (***Cordulegaster***) 1878b: 688 (96 reprint). Syntypes 2 ♂♂, 1 ♀. 2 ♂♂: "C. erroneus / \* Hag. [handwritten]"; "erroneus [handwritten]"; "N. Carol. / Morr. [handwritten]"; "Hagen [printed]". 1 ♀: "erroneus [handwritten]"; "Kentucky / Bee Spring / June 79 Sanborn [handwritten]"; "Hagen [printed]". MCZ ENT 12393.

Description based on an unspecified number of ♂♂ and ♀♀ from "Caroline du Nord aux environs de Marganton, juillet-septembre, par M. Morrison; Kentucky a Beespring en juin, par M. Sanborn (Coll. Selys, Hagen)." Currently *Cordulegaster erronea* Selys, 1878.

**insignis** Schneider (**Cordulegaster**) 1845: 114. Holotype ♀. "C. insignis / \* Schn. [handwritten]"; "Kellemisch [handwritten]"; "Löw. [handwritten]"; "Hagen [printed]". MCZ ENT 12391.

Description based on 1 ♀ from Kellemisch at "Mus. Berlin". Currently *Cordulegaster insignis insignis* Schneider, 1845.

#### CORDULIIDAE

**affinis** Selys (**Cordulia**) 1871: 260 (26 reprint). Syntype ♂. "Subg. / Somatochlora / Sel. [handwritten]"; "Cord. affinis / ♂ Selys [handwritten]"; "fasciata / Hagen. / Süd W. Austral. [handwritten]"; "S. W. Aus- / tralien / Dr. Preiss [handwritten]"; "193 [printed]"; "28. [handwritten]"; "Hagen [printed]". MCZ ENT 12418.

Description based on an unspecified number of ♂♂ from "Sud-ouest de l' Australia (coll. Selys et Hagen)." Currently *Procordulia affinis* (Selys, 1871).

**albicincta** Burmeister (**Epophthalmia**) 1839: 847. Holotype ♀. "C. albicincta / \* Br. / eremita \* Scud[der] [handwritten by Hagen]"; "coll. Somer [handwritten]"; "Labrad. [handwritten]"; "Hagen [printed]". MCZ ENT 12409.

Description based on 1 ♀ "Aus Labrador; in Sommer's Sammlung.". Calvert (1898b: 58) stated the following concerning Burmeister's type: "In the M. C. Z., a female with the pin-labels "coll. Somer", " Labrad"; a male with the pin-labels "coll. Somer", "C. albicincta \* Burm." - all four labels are in Hagen's hand. As B[urmeister]. specifies only the female, it alone can be the type, although Hagen [1873b] speaks of "the types of *Cordulia albicincta* Burm." in Proc. Bost. Soc. Nat. Hist. xv, p. 376." Currently *Somatochlora albicincta* (Burmeister, 1839).

**assimilis** Hagen in Selys (**Hemicordulia?**) 1871: 251 (17 reprint). Holotype ♀ "Hemic. assimilis / ♀ Hag. [handwritten]"; "C. assimilis / \* Hag [handwritten]"; "Celebes / Mus. Leyd / 1865. [handwritten]"; "6 [handwritten]"; "32. [handwritten]"; "28. [handwritten]"; "Hagen [printed]". MCZ ENT 12415.

Description based on a single ♀ from "Ile Célèbes. (Coll. Hagen, par le musée de Leyde.)" Lieftinck (1971: 75) claimed the holotype to be at RMNH: "**assimilis** Selys (**Hemicordulia?**), 1871: 251–252 (17–18 sep.). Holotype ♀ (immature). N. Celebes: Rosenberg Celebes (print), Limbotto (written), 6 Hag. 65 (written, yellow label), over drawer-label *Hemicordulia assimilis* Hagen. – Cordulidae. Three males bear identical locality labels, one adult ♂ carrying a label *Hemicordulia assimilis* Hagen, in de Selys' handwriting. Correctly placed in *Hemicordulia*." We believe the MCZ ♀ to be the true holotype given Hagen's statement "(Coll. Hagen, par le musée de Leyde.)" and label data given above ("Celebes / Mus. Leyd / 1865"). Currently *Hemicordulia assimilis* Hagen in Selys, 1871.

**bimaculata** Charpentier (**Libellula**) 1825: 43. Syntypes 1 ♂, 1 ♀. ♂: "Epitheca / Charp; "E. bimacu- / lata / Chp [both handwritten by Hagen]". Both specimens: "Brieg. / Charp. [handwritten]"; "Charp. [handwritten on intricate black bordered label]"; "Hagen [printed]". MCZ ENT 12414.

Described from "Silesia." Currently *Epitheca bimaculata* (Charpentier, 1825).

**cingulata** Selys (**Epitheca**) 1871: 302 (68 reprint). Holotype ♀. "Epitheca / cingulata / ♀ Selys [handwritten in green label]"; "C. cingulata / \* Sel [handwritten]"; "Hopedal, Labrador. / à renvoyer [handwritten]"; "Hagen [printed]". MCZ ENT 12408.

Description based on a single ♀ from "Terre-Neuve. (Coll. Selys.)". Currently *Somatochlora cingulata* (Selys, 1871).

**cynosura** Say (*Libellula*) 1840: 30. Holotype ♂. "Cord / cynosura / Say [handwritten in green label]"; "Cordulia cynosura Say \* / Hag. Syn. 139.15 / Harris Cat. no. 75 ♂ [handwritten]"; "75 [handwritten]"; "Randal[] / Stow. [handwritten]"; "HOLOTYPE [printed] / Libellula cynosura / Say 1839 [handwritten]". MCZ ENT 26466.

Description based on a single ♂ from "Massachusetts" sent to Say by Dr. Harris (Say 1840). Hagen (1873a: 270) remarked concerning the type: "No. 75. ♂, Lib. cynosura Say MSS. (Say's determ.). Randal, Stow, Mass. Say describes only the male from Massachusetts, sent to him by Dr. Harris. Of course the specimen in the collection is a typical one, and agrees with the type of *C. lateralis* Burm., now in my collection, as stated in the Synopsis and by Baron De Selys Longchamps, 1. c., p. 36." Calvert (1905b: 29) has noted that "Randal" "given by Selys.....is an error for "Randal[], Stow, Mass.," Randall being the collector's name." The holotype is partially eaten by dermestids, missing abdominal segments 6-10, and part of head and thorax. Currently *Epithea cynosura* (Say, 1840).

**elongata** Scudder (*Cordulia*) 1866: 218. Lectotype 1 ♂. "Epithea elongata. / Cord. elongata \* / Scudd. Proc. X. 218 [handwritten by Hagen]"; "Hermit Lake. / White Mts. / N.H. August / S.H. Scudder [handwritten]". MCZ ENT 27069.

Description based on 1 ♂ and 3 ♀ from "White Mts. August". We consider the statement by Walker (1925: 73): "Holotype ♂, Hermit Lake, Mt. Washington, N. H. (S. H. Scudder, Mus. Boston Soc. Nat. Hist.)" as lectotype designation. Currently *Somatochlora elongata* (Scudder, 1866).

**eremita** Scudder (*Cordulia*) 1866: 215. Syntypes 9 ♂♂, 1 ♀. 8 ♂: "New Hampshire. [printed] / Hermit Lake / Scudder 11 / 8 [handwritten]"; 1 ♂ with additional label: "Cordulia / albicincta / Br. [handwritten]". 1 ♂, 1 ♀: "New Hampshire. [printed] / Hermit Lake / Scudder 25 / 862 [handwritten]". MCZ ENT 12410.

Description based on 39 ♂♂ and 8 ♀♀ from "Hermit Lake, August." Currently considered a junior synonym of *Somatochlora albicincta* (Burmeister, 1839).

**errans** Calvert (*Dorocordulia*) 1909: 225. Holotype ♂: "Dorocordulia / errans Calv. [handwritten] / P.P. Calvert det. 1909 [printed] / AnCar Mus. VI p. [printed] 226 [handwritten] / Orig. Pl. VII, f. 131. / Type ♂ [handwritten on right margin]; "Chapada [printed]". MCZ ENT 12425.

Described from "Brazil, Chapada, presumably by H. H. Smith, 1 ♂ numbered 8. Museum of Comparative Zoology, Cambridge, Mass.". Currently *Navicordulia errans* (Calvert, 1909).

**filosa** Hagen (*Cordulia*) 1861: 136. Holotype ♂. "Subg. / Somatochlora / Sel. [handwritten]"; "C. filosa /\* Hag. [handwritten]"; "Epith. filosa / ♂ Hag. [handwritten in green label]"; "C. filosa Hagen / New Georgian Escher [handwritten]"; "41. [handwritten]"; "Hagen [printed]". MCZ ENT 12407.

Description based on 1 ♂ from "Georgia (Abbot)" and later (Hagen 1874a: 360) stated again: "I possess a male from Georgia communicated by Abbot to Mr. Escher Zolli[c]kofer." Currently *Somatochlora filosa* (Hagen, 1861).

*fletcheri* Williamson (*Williamsonia*) 1923: 96. Paratypes 1 ♂, 1 ♀. "PARATYPE [printed] / *W. fletcheri* / Williamson / No. 555 [handwritten]"; "Ottawa, Ont. [printed] / 23.v.1922 [handwritten] / J.H. McDunnough [printed]"; "*W. fletcheri* [handwritten]". MCZ ENT 27067.

Description based on 6 ♂♂ and 4 ♀♀ from "Mer Bleue, Ottawa, Ontario, Canada; May 25, 1908, and June 4, 1908, (two males, C. H. Young), May 23, 1922 (three males and four females, J. H. McDunnough) and May 29, 1922 (one male, A. W. Richardson), No. 555, in the Canadian National Collection, Ottawa; the male of May 29 the type, and a female of May 23 the allotype. The types are at Ottawa, and some of the specimens above enumerated have been given by Dr. McDunnough to Drs. Walker and Howe and myself". An interesting history on the recognition and naming of this species is given by White & O'Brien (2017). Currently *Williamsonia fletcheri* Williamson, 1923.

***hudsonica*** Hagen in Selys (*Epitheca*) 1871: 301 (67 reprint). Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Epith. hudsonica / ♂ Hag. [handwritten green label]"; "C. hudsonica / Hagen [handwritten]"; "Ft. Resolution / Kennicot 1861 [handwritten]"; "49. [handwritten]"; "Hagen [printed]". ♂<sub>2</sub>: "C. hudsonica / Hagen [handwritten]"; "Ft. Resolution / Hudson Territ. / Kennicot 1861 [handwritten]"; "Hagen [printed]" MCZ ENT 12415. ♀<sub>1</sub>: "Epith. hudsonica / ♀ Hag. [handwritten green label]"; "50 [handwritten]"; "Ft. Resolution / Hudson Territ. / Kennicot 1861 [handwritten]"; "Som. Kennedyi Wlk. / Det. by EM Walker, Sept'23. / Apparently this sp., vulvar lamina too long & pterostig. / ma too short for / *S. hudsonica* [handwritten]". MCZ ENT 12405.

Description based on an unspecified number of ♂♂ and ♀♀ from "Fort Résolution, territoire de la baie d'Hudson". Walker (1925: 180) erroneously referred to one of the ♂♂ as holotype, but no holotype was designated in the original description nor did he mark any of the specimens in the MCZ as "holotype." Considering that the type series is mixed including a ♀ of *S. kennedii* determined by Walker, one of the ♂ syntypes should be designated as lectotype to preserve application of the name. Currently *Somatochlora hudsonica* (Hagen in Selys, 1871).

***indistincta*** Morse (*Tetragoneuria*) 1895a: 210. Holotype ♀. "Tetragoneuria / indistincta / Morse [handwritten]"; Winchendon, Mass. / July 2, 1892. [printed]"; "C. spinigera / Sel. [handwritten]"; "spinigera Selys / det. by P.P. Calvert / June 1899 [handwritten]". MCZ ENT 52.

Description based on a single ♀ from "Winchendon, Mass., July 2." Currently considered a junior synonym of *Epitheca spinigera* (Selys, 1871).

***intermedia*** Selys (*Hemicordulia*) 1871: 255 (21 reprint). Holotype ♂. "Subg. / Hemicordulia / Sel. [handwritten]"; "Hemic. intermedia / ♂ Selys [handwritten]"; "C. intermedia / \* Hag. [handwritten]"; "Queensland / Australien / Thorey. 1866. [handwritten]"; "24 [handwritten]"; "Hagen [printed]". MCZ ENT 12416.

Description based on a ♂ from "Queen's Land, Australie. (Coll. Hagen.)". Currently *Hemicordulia intermedia* Selys, 1871.

***lateralis*** Burmeister (*Epophthalmia*) 1839: 847. Holotype ♂. "C. cynosura / Say / lateralis / \* Br. [handwritten by Hagen]"; "Chlorosoma / lateralis / Burm. \* / Philadelphia [handwritten]"; "Winthem." [printed]"; "Hagen [printed]". MCZ ENT 1875.

Description based on 1 ♂ "Von Philadelphia; in v. Winthem's Sammlung.". Currently considered a synonym of *Epitheca cynosura* (Say, 1840).

**lepida** Hagen in Selys (**Cordulia**) 1871: 264 (30 reprint). Syntypes 1♂, 3♀♀. ♂: "Cord. lepida / ♂ Hag. [handwritten on green label]"; "C. lepida / \* Hag. [handwritten]"; "Albany. / No. 60. [handwritten]"; "Uhler [handwritten]"; "91 [handwritten]"; "Hagen [printed]". ♀<sub>2</sub>: "Cord. lepida / ♀ Hag. [handwritten in green label]"; "Mass. [handwritten]"; "92 [handwritten]". ♀<sub>3</sub>: "Cord. lepida / ♀ Hag. [handwritten in green label]"; "N.J. [printed]"; "94 [handwritten]"; "Uhler [handwritten]". ♀<sub>4</sub>: "Cord. lepida / ♀ Hag. [handwritten on green label]"; "75 [handwritten]"; "Hagen [printed]". MCZ ENT 12404.

Description based on an unspecified number of ♂♂ and ♀♀ from "Massachusetts, - New York, Albany, - Maryland, - New Jersey. (Coll. Hagen, Uhler.)" Currently *Dorocordulia lepida* (Hagen in Selys, 1871).

**linearis** Hagen (**Cordulia**) 1861: 137. Holotype ♂. "C. linearis / \* Hag. / procera 54. [handwritten]"; "C. linearis. Hag. / St. Louis. Engelm. [handwritten]"; "Epith. linearis / ♂ Hag. [handwritten in green label]"; "40 [handwritten]"; "Hagen [printed]". MCZ ENT 8835.

Description based on 1 ♂ from "St. Louis". Currently *Somatochlora linearis* (Hagen, 1861).

**lintneri** Hagen in Selys (**Cordulia**) 1878a: 187 (9 reprint). Syntype ♀. "C. lintneri / \* Hag. [handwritten]"; "v.21 / 4♀ [handwritten]"; "2840 [printed]". MCZ ENT 14504.

Description based on ♂ and ♀ pair from "Les montagnes de l'Etat de New-York. Un couple au Musée d'Albany (Diagnose extraite d'une lettre du Dr Hagen)". Currently *Williamsonia lintneri* (Hagen in Selys, 1878).

**macrotona** Williamson (*Somatochlora*) 1909a: 78. Paratype ♂. ♀. "Somatochlora / macrotona / Cotype ♂ / ! E.B.W. Dec. 1908. [handwritten]"; "Duluth, / Min. [printed]"; "ex Illinois / St. Univ [handwritten]"; "PARATYPE [printed] / Somatochlora / macrotona / ♂ Williamson [handwritten]". MCZ ENT 15925.

Description based on 5 ♂♂ and 2 ♀♀ from "Duluth, Minn.". Holotype and allotype at the Bolter Collection, University of Illinois, Urbana. Currently a junior synonym of *Somatochlora franklini* (Selys, 1878).

**obsoleta** Say (**Libellula**) 1840: 28. Lectotype ♀. "Epitheca? obsoleta Say \* / Hag. Syn. 136.2. / Harris Cat. no 1. ♀ [handwritten]"; "Type [handwritten]"; "Epitheca ? obsoleta / ♀ Say [handwritten in green label]"; "Meadows (Milton) / 1820. [handwritten]". MCZ ENT 26467.

Say (1840: 28, 29) stated that this species "Inhabits Indiana and Massachusetts" and "A female specimen sent me for examination by Dr. Harris has the spots of the anal base of the wings more obvious." We consider the statement by Hagen (1873a: 269): "Say's type was a female specimen, sent for examination by Dr. Harris. As the only specimen in the collection is a female, and labeled u, it is doubtless the type seen by Say." as lectotype designation. Currently *Neurocordulia obsoleta* (Say, 1840).

**polysticta** Burmeister (**Libellula**) 1839: 856. Holotype ♂. "L. poly- / sticta. / Burm / New- / Orleans [handwritten]"; "Neurocordu - / lia / Sel [handwritten]"; "N. obsoleta / Say. [handwritten]"; "Winthem. [Printed]"; "Hagen [printed]". MCZ ENT 25966.

Description based on 1 ♂ "Von New-Orleans; in v. Winthem's Sammlung.". Calvert (1898b: 82) remarked concerning Burmeister's type "In Psyche, v, p. 371, 1890. Hagen wrote" the type of

Burmeister a male ..... in my collection. the type of Burmeister is immature and in bad condition". He mentions it also in Proc. Bost. Soc. Nat. Rist. xv, p. 269, 1873 ["Besides the specimen from Indiana described by Mr. Say, only three other specimens are known, all seen and studied by me. The female in Harris' collection; the type of Lib. polysticta Burm. (*Didymops obsoleta* Hag. Syn.) now in my collection, which is a male from New Orleans, and thirdly the female from Rock Island, Ill., described by Mr. Walsh as *Cordulia molesta*. The latter was destroyed by the Chicago fire, and was studied by me in 1868 at the author's home.']. The MCZ specimen is a very teneral ♂. Currently a synonym of *Neurocordulia obsoleta* (Say, 1840).

**princeps** Hagen (***Epitheca***) 1861: 134. Syntypes 2 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "Cord. princeps / Hag. [handwritten in green label]"; "E. princeps / Hag. [handwritten]"; "Pecos River [handwritten]"; "14 [handwritten]"; "Hagen [printed]". ♂<sub>2</sub>: "Cord. princeps / Hag. [handwritten in green label]"; "July / 19 [handwritten]"; "Pecos River [handwritten]"; "15. [handwritten]"; "Hagen [printed]". ♀<sub>3</sub>: "Cord. princeps / Hag. [handwritten in green label]"; "Aug / 7 [handwritten]"; "Pecos River [handwritten]"; "17. [handwritten]"; "Hagen [printed]". ♀<sub>4</sub>: "Cord. princeps / Hag. [handwritten in green label]"; "July / 7 [handwritten]"; "Pecos River [handwritten]"; "18. [handwritten]"; "Hagen [printed]". MCZ ENT 12400.

Description based on an unspecified number of ♂♂ and ♀♀ from "Pecos River, Western Texas; Georgia (Abbot); Maryland.". Currently *Epitheca princeps princeps* Hagen, 1861.

**selysii** Hagen in Selys (***Cordulia?***) 1878a: 189 (11 reprint). Syntypes 2 ♂♂, 2 ♀♀. "N. selysii / \* Hag [handwritten]"; "selysii [handwritten]"; "Georgia / Morrison, 1876 [printed]". MCZ ENT 12401.

Description based on an unspecified number of ♂♂ and ♀♀ from "Géorgie, Etats Unis". Currently *Helocordulia selysii* (Hagen in Selys, 1878).

**semiaquea** Burmeister (***Libellula***) 1839: 858. Holotype ♀. "semiaque / a Br. / Savannah [handwritten]"; "Winthem. [Printed]"; "Hagen [printed]". MCZ ENT 1876.

Description based on a single ♀ "Von Savannah; in v. Winthem's Sammlung". Currently *Epitheca semiaquea* (Burmeister, 1839).

**semicircularis** Selys (***Epitheca***) 1871: 295 (61 reprint). Holotype ♂. "Epith. semicircularis / ♂ Selys [handwritten in green label]"; "C. semicircu - / laris / \* Sel. [handwritten]"; "Gulf of Georgia [handwritten] / A. agassiz. [printed]"; "55 [handwritten]". MCZ ENT 12406.

Description based on 1 ♂ from "Golfe de Géorgie. Un mâle unique recueilli par M. A. Agassiz. (Mus. De Cambridge, Massach.)". Currently *Somatochlora semicircularis* (Selys, 1871).

**septentrionalis** Hagen (***Cordulia***) 1861: 139. Lectotype ♂, paralectotypes 1 ♂, 1 ♀. Lectotype ♂<sub>1</sub>: "C. septentrio- / nalis / \* Hag. [handwritten]"; "C. nov. spec. / Labrador [handwritten]"; "**coll. Somer.** [handwritten]"; "Hagen. [printed]". ♀<sub>2</sub>: "Labrador / Thy [handwritten]"; "Winthem. [printed]"; "Hagen. [printed]". ♂<sub>3</sub>: "C. septentrio- / nalis / Hag. [handwritten]"; "Labrador [handwritten]"; "Winthem. [printed]"; "Hagen. [printed]". MCZ ENT 8836.

Description based on an unspecified number of ♂♂ and ♀♀ from "Labrador.". Walker (1925: 163) in his monograph of the genus *Somatochlora* remarked: "Holotype ♂, "Labrador", coll. Sommer. Museum of Comparative Zoology, Cambridge, Mass." These data are consistent with ♂<sub>1</sub> noted above and we are considering Walker's statement quoted above as a lectotype designation.



There is also a ♀ labeled as *Epitheca septentrionalis* ["Saskatchuan / Hudson. / Kennicott 1860"] with MCZ ENT 12411 which is a pseudotype. Currently *Somatochlora septentrionalis* (Hagen, 1861).

**shurtleffii** Scudder (***Cordulia***) 1866: 217. Syntypes 3 ♂♂. Hermit Lake, August 11, 25. ♂<sub>1</sub>: "C. shurtleffii / Scudd. [handwritten]"; "Cordulia / shurtleffii / Scudd. /821 on left margin [handwritten] / B. S. N. H. on right margin [printed]"; "Cordulia shurtleffii \* / (C. bifurcata Hag. Syn.) / Scudd. Proc. X-217. [handwritten]"; "Hermit Lake / White Mts Aug 11 [handwritten]". ♂<sub>2</sub>: "813 [handwritten]"; "25 [handwritten]". ♂<sub>3</sub>: "Hermit Lake / White Mts Aug 11 [penciled]"; "829 [handwritten]"; "Cordulia / 3 [penciled]". MCZ ENT 27068.

Description based on "2 ♂♂. Hermit Lake, August 11, 25. ". However, there are three ♂♂ from Hermit Lake, one dated 25, missing head and abdominal segments 4-10, and two dated August 11, and one of the later might be a pseudotype. Currently *Cordulia shurtleffii* Scudder, 1866.

**spinosa** Hagen in Selys (***Cordulia***) 1878a: 188 (10 reprint). Syntypes 3 ♂♂. "C. spinosa / Hag. [handwritten]"; "Georgia / Morrison, 1876. [printed]". MCZ ENT 12403.

Description based on an unspecified number of ♂♂ and 1 ♀ from "Géorgie (Etats-Unis) par Morrison. (Collect. Selys.) – La femelle au Mus. Brit.". Currently *Epitheca spinosa* (Hagen in Selys, 1878).

**tau** Selys (***Hemicordulia***) 1871: 256 (22 reprint). Syntypes 2 ♂♂, 5 ♀♀. ♂<sub>1</sub>: "Hemic. Tau / ♂ Selys [handwritten]"; "C. tau / \* Sel. [handwritten]"; "Australia, / W. Edwards. [printed]"; "26. [handwritten]". ♂<sub>2</sub>: "Hemic. Tau / ♂ Selys [handwritten]"; "West Australia / Thorey. [handwritten]"; "25 [handwritten]"; "Hagen [printed]". ♀<sub>3</sub>: "Hemic. Tau / ♀ Selys [handwritten]"; "Nov Hollande, / u. Australien [handwritten]"; "30. [handwritten]"; "Hagen [printed]". ♀<sub>4</sub>: "Hemic. Tau / ♀ Selys [handwritten]"; "elongata / Hagen. / S.W. Austr. [handwritten]"; "20. [handwritten]"; "S.W. Aus- / tralien / Dr. Preiss [handwritten]"; "Hagen [printed]". ♀<sub>5</sub>: "Hemic. Tau / ♀ Selys [handwritten]"; "New Holland / Melbourne / Thorey. [handwritten]"; "27. [handwritten]"; "Hagen [printed]". ♀<sub>6</sub>: "Hemic. Tau / ♀ Selys [handwritten]"; "Fidji Isle / Thorey [handwritten]"; "33. [handwritten]"; "Hagen [printed]". MCZ ENT 12417.

Description based on an unspecified number of ♂♂ and ♀♀ from "Nouvelle-Hollande (Melbourne). (Coll. Selys.) Australie occidentale sud-ouest et nord-est; îles Fidji. (Coll. Hagen.)". Currently *Hemicordulia tau* Selys, 1871.

**uhleri** Selys (***Cordulia***) 1871: 274 (40 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Cord. Uhleri / ♂ Selys [handwritten in green label]"; "Cordulia Uhleri Selys \* / Harris Cat. No. 76 ♂ [handwritten]"; "Randal / Stow. [handwritten]"; "76. ♂ [handwritten]". ♀: "Cord. Uhleri / ♀ Selys [handwritten in green label]"; "N. uhleri / \* Hag [handwritten]"; "N. J. [printed]"; "90. [handwritten]"; "Hagen [printed]". MCZ ENT 12402.

Description based on "Un mâle de Randal, Maine (coll. Hurris [sic] Harris), Mus. de Boston); deux femelles (coll. Uhler) de New-Jersey." Calvert (1905b: 29) has noted that "Randal" "given by Selys.....is an error for "Randal[[]], Stow, Mass.," Randall being the collector's name." There is a supplementary ♂ in Say/Harris collection with this type number, which is not a type since Hagen (1873a: 270) states: "This male [Randal, Stow, Mass.], the only one known, and in very bad condition, has been in Baron De Selys Longchamps' hands, and besides this the very imperfect fragments of the female, from New Jersey, in Mr. P. R. Uhler's collection." Currently *Helocordulia uhleri* (Selys, 1871).

**viridiaenea** Uhler (**Cordulia**) 1858b: 31. Holotype ♀. "Cordulia / viridi=aenea / ♀ Uhler / Hakodadi. / Japan [handwritten]"; "C. viridianaenea / \* Uhler [handwritten]"; "Epith. viridiaenea / ♀ Uhler. [handwritten]"; "64. [handwritten]". MCZ ENT 1874.

Description based on a single ♀ from Hakodadi, Japan. The specimen is very teneral. Currently *Somatochlora viridiaenea* (Uhler, 1858).

**walkeri** Kennedy (*Somatochlora*) 1917: 229. Allotype ♀. "Epith. septentrionalis ♀ Hag. [handwritten in green label]"; "Saskat. Scudder. / F.C. Gray's Fund. [printed]"; "Somatochlora / walker / Allotype Kenn. [handwritten]". MCZ ENT 12412.

Kennedy stated "Allotype.- Female, a broken specimen in the collection of the Museum of Comparative Zoology. It is part of the Hagen collection and is labeled Epith. septentrionalis ♀ Hag. Saskat. Scudder, F.C. Gray's Fund." Segments 4 and 5 are missing, which give it the small size of *septentrionalis*." Currently a junior synonym of *Somatochlora sahlbergi* Trybom, 1889.

## GOMPHIDAE

**abbreviatus** Hagen in Selys (**Gomphus**) 1878b: 464 (59 reprint). Syntypes 1 ♂, 1 ♀. ♂: "G. abbreviatus / Hag. [handwritten]"; "Provincetown / Mass. July. Sanborn [handwritten]". ♀: "Orono / Main. [penciled] / 27. [handwritten]". MCZ ENT 12360.

Description based on an unspecified number of ♂♂ and ♀♀ from "Provincetown (Massachuset), en juillet, par M. Sanborn, un couple d'Orono (Maine)". No male from Orono was found at MCZ. Currently *Hylogomphus abbreviatus* (Hagen in Selys, 1878).

**albistylus** Hagen in Selys (**Gomphus**) 1878b: 460 (55 reprint). Holotype ♀. "G. albistylus / Hag. [handwritten]"; "Maine. / Packard Coll. [printed]"; "1088 [printed]". MCZ ENT 12357.

Description based on a single ♀ from Maine. Currently *Stylogomphus albistylus* (Hagen in Selys).

**alleni** Howe (**Gomphus**) 1922: 19. Holotype ♂. "Gomphus alleni / Howe. / Occ. paper's Boston Soc. Nat. Hist. 1922, vol 5.19. [handwritten]"; "TYPE OF [printed] Gomphus alleni [handwritten]"; "Squam Ln [printed] / VI 22 07 [handwritten] N H [printed]". MCZ ENT 27066.

Description based on a single ♂ from "Squam Lake, New Hampshire. Type in the entomological collection of the Boston Society of Natural History, Boston, Massachusetts". Currently a junior synonym of *Phanogomphus quadricolor* (Walsh, 1863).

**annicola** Walsh (**Gomphus**) 1862: 396. Syntypes 1 ♂, 1 ♀. ♂: "G. annicola / Walsh [handwritten by Hagen]"; "G. annicola Walsh ♂ \* / Rock Island 1863. [handwritten by Hagen]"; "122. [handwritten]". ♀: "G. annicola Walsh ♀ \* / Rock Island 1863. [handwritten by Hagen]"; "123. [handwritten]". MCZ ENT 12355.

Description based on 4 ♂♂ and 8 ♀♀. Walsh (1862: 361) stated "the following species have been taken by myself within four miles of the city of Rock Island. The species with an exclamation point (!) affixed have been kindly identified by Dr. Hagen, from duplicates which I sent him in 1860; but to prevent possible mistakes I have compared most of them with his diagnoses". The date on the labels, 1863, postdates Walsh's publication but these labels may have been added (and dated) by Hagen a year after Walsh's paper was published; we suspect that these two specimens are part of the original type series. Currently *Stylurus annicola* (Walsh, 1862).

**argentina** Hagen in Selys (**Cyclophylla**) 1878b: 665 (73 reprint). Lectotype ♀; paralectotype ♂. ♀: "Cyclophylla / argentina / Hag. [handwritten]"; "argentina [handwritten]"; "Cordova [handwritten] / Argent. [printed]"; "Phyllocycla / argentina (Hg in S) / Rev. J. Belle, 1970 [handwritten]". ♂: "argentina [handwritten]"; "Cordova / Argent Rep / Davis. [handwritten]"; "Rev. J. Belle / 1974 [handwritten]". MCZ ENT 12382.

Description based on 1 ♂ and 1 ♀ from "Cordova (République Argentine), par M. Davis". Belle designated the ♀ as lectotype in 1972 (Belle 1972: 230), when the ♂ was thought to be lost. The ♂ was found later, and Belle (1975), considering it to be the holotype [should be lectotype], suggested that the lectotype designation should be discarded. However, the ♂ was not designated as "holotype" in the original description, that treated ♂ and ♀ as syntypes, and therefore we consider Belle's 1972 designation of the ♀ lectotype as valid. Currently *Phyllocycla argentina* (Hagen in Selys, 1878).

**aspersus** Morse (**Ophiogomphus**) 1895a: 209. Syntypes 2 ♂♂, 3 ♀♀. ♂<sub>1</sub>: "aspersus / Morse. [handwritten]"; "Ophiogomphus / aspersus / Morse. / Type, Dec. 1894 [handwritten]"; "Wellesley, Mass. [printed] ♀ [handwritten] / S. F. Denton, Donor. [printed]". ♀<sub>2</sub>: "Ophiogomphus / aspersus / Morse. [handwritten]"; "Wellesley, Mass. [printed] / S. W. Denton, Collr. [handwritten]". ♀<sub>3</sub>: "Ophiogomphus / aspersus / Morse. / Type, Dec. 1894 [handwritten]"; "Wellesley, Mass. [printed] / S. W. Denton, Collr. [handwritten]". ♀<sub>4</sub>: "Ophiogomphus / aspersus / Morse. [handwritten]"; "S. W. Denton, Coll. / Wellesley, Mass. ♀ / Ind ♀ III ♀ Ohio ♀ [handwritten]; "Type [printed]". ♂<sub>5</sub>: "Ophiogomphus / aspersus / Morse. [handwritten]"; "S. W. Denton, Coll. / Wellesley, Mass. ♀ / Ind ♀ III ♀ Ohio ♀ [handwritten]; "Type [printed]". MCZ ENT 51.

Description based on 2 ♂♂ and 3 ♀♀, from "northeastern U. S. (probably Wellesley, Mass., but if not, then Ohio, Ind., or Ill.); one ♀ received from S. F. Denton, the remainder from S. W. Denton". ♀<sub>4</sub> and ♂<sub>5</sub> have red type labels but with no annotated number. Currently *Ophiogomphus aspersus* Morse, 1895.

**assimilis** Schneider (**Gomphus**) 1845: 115. Holotype ♀ ♂. "G. assimilis / Schn. [handwritten by Hagen]"; "assimilis / Schneider / Kleinasien [handwritten]"; "Kellemish [handwritten]"; "Löw. [handwritten on blue label]"; "Schneider S.E.Z., / 1845, vol. 6, p. 115. [handwritten]"; "Hagen [printed]". MCZ ENT 12340.

Description based on 1 "♂ von Kellemish". Abdominal segments 7-10 are glued to the blue Löw label. Currently *Onychogomphus assimilis* (Schneider, 1845).

**ater** Hagen in Selys (**Davidius?**) 1878b: 672 (80 reprint). Syntypes 1 ♂, 1 ♀. "G. ater / Hag. [handwritten by Hagen]"; "Jeddo / Japan / E. D. Morse [handwritten; both specimens]"; "Davidius nanus (Hagen-Selys) [handwritten] / Det. S. ASAHINA, 19 [printed] 76 [handwritten]". MCZ ENT 36153.

Description based on 1 ♂ and 1 ♀, "Ne connaissant qu'un couple unique", from "Jeddo (Japon). Coll. Hagen." Currently a junior synonym of *Davidius nanus assimilis* (Hagen, 1845).

**bifasciata** Hagen in Selys (**Gomphoides**) 1878b: 663 (71 reprint). Holotype ♀. "G. bifasciata / Hag. [handwritten by Hagen]"; "F. Sumichrast/ Isth. of Tehuantepec. [printed]"; "G. bifasciata Hagen / an suasa? [handwritten]"; "Gomphoides [printed] / bifasciata Hag.

[handwritten] / P. P. Calvert, det. 1905 [printed] / B.C.A. Neur., p. 15 [printed] 9 [handwritten] / Hagen's type ♀ [handwritten]". MCZ ENT 12377.

Description based on at least 1 ♀ from "Isthme de Tehuantepec (Mexique)." Donnelly (1979: 253) considered the description based on a single holotype ♀ and we agree with his decision. Currently *Phyllogomphoides bifasciatus* (Hagen in Selys, 1878).

**bistrigatus** Hagen in Selys (**Gomphus**) 1854a: 46 (27 reprint). Holotype? ♀. "G. bistrigatus / \*Hag. [handwritten by Hagen]"; "Ind. or. [handwritten]"; "Hagen [printed]". MCZ ENT 12331.

Description based on 1 ♀, "♀. Extrémité de l'abdomen manque", from "Inde (Musée de Vienne)". Specimen is missing abdominal segments 4-10. Currently *Scalmogomphus bistrigatus* (Hagen in Selys, 1854).

**bequaerti** Chao (*Nihonogomphus*) 1954: 409. Paratype 1 ♂. "Nihonogomphus / bequaerti Chao / PARATYPE ♂ [handwritten]"; "Foochow China / Kellogg coll. [printed]". MCZ ENT 28699.

Description based on the holotype ♂ (Dehua, Fujian, deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing) and MCZ paratype ♂. Currently *Nihonogomphus bequaerti* Chao, 1954.

**carolus** Needham (**Ophiogomphus**) 1897: 183. Syntypes 1 ♂, 1 ♀. ♂: "Ophiogomphus / carolus n sp. / Bred insectary / 19 May 1897 [handwritten]"; "J. G. Needham. [handwritten]". ♀: "carolus / Needham [handwritten]"; "J. G. Needham. [handwritten]"; "Oph. carolus ♀ / Bred. Ithaca Mar 18 X 89 [penciled]". MCZ ENT 12336.

Description based on an unspecified number of ♂♂ and ♀♀ from Ithaca, N. Y., based on "more than 70 bred specimens ...., a single ♀ in the Cornell University collection, and from five specimens captured in May by Mr. Chester Young and Mr. J. O. Martin". Currently *Ophiogomphus carolus* Needham, 1897.

**carolinus** Hagen (**Ophiogomphus**) 1885: 258. Holotype larval skin. "O. carolinensis / sis / Hag. [handwritten]"; "Ophiogomphus / carolinensis / Hag [handwritten]"; "O. carolinus Hag. [all handwritten by Hagen]"; "Kentucky / Bee Spring / May 74 / Sanborn. [handwritten]"; "Ophiogomphus rupinsulensis (Walsh) / Det. F. L. Carle 1982 [printed]"; "HOLOTYPE [printed] / Ophiogomphus / carolinus Hagen / See Carle 1982 [handwritten]". MCZ ENT 12335.

Hagen described the larva by supposition, from 1 ♀ "nympha skin, Bee Spring, Ky., May, 1874, by Mr. F. G. Sanborn". He stated "As now a pair of new species O. carolinus Hag. from North Carolina is discovered, the supposition that the larva may belong to this species is probable". There is a series of adults (1 ♂, 2 ♀♀) from N. Carolina, C.U. Lot 35, which are probably the ones referred to by Hagen. However, these do not represent types of O. carolinus, since only the larva was described. Carle (1982) determined that the holotype larva was conspecific with O. rupinsulensis and synonymized them, and that the adults were not conspecific with the larva and proposed the replacement name O. incurvatus to refer to that species. The three adult specimens from North Carolina became then paratypes of O. incurvatus – see under that species. Currently a junior synonym of *Ophiogomphus rupinsulensis* (Walsh, 1862).

**ceylonicus** Hagen in Selys (**Gomphus?**) 1878b: 455 (50 reprint). Holotype ♀. "G. ceylonicus / Hagen / Nietner [handwritten]"; "Ceylon / Nietner [handwritten]"; "Hagen [printed]". MCZ ENT 12366.

Description based on 1 ♀ from "Ceylan, à Rambodde, par M. Nietner". Currently *Heliogomphus ceylonicus* (Hagen in Selys, 1878).

*coluber* Williamson & Williamson (*Erpetogomphus*) 1930: 14. Paratype ♂. "Erpetogomphus / coluber / Wmson & Wmson [handwritten]"; "Paratype / Mexico / State of Baja Calif / San Jose de Comandu / J.H. Williamson / Oct 10, 1923 / Erp coluber ♂ [handwritten]"; "Gift of E. B. / Williamson [handwritten]". MCZ ENT 16307.

Description based on 31 ♂♂ from San José de Comandu, Baja California, Mexico; holotype at UMMZ (Garrison et al. 2003). Currently a junior synonym of *Erpetogomphus compositus* Hagen in Selys, 1858.

**costalis** Hagen in Selys (**Progomphus**) 1854a: 71 (52 reprint). Paralectotype ♂. "P. costalis / Hag. [handwritten by Hagen]"; "P. costalis / Sello [handwritten]"; "Gomphoides / costalis (Hg in S) / Det. J. Belle, 1968 [handwritten]"; "Mus. Berol."; "Hagen [both printed]". MCZ ENT 12373.

Description based on 2 ♂♂ from "Brésil. (Musée de Berlin)". Belle (1973: 223) selected the specimen at MNB as lectotype. Currently *Progomphus costalis* Hagen in Selys, 1854.

**compositus** Hagen in Selys (**Erpetogomphus**) 1858: 660 (400 reprint). Holotype ♀. "compositus [handwritten]"; "Aug / 15 [handwritten]"; "HOLOTYPE [printed] / Erpetogomphus compositus / Hagen 1857 ♀ [handwritten by Garrison]"; "Hagen [printed]". MCZ ENT 12332.

Description based on 1 ♀ from "Rivière Peros (Texas occidental), en juillet, d'après une femelle communiquée par la Smithsonian Institution." Currently *Erpetogomphus compositus* Hagen in Selys, 1858.

**consobrinus** Walsh (**Gomphus**) 1864: 242. Syntypes 1 ♂, 1 ♀. ♂: "G. consobrinus ♂ / \* Walsh. 1864. / Rock Island"; "G. consobrinus / Walsh / = externus [both handwritten by Hagen]". ♀: "July / 6 [handwritten]"; "Hagen [printed]". MCZ ENT 12353.

Description based on 3 ♂♂ and 2 ♀♀ from "within four miles of Rock Island, Illinois". Currently a junior synonym of *Gomphurus externus* (Hagen in Selys, 1858).

**crassus** Hagen in Selys (**Gomphus**) 1878b: 453 (48 reprint). Holotype ♀. "crassus / Hagen [handwritten]"; "G. crassus / Hag [handwritten by Hagen]"; "Kentucky / Bee Spring / June 74. Sanborn [handwritten by Hagen]"; "Hagen. [printed]". MCZ ENT 12362.

Description based on 1 ♀ from "Beespring (Kentucky), en juin, une femelle par M. Sanborn." Currently *Gomphurus crassus* (Hagen in Selys, 1878).

**crotalinus** Hagen in Selys (**Ophiogomphus**) 1854a: 40 (21 reprint). Lectotype ♂. "crotalinus [handwritten]"; "G. lineatus / Mexico [handwritten]"; "Mus. Berol. [printed]"; "Hagen [printed]"; "LECTOTYPE [printed] / Ophiogomphus crotalinus / Hagen 1853 / des. R. W. Garrison 1984 [handwritten]". MCZ ENT 12334.

Description based on 2 ♂♂ and 1 ♀ from "Mexico, d'après deux mâles jeunes et une femelle communiqués à M. Hagen par le Musée de Berlin". A lectotype ♂ was selected by Garrison (1994b: 229). Currently *Erpetogomphus crotalinus* (Hagen in Selys, 1854).

**designatus** Hagen in Selys (**Erpetogomphus**) 1858: 661 (401 reprint). Lectotype ♂, Paralectotypes 1 ♂, 1 ♀. Lectotype ♂: "July/ 16 [handwritten]"; "H. designatus / \* Hag [handwritten]"; "LECTOTYPE [printed] / Erpetogomphus designatus / Hagen ♂ / des. R. W. Garrison 1984 [handwritten]". Paralectotype ♂: "Erpet. designatus / ♂ / Pecos River [handwritten]"; "Pecos River / Uhler 1860 [handwritten]"; "July/ 6 [handwritten]"; "179 [handwritten]"; "PARALECTOTYPE [printed] / Erpetogomphus designatus / Hagen ♂ / des. R. W. Garrison 1984 [handwritten]". Paralectotype ♀: "designatus [handwritten]"; "ERPETO GOMPHUS / DESIGNATUS HAGEN / P. P. Calvert, det. [printed] 1905 [handwritten] / B. C. A. Neur., p. [printed] 166 [handwritten]"; "July/ 15 [handwritten]"; "Hagen [printed]"; "PARALECTOTYPE [printed] / Erpetogomphus designatus / Hagen ♀ / des. R. W. Garrison 1984 [handwritten]". MCZ ENT 1864.

Although the type locality for *E. designatus* and many other species collected by Capt. John Pope of the Smithsonian Institution and described by Hagen was stated to be the Pecos River in western Texas (Garrison 1994b: 220) it is probably restricted to the vicinity of Roswell, Chaves Co., New Mexico according to Needham and Cockerell (1903: 138-139), based on Scudder and Cockerell (1902) as follows: "In Proc. Davenport Acad. Sci. vol. 9 (1902), p. 51, it is inferred that Pope collected his material at very different localities above the river, since he obtained both *Melanoplus bivittatus* and *M. differentialis*, which inhabit different life-zones. However, in 1902 it was observed that these two grasshoppers do actually occur together at Roswell. As it is not very likely that their ranges overlap very much, it thus seems likely that Pope's collections, if all from one place, were from the vicinity of the present town of Roswell, rather than from Lat. 32° (the present boundary between New Mexico and Texas), as Hagen indicates. In all probability, however, the collections were made in several places." A lectotype ♂ was selected by Garrison (1994b: 220-221). Currently *Erpetogomphus designatus* Hagen in Selys, 1858.

**diphylla** Selys (**Cyclophylla**) 1854a: 76 (57 reprint). Syntype ♂. "C. diphylla / \* Sel [handwritten by Hagen]"; "Gomphoides / Diphylla / bresil [handwritten]"; "cl. / 1. [handwritten]"; "Hagen. [printed]". MCZ ENT 12379.

Description based on unspecified number of ♂♂ from "Bresil. (Collect. Selys, Hagen.)". The syntype is in poor condition and consists of the pterothorax, head, right fore wing and left hind wing. The latter portion of the abdomen has been glued to the "bresil" locality label. Currently *Phyllocycla diphylla* (Selys, 1854).

**externus** Hagen in Selys (**Gomphus**) 1858: 671 (411 reprint). Syntypes 1 ♂, 1 ♀. ♂: "G. externus / Hag. [handwritten by Hagen]"; "July / 5 [handwritten]". ♀: "July / 6 [handwritten]"; "Hagen. [printed]". MCZ ENT 12352.

Description based on 1 ♂ and 1 ♀ from "La rivière Péros (Texas occidental), on juillet, d'après un couple communiqué par la Smithsonian Institution". Currently *Gomphurus externus* (Hagen in Selys, 1858).

**fallax** Selys (**Ictinus**) 1854a: 91 (72 reprint). Holotype? ♂. "I. fallax / \* Sel. [handwritten by Hagen]"; "Rapax var? / Ramb. [handwritten] / I. pertinax [penciled]"; "Schanghai [handwritten]"; "fallax [handwritten]"; "Hagen. [printed]". MCZ ENT 12387.

Description based on 1 ♂ from "Shanghai (Chine), Musée de Copenhague" and with the added note: "M. Hagen ne croit pas qu'il soit distinct de l' *I. rapax*" and again (Selys 1858: 540: 280

reprint) "Shangai (Chine), d'apres un mâle du Musée de Copenhague." With the following comment: "M. Hagen rapport le *fallax* au [*Ictinogomphus*] *decoratus*. Je regrette de ne pouvoir me ranger de son avis." The name is most likely a junior synonym of *Ictinogomphus rapax* (Rambur, 1842) or, less likely, a junior synonym of *I. decoratus* Selys 1854 (the known distribution of the latter species is further to the south of the type locality Shanghai). A search of the type collection database (<http://www.daim.snm.ku.dk/search-in-types>) in the Natural History Museum of Denmark does not list a type for this name. NOTE: *Ictinogomphus pertinax* Hagen in Selys, 1854, has generally been considered a junior synonym of the older name *I. rapax* (Rambur, 1842) although Katatani (2017) considered both to be distinct species. His evidence does not seem to be convincing and he did not examine types of both names nor did he mention *I. fallax* in his paper.

**flavipes** Charpentier (**Aeschna**) 1825: 24. Syntypes 1 ♂, 1 ♀. ♂: "G. flavipes / Charp. [handwritten by Hagen]"; "flavipes, Charp. [handwritten]"; "Charp. [intricate black-bordered handwritten label]"; "Brieg / Charp. [handwritten]"; "Hagen. [printed]". ♀: "Charp. [intricate black-bordered handwritten label]"; "Brieg / Charp. [handwritten]"; "Hagen. [printed]". MCZ ENT 12365.

According to the original description, described from "Silesia." Currently *Stylurus flavipes* (Charpentier, 1825).

**flexuosus** Schneider (**Gomphus**) 1845: 114. Holotype ♂. "O. flexuosus / Schn. [handwritten by Hagen]"; "Löw. [handwritten]"; "Kellemisch [handwritten]"; "Hagen. [printed]." MCZ ENT 12329.

Description based on 1 "♂ von Kellemisch". Currently *Onychogomphus flexuosus* (Schneider, 1845).

**fluvialis** Walsh (**Gomphus**) 1862: 394. Syntypes 1 ♂, 1 ♀. ♂: "G. notatus / Rbr [header label handwritten by Hagen]"; "G. fluvialis Walsh ♂ \* / Rock Island 1863. [handwritten by Hagen]"; "811 [handwritten]"; "Hagen. [printed]". ♀: "G. fluvialis Walsh ♀ \* / Rock Island 1863. [handwritten by Hagen]"; "611 [handwritten]"; "Hagen. [printed]". MCZ ENT 12354.

Description based on 3 ♂♂ and 6 ♀♀ from "the Mississippi river in North Illinois and the Ohio River in South Illinois". As with *G. amnicola* noted above, the date on the labels, 1863, postdates Walsh's publication but these labels may have been added (and dated) by Hagen a year after Walsh's paper was published; we suspect that these two specimens are part of the original type series. Currently a junior synonym of *Stylurus notatus* (Rambur, 1842).

**fuliginosus** Hagen in Selys (**Gomphoides**) 1854a: 74 (55 reprint). Holotype ♀. "G. fuliginosa / \* Hag. [handwritten by Hagen]"; "fuliginosa [handwritten]"; "Essequibo / Schmidt [handwritten]"; "Hagen. [printed]"; "Phyllogomphoides / fuliginosus (Hagen / in Selys, 1854) comb. / nov. Holotype Rev. / J. Belle, 1984 [handwritten]". MCZ ENT 12378.

Description based 1 ♀ from "Essequibo, Chili [error pro Guyana, see Belle (1984: 84)] (Musée de Copenhague)". Abdominal segments 9-10 have been glued to the Essequibo locality label. Currently *Phyllogomphoides fuliginosus* (Hagen in Selys, 1854).

**furcifer** Hagen in Selys (**Gomphus**) 1878b: 458 (53 reprint). Syntypes 2 ♂, 1 ♀. ♂<sub>1</sub>: "G. furcifer / \* Hag [handwritten by Hagen]"; "♂ / Gomphus / villosipes / Selys / Natick Mass. / June 4. 1864 [handwritten on round label]". ♂<sub>2</sub>: "G. (villosipes) / Syn p. 45 Hag. / furcifer



Hag. [handwritten]". ♀:"280 / Fr. A. J. Cook. [handwritten]"; "Gomphus (Gomphus) probably / quadricolor Walsh / det. R.W. Garrison ♀ / 1980 [handwritten]". MCZ ENT 12347.

Description based on 2 ♂♂ and 1 ♀ "le mâle de Natick (Massachusetts); la femelle de Lansing (Michigan)". Hagen had previously (Hagen, 1877: 45) identified these same specimens as *Gomphus villosipes* Selys, 1854. The ♀ likely belongs to *Phanogomphus quadricolor* Walsh, 1864. Currently *Arigomphus furcifer* (Hagen in Selys, 1878).

*[gladiata* Hagen in Selys (*Cyclophylla*) 1854a: 77 (58 reprint). Holotype ♂. Not at MCZ.

Hagen (in Selys 1854a) described this species based on 1 ♂ from "Pernambuco, Brésil" in his collection. According to Belle (1988a: 91) a ♂ with the same locality label and matching exactly its original description and later redescription (Hagen in Selys 1858: 479, 480 (219, 220 sep.), pl. 12 figs. 3) is deposited at Selys collection, RBINS, and he suspected that the identification labels had been accidentally switched after the illustrations for its redescription had been completed. Belle (1988a) designated this same ♂ as neotype of *Cyclophylla gladiata* Hagen in Selys. Since the specimen represents the holotype, we consider that its designation as neotype, which should be applied only to stabilize a name when a primary type is lost by designating a different specimen as type, is unnecessary and invalid. Currently *Phyllocyca gladiata* (Hagen in Selys, 1854.)

**gracilis** Hagen in Selys (**Progomphus**) 1854a: 70 (51 reprint). Lectotype ♂, paralectotypes 8 ♂. Lectotype ♂: "G. gracilis Hag / Brasilien / Beschke / Neu Freiburg [handwritten]"; "Neu Freiburg. / Rio Beschke. [handwritten]"; "Hagen. [printed]"; "Gomphoides / gracilis (Hag. in S) / Lectotype / Def. J. Belle, 1968 [handwritten]". Paralectotypes: "P. gracilis / \* Hag. [handwritten]"; "Neu Freiburg / Rio Beschke [handwritten]"; "Hagen. [printed]". MCZ ENT 12372.

Description based on unspecified number of ♂♂ and ♀♀ from "Nouvelle-Fribourg, Bresil. (Collect. Hagen, Selys)". Belle (1973: 210) designated a lectotype from the type series at MCZ. Currently *Progomphus gracilis* Hagen in Selys, 1854.

**graslinellus** Walsh (**Gomphus**) 1862: 394. Syntypes 1 ♂, 2 ♀♀. ♂: "G. graslinellus / Walsh. [handwritten by Hagen]"; "G. graslinellus Walsh ♂ \* / Rock Island 1863. [handwritten]"; "126 [handwritten]"; "Hagen. [printed]". ♀♀: same labels except for "125 [handwritten]" and "127 [handwritten]" respectively. MCZ ENT 12350.

Description based on 4 ♂♂ and 7 ♀♀ from Coal Valley Creek in Rock Island County, and Des Plains and Chicago Rivers in Cook County. As noted above for *G. amnicola* and *G. fluvialis* the date on the labels, 1863, postdates Walsh's publication but these labels may have been added (and dated) by Hagen a year after Walsh's paper was published; we suspect that these two specimens are part of the original type series. Currently *Phanogomphus graslinellus* (Walsh, 1862).

**hamata** Charpentier (**Aeschna**) 1825: 25. Syntype? ♀. "O. forcipatus / L. [handwritten by Hagen]"; "Charp. [intricate black-bordered handwritten label]"; "Brieg / Charp. [handwritten]"; "Hagen. [printed]". ♀: "Charp. [intricate black-bordered handwritten label]"; "Lüne- / burg. / Heyer. [handwritten]"; "Hagen. [printed]". MCZ ENT 12328.

According to the original description, described from "Germania, Suecia". A ♂ (MCZ ENT 12328) carries the following labels: "O. forcipatus / L. [handwritten by Hagen]"; "Charp. [intricate black-

bordered handwritten label)]; "Brieg / Charp. [handwritten]"; "Hagen. [printed]" and does not agree with the type locality. According to Seehausen (*pers. comm.*) there is a possible ♂ syntype labeled "hamata / Imhoff" at RBINS. Currently a junior synonym of *Onychogomphus forcipatus* (Linnaeus, 1758).

*hamatus* Williamson (*Agriogomphus*) 1918: 4. Paratype ♂. "agriogomphus / hamatus / n. sp. [handwritten]"; "Fundacion / Colombia / J.H. & E.B. Williamson / Jan 14, 1917 [handwritten]". MCZ ENT 12371.

Description based on 13 ♂♂ and 9 ♀♀ from Fundación, Colombia; the lectotype is deposited at UMMZ (Garrison et al. 2003). Currently *Archaeogomphus hamatus* (Williamson, 1918).

**hybridus** Williamson (**Gomphus**) 1902: 47. Syntypes 1 ♂, 1 ♀. ♂: "Hybridus ♂ / type / Nashville / Tenn. / 6.2.01. / E.B. Williamson [handwritten]". ♀: "Hybridus ♀ / type / Nashville / Tenn. / 6.7.01. [handwritten]"; "E.B. Williamson". MCZ ENT 12361.

Description based on 15 ♂♂ and 17 ♀♀ from Nashville, Tennessee, below the State Penitentiary (May 12 - June 7, 1901), Cumberland River, above mouth of Stone River (May 16, 1901), and Stone River, near Cumberland River (May 16, 1901). Williamson stated (1902: 49): "Unfortunately much of this material is so teneral as to be of little or no value, and for this reason doubtless some variations have been overlooked. Exuviae of the species were collected. Specimens of these have been sent to Prof. Needham. The types of the species are placed in the Museum of Comparative Zoology, Cambridge, Mass.". Currently *Gomphurus hybridus* (Williamson, 1902).

*incurvatus* Carle (*Ophiogomphus*) 1982: 335. Paratypes 1 ♂, 2 ♀♀. "Ophiogomphus incurvatus Carle / Det. F. L. Carle 1982 PARATYPE [printed]"; "N. Carolina, / C.U. Lot 35. [printed]"; "PARATYPE [printed]".

Carle (1982) proposed the name *O. incurvatus* as replacement name for the adults earlier associated with the name *O. carolinus* Hagen (a junior synonym of *O. rupinsulensis* Walsh 1862). See under *O. carolinus*. Currently *Ophiogomphus incurvatus* Carle, 1982.

**integer** Hagen in Selys (**Progomphus**) 1878b: 659 (67 reprint). Lectotype ♂, paralectotype ♀. Lectotype ♂: "P. integer / Hag [handwritten]"; "Pr. integer Hag. / Cuba / Poey 1864 [handwritten]"; "48 [handwritten]"; "♂ [handwritten]"; "Hagen. [printed]". Paralectotype ♀: "Cuba / Poey. 1864. [handwritten]"; "♀ [handwritten]". MCZ ENT 12375.

Description based on 1 ♂ and 1 ♀ from "Cuba, un couple par le professeur Poey". We consider the statement by Belle (1973: 250) "The holotype, male, and allotype, female, of this species are in the Museum of Comparative Zoology at Cambridge, Mass., and both bear the type number 12375 (Lawrence 1973, personal communication)" as lectotype designation. Currently *Progomphus integer* Hagen in Selys, 1878.

**intricatus** Hagen in Selys (**Gomphus**) 1858: 678 (418 reprint). Holotype ♂. "G. intricatus / Hag. [handwritten]"; "June / 2 [handwritten]"; "Hagen. [printed]". MCZ ENT 12349.

Description based on 1 ♂ from "Rivière Péros, en juillet (Texas occidental) d'après un mâle communiqué par la Smithsonian Institution". Even though the date given in the label does not match the one mentioned in the description, the ♂ measurements agree with those given in the original description. Currently *Stylurus intricatus* (Hagen in Selys, 1858).

***kurilis*** Hagen in Selys (***Gomphus***) 1858: 342 (152 reprint). Holotype ♂. "G. kurilis / \* Hag. [handwritten by Hagen]"; "Kurilische / Inseln [handwritten]"; "Hagen. [printed]". MCZ ENT 12346.

Description based on 1 ♂ from "Iles Kuriles. Cette espèce ne nous est connue que par un mâle, en assez mauvais état, communiqué à M. Hagen, par le Musée de St.-Pétersbourg". Gloyd (1941: 131) considered the type locality was in error, and that the type specimens most likely originated from California or Nevada, and not from the Kurile Islands. Currently *Phanogomphus kurilis* (Hagen in Selys, 1858).

[*lampropeltis* Kennedy (*Erpetogomphus*) 1918b: 297. Pseudotypes 2 ♂♂. "Erpetogomphus / lampropeltis / cotype Kennedy [handwritten]"; "cotype [handwritten]"; "Fillmore Cal. / Sespe Riv. / C.H. Kennedy coll. / Aug 7 '15 [handwritten]". MCZ ENT 12333.

Description based on a pair from Sespe Creek, Fillmore, Ventura County, California. Kennedy (1918b: 297) specifically designated a ♂ holotype and ♀ paratype at the USNM ("Holotype.-Male caught by the writer on Sespe Creek, Fillmore, Ventura Co., California, Aug. 7, 1915, and now in the U. S. National Museum. Paratype.-Female not in copula with the holotype but with the same data, now in the U. S. National Museum."). Although other specimens were collected at the type locality, none was mentioned in the original description and these two specimens at the MCZ cannot be considered types. Currently *Erpetogomphus lampropeltis lampropeltis* Kennedy, 1918.]

*laurae* Williamson (*Stylurus*) 1932: 3. Paratype ♂. "Stylurus / laurae / Greenville Co / S. Car. La Saluda / River ♂ paratype / E. B. Williamson / Oct 5, 1931 [handwritten]". MCZ ENT 9110.

Description based on 56 ♂♂ and 10 ♀♀ from various localities, including 2 ♂♂ from North Saluda River (Saluda-Congaree-Santee River Systems), Greenville County, South Carolina, on either side of the bridge on U. S. Road 25, October 5 and 6, 1931 (the Oct 5 ♂ designated as holotype, is deposited at UMMZ; Garrison et al. 2003:47). Currently *Stylurus laurae* Williamson, 1932.

*lineatifrons* Calvert (*Gomphus*) 1921: 222. Paratypes 2 ♀♀. ♀<sub>1</sub>: "Michig. / Lansing. Cook"; "Gomphus ♀ / lineatifrons Calv. / P. P. Calvert det. [printed] 1921 [handwritten] / TrAmEntSoc. [printed] XLVII [handwritten] / p. 222 [handwritten] / PARATYPE [handwritten]". ♀<sub>2</sub>: "Pennington / Gap, 6.22 Va [printed]"; "Gomphus ♀ / lineatifrons Calv. / P. P. Calvert det. [printed] 1921 [handwritten] / TrAmEntSoc. [printed] XLVII [handwritten] / p. 222 [handwritten] / PARATYPE [handwritten]". MCZ ENT 14467.

Description based on a ♀ holotype at ANSP, and 12 paratypes from various localities, including 2 ♀♀ at MCZ from "Michigan Lansing, Cook" and "Pennington Gap, Va. 6.22" (Calvert 1921: 227). Currently *Gomphurus lineatifrons* (Calvert, 1921).

***mainensis*** Packard in Walsh (***Ophiogomphus***) 1864: 255. Holotype ♀. "O. mainensis / Walsh. [handwritten]"; "O. mainensis / Walsh. [handwritten] / Maine. / Packard Coll. [printed]"; "Hagen. [printed]". MCZ ENT 1865.

Description based on a single ♀ from the northern part of the State of Maine. Donnelly (1987: 209) described the male of this species, and his "neallotype" (a pseudotype) ♂ is also deposited at MCZ. Currently *Ophiogomphus mainensis* Packard in Walsh, 1863.

**militaris** Hagen in Selys (**Gomphus**) 1858: 675 (416 reprint). Syntypes 1 ♂, 2 ♀♀. ♂: "G. militaris / Hag. [handwritten by Hagen]"; "Aug / 14 [handwritten]"; "Hagen. [printed]". ♀<sub>1</sub>: "Pecos River. / Pope / July / 5 [handwritten]"; "Hagen. [printed]". ♀<sub>2</sub>: "G. militaris (juillet [?]) / Pecos River [handwritten]"; "July / 5 [handwritten]"; "Hagen. [printed]". MCZ ENT 12348.

Description based on an unspecified number of ♂♂ and ♀♀ from "La Rivière Péros, en juillet, (Texas occidental) d'après plusieurs exemplaires communiqués par la Smithsonian Institution." Currently *Phanogomphus militaris* (Hagen in Selys, 1858).

**molestus** Hagen in Selys (**Hemigomphus**) 1854a: 67 (48 reprint). Syntypes 2 ♀♀. ♀<sub>1</sub>: "N. molestus / \* Hag. [handwritten by Hagen]"; "Quillota [handwritten]". ♀<sub>2</sub>: "Gomphus ♀ / molestus Hagen [handwritten]"; "Hagen. [printed]". MCZ ENT 12369.

Description based on 1 ♂ and 3 ♀♀ from "Quillota, Chili. (Collect. Hagen.)" Selys (1858: 445-446 [185-186 reprint]) added the following concerning this species: "Patrie. Chili. Decrit d'après un exemplaire du Musée de Berlin pris par Sellow a Salto grande, et trois femelles de Quillota, communiqués par M. Hagen, prises par l'expédition de la Galathea (Musée de Copenhague)." Currently *Neogomphus molestus* (Hagen in Selys, 1854).

[**montanus** Selys (*Herpetogomphus*) 1878b: 432 (27 reprint). Pseudotype ♂. "Yellowstone [handwritten] / U. S. [printed] / Hayden 1872 [handwritten]"; "Hagen. [printed]". MCZ ENT 12337.

Description based on a single ♂ from "Yellow Town (territoire de Montana), par M. Thomas." Selys further added: "Yellow Town est une localité plus septentrionale que le Colorado." The locality and collector from the labels do not agree with those given by Selys in its description and Hagen (1874b: 591-592) stated for his description of *Ophiogomphus severus*: "(Three males and two females from Colorado, in alcohol; a single male from Yellowstone, preserved dry,....)" and he (Hagen 1875: 918) further added concerning a redescription of *O. severus*: "HAB.-Colorado (Mr. James Ridings); foothills and plains of Colorado, end of September (Lieutenant Carpenter); Fort Garland, Colo., June 27; South Montana and Yellowstone (Mr. C. Thomas)." This specimen was incorrectly labeled as type of *H. montanus*; it actually represents a syntype of *Ophiogomphus severus*. See under *O. severus*. Currently a junior synonym of *Ophiogomphus severus* Hagen, 1874.]

**naevius** Hagen in Selys (**Gomphus**) 1878b: 462 (57 reprint). Syntypes 2 ♀♀. ♀<sub>1</sub>: "G. naevius / Hagen [handwritten by Hagen]"; "Penn. [handwritten]"; "York Co / Pa. / Uhler [handwritten]"; ♀<sub>2</sub>: "Berks Co. / Pa. / H. Strecker [handwritten]". MCZ ENT 25964.

Description based on 2 ♀♀ from "Comtes de Berks et de York (Pensylvanie)". Both specimens feneral or nearly so. Currently a junior synonym of *Stylogomphus albistylus* (Hagen in Selys, 1878).

**natrix** Williamson & Williamson (*Erpetogomphus*) 1930: 19. Paratype ♂. "Erpetogomphus / natrix / Wllmson & Wllmson [handwritten]"; "Mexico / State of Baja California / Purissima / J.H. Williamson / Oct. 12, 1923 / E. natrix ♂ paratype [handwritten]"; "gift of E. B. / Williamson [handwritten]". MCZ ENT 16308.

Description based on 21 ♂♂ and 2 ♀♀ from three localities in Baja California, Mexico, including several ♂♂ from Oct. 12 and 13, 1923 from Purissima; holotype is deposited at UMMZ (Garrison et al. 2003: 47). Currently *Erpetogomphus lampropeltis natrix* Williamson & Williamson, 1930.

**nexans** Calvert (**Diaphlebia**) 1903c: 184. Lectotype ♂, paralectotype ♂. Lectotype ♂: "Diaphlebia / nexans Calv. Cotype / Original of figs. 9 and / 12, Ent. News XIV, pl. viii [handwritten]" / P. P. Calvert det. [printed] / 1903 [handwritten, Fig. 3]"; "Chapada [printed]"; "squalidus [handwritten]"; "MCZ [handwritten]"; "Lectotype / Det. J. Belle, 1976 [handwritten]". Paralectotype ♂: "Diaphlebia / nexans Calv. cotype / Original of fig. 5, pl. / viii, Ent. News xiv. [handwritten]" / P. P. Calvert det. [printed] / 1903 [handwritten]"; "Chapada [printed]"; "squalidus [handwritten]"; "MCZ [handwritten]"; "Dec. [printed]". MCZ ENT 12385.

According to Calvert (1903c), described from "Chapada, Brazil, two males, probably by H. H. Smith, one labelled December (sup. apps. lost), in the Museum of Comparative Zoology, Cambridge, Mass." Belle (1977: 115) designated one of the ♂♂ as lectotype. Currently *Diaphlebia nexans* Calvert, 1903.

**nietneri** Hagen in Selys (**Gomphus?**) 1878b: 449 (44 reprint). Holotype ♂. "G. Nietneri / \* Hag. [handwritten by Hagen]"; "Ceylon / Nietner. [handwritten by Hagen]"; "Hagen. [printed]". MCZ ENT 12367.

Description based on a single ♂ from "Rambodde (Ceylon), par M. Nietner". Currently *Helio-gomphus nietneri* (Hagen in Selys, 1878).

**occidentis** Hagen (**Ophiogomphus**) 1885: 259. Lectotype ♂. "O. occidentis / Hag. / Wash. Terr. raised [handwritten by Hagen]"; "occidentis / Hagen [handwritten]"; "Umatilla, Or. / June 25, '82. [printed]"; "Hagen. [printed]". MCZ ENT 12338.

Hagen described this species, indicating that it had been raised, based on 10 exuviae from Umatilla, Oregon, June 25th, Big Bend of Yakima River, Washington Territory, July 19, 1882, by Mr. S. Henshaw, and one full grown larva from Washington Territory opposite Umatilla, June 27, 1882, by H. Hagen. Needham (1899: 236) illustrated the adult of the bred specimen in Hagen's collection and stated that it "must be considered the type, since its cast skin is described"; we consider Needham's statement as a lectotype designation. Currently *Ophiogomphus occidentis* Hagen, 1885.

**occultus** Selys (**Platygomphus?**) 1878b: 440 (35 reprint). Syntype ♀. "Stylurus sp ? [handwritten]"; "P. occultus / Sel. / chinensis Hag [handwritten]"; "Tien tsin Jany 1858 / China [handwritten]"; "Hagen. [printed]". MCZ ENT 12368.

Description based on 2 ♀♀ from "Kiang-si (Chine) une femelle unique par M. l'abbé David. (Musée de Paris.) - Tientsien, une femelle par le baron Osten Sacken. (Coll. Hagen.)". Currently *Stylurus occultus* Selys, 1878.

[**paludosus** Hagen in Selys (**Epigomphus**) 1854a: 60 (41 reprint). Pseudotype ♂. "E. paludosus / \* Hag. [handwritten by Hagen]"; "Epigomphus / paludosus ? [handwritten]"; "♂ [printed]"; "54 [printed]"; "Hagen. [printed]". MCZ ENT 12370.

Description based on 1 ♀ from "Brésil. (Collect. Hagen.)". According to Belle (1988b: 136) the holotype ♀ is deposited at RBINS. The ♂ at MCZ does not represent a type. Currently *Epigomphus paludosus* Hagen in Selys, 1854.]

**pictus** Hagen in Selys (**Ceratogomphus**) 1854a: 42 (23 reprint). Syntype ♀. "C. pictus / Hag. [handwritten by Hagen]"; "C. pictus nov. / Cap. b[?]. sp. [handwritten]"; "Mus. Berol [printed]"; "Hagen. [printed]". MCZ ENT 12342.

Description based on a pair from "Cap de Bonne-Espérance. (Musée de Berlin.)" Selys (1858: 129 [69 reprint] in his redescription of this species states: "Patrie. Le Cap de Bonne Espérance, d'après un mâle et une femelle du Musée de Berlin." Currently *Ceratogomphus pictus* Hagen in Selys, 1854.

**pilipes** Hagen in Selys (**Gomphus**) 1858: 408 (148 reprint). Lectotype ♂. "G. pilipes / Sel. [handwritten by Hagen]"; "G. pallidus / Rbr. [handwritten]"; "Gomphus pilipes / ♂ à vous Hagen [handwritten]"; "New Orleans. [handwritten]". MCZ ENT 12359.

Description based on 1 ♂ "Le sud des États-Unis: la Nouvelle-Orléans, d'après un mâle de la collection de M. Hagen" and 1 ♀ "La femelle est décrite d'après un exemplaire du Musée de Francfort.". We consider Williamson's (1914: 53) statement: "Hagen 3, - a male, with abd. appendages broken off, labelled "New Orleans" and "G. pallidus Rbr. " "Gomphus pilipes Hagen, ♂ a vous" (on this labeled is glued the thoracic sclerite from between the front wings). "G. pilipes Sel. " This is the type of *pilipes*" as a lectotype designation. Currently a junior synonym of *Ari-gomphus pallidus* (Rambur, 1842).

**praecox** Hagen in Selys (**Ictinus**) 1854a: 89 (70 reprint). Holotype ♂. "I. praecox / \* Hag. [handwritten]"; "Pondichery [handwritten]"; "rapax [handwritten]". MCZ ENT 12386.

Description based on 1 ♂ from "Pondichéry. (Musée de Copenhague.)" and noted by Selys (1858: 586 [276 reprint]: "**Patrie**. Pondichéry, d'après le mâle type du Musée de Copenhague." Currently a junior synonym of *Ictinogomphus rapax* (Rambur, 1842). NOTE: as stated above under *fallax* Selys, *Ictinogomphus pertinax* Hagen in Selys, 1854, has generally been considered a junior synonym of the older name *I. rapax* (Rambur, 1842) although Katatani (2017) considered both to be distinct species. His evidence does not seem to be convincing and he did not examine types of both names.

*producta* race? *Gomphoides caraïba* Selys (*Aphylla*) 1854a: 79 (60 reprint). Paralectotype ♀. "Aphylla / caraïba / Selys. [handwritten]"; "Cuba, Otto [handwritten]"; "Mus. Berol. [printed]"; "Hagen [printed]". MCZ ENT 12384.

Description based on an unspecified number of specimens from "Cuba (Musée de Berlin)". Belle (1970: 53) designated a ♂ from Bahia, Brazil in MNB as lectotype. The MCZ specimen is not mentioned by Belle (1970). Currently *Aphylla caraïba* Selys, 1854.

**protracta** Hagen in Selys (**Cyclophylla**) 1859b: 546 (20 reprint). Lectotype ♂, paralectotype ♀. Lectotype ♂: "C. elongata / ♂ ♀ / à renvoyer. [handwritten by Hagen]"; "Cycloph. protracta / ♂ Hagen [handwritten]"; "Matamoros. [handwritten by Hagen]"; "Hagen [printed]"; "LECTOTYPE / Cyclophylla protracta / Hagen ♂ / des. by R. W. / Garrison 1986 [handwritten on red label] ". Paralectotype ♀: "C. protracta / Sel. [handwritten]"; "Cycloph. protracta / ♀ Hagen [handwritten]"; "Matamoros. [handwritten by Hagen]"; "Hagen [printed]"; "PARALECTOTYPE [printed] / Cyclophylla protracta / Hagen ♀ / des. by R. W. Garrison 1986 [handwritten on yellow label]". MCZ ENT 12381.

Description based on 1 ♂ and 1 ♀ from "Matamoros, dans de Texas. (Collect. Hagen.)." Lectotype designated by Garrison (1986: 942). Currently *Aphylla protracta* (Hagen in Selys, 1859).

**pugnax** Selys (**Ictinus**) 1854a: 95 (76 reprint). Syntype ♀. "I. pugnax / \* Sel. [handwritten by Hagen]"; "pugnax [handwritten]"; "Cap. b. sp. / Dr. Krauss. [handwritten]"; "6. [handwritten]"; "Hagen [printed]". MCZ ENT 12388.

Description based on an unspecified number of ♂♂ and ♀♀ from "Port-Natal. (Collect. Dale, Saunders.), Cap. (Collect. Schneider.)". Selys (1858: 552 [292 reprint] further remarked: "Patrie. Le Port-Natal, d'après un mâle communiqué par M. Sanders, une femelle appartenant a M. Dale, et un couple de ma collection." The ♀ specimen at MCZ is missing abdominal segments 6-10, and a piece of one cercus is pasted to a label. Currently a junior synonym of *Ictinogomphus ferox* (Rambur, 1842).

**pulchellus** Selys (**Gomphus**) 1840: 83. Syntypes 1 ♂, 1 ♀. ♂: "G. pulchellus / Selys. [handwritten by Hagen]"; "pulchellus, / de Selys. [handwritten]"; "Belgien / de Selys / Hagen. [handwritten on small black-bordered yellow label]". ♀: "Paris [handwritten]"; "Hagen [printed]". MCZ ENT 12364.

Description based on an unspecified number of ♂♂ and ♀♀: Selys (1840: 84-85) mentioned the species as being present in Douvres, on the southern coast of England, Belgium in June, France, Germany and northern Africa. Currently *Gomphus pulchellus* Selys, 1840.

**rogersi** Gloyd (**Gomphus**) 1936: 1. Paratype ♂. "Gomphus ♂ / rogersi Gloyd / PARATYPE [in red]: Occ. Papers / Mus. Zool. U. of M., no. 326, p. 1-5 [handwritten] / Det. L.K. Gloyd 19 [printed] 36 [handwritten]"; "Black Mt. [printed] / N. C. May [handwritten]"; "N. Fork / Swannanoa [printed]"; "Banks / Collection [printed]". MCZ ENT 22214.

Described from "Long Creek, Fentress County, Tennessee, June 18, 1924, 2 ♂ (type ♂), Dr. J. Speed Rogers, in the Williamson Collection, Museum of Zoology, University of Michigan. North Fork of the Swannanoa River, near Black Mountain, Buncombe County, North Carolina, May, 2 ♂ 1 ♀. Mr. Nathan Banks, Museum of Comparative Zoology, Cambridge, Massachusetts". Currently *Stenogomphus rogersi* (Gloyd, 1936).

**ruptus** Selys (**Onychogomphus**) 1858: 655 (395 reprint). Holotype ♂. "O. ruptus / \* Sel. [handwritten by Hagen]"; "fl. Amur [handwritten]"; "Hagen [printed]". MCZ ENT 12330.

Described from "Les bords du fleuve Amur (Asie Orientale), d'après un mâle en très-mauvais état, communiqué par M. Hagen.". Holotype's hindwing tips, part of pterothorax and abdominal segments 4-5 are missing, and the remainder of the abdomen is twisted and distorted. Currently *Nihonogomphus ruptus* (Selys, 1858).

**serenus** Hagen in Selys (**Progomphus**) 1878b: 661 (69 reprint). Holotype ♂. "P. serenus / Hag. [handwritten by Hagen]"; "serenus [handwritten]"; "Hayti. / P. R. Uhler. [printed]". MCZ ENT 12376.

Description based on a single ♂ from "Haïti, à St-Jérémie, pris par M. Uhler et mentionné par lui, sans dénomination dans les Proc. Boston. N. H. S., I. XI, p. 295". Belle (1973: 248) in his revision of the genus *Progomphus* remarked: "The holotype, male, of this species [of *P. serenus*] is in the Museum of Comparative Zoology at Cambridge, Mass., and it bears the type number 12376 (Lawrence 1973, personal communication)." Currently *Progomphus serenus* Hagen in Selys, 1878.



**serpentina** Charpentier (**Aeschna**) 1825: 25. Syntypes? 1 ♂, 1 ♀. ♂: "O. serpentinus / Chp. [handwritten by Hagen]"; "serpentinus / Charp. [handwritten]"; "Charp. [intricate black-bordered handwritten label]"; "Brieg / Charp. [handwritten]"; "Hagen. [printed]". ♀: "serpentinus [handwritten]"; "Schwoitsen / II.6.45. [handwritten]"; "Hagen. [printed]". MCZ ENT 12339.

According to the original description, described from "Silesia". The ♀ quoted above carries the label "II.6.45" which presumably means that the specimen was collected in 1845. If so, the ♀ cannot be considered a syntype. According to Seehausen (*pers. comm.*), there is a possible syntype ♀ labelled "Silesie"; "Charp / Schn. Ch." At RBINS. Currently a junior synonym of *Ophiogomphus cecilia* (Geoffroy in Fourcroy, 1785).

**severus** Hagen (**Ophiogomphus**) 1874b: 591. Syntypes 3 ♂♂. ♂<sub>1</sub>: "O. severus / Hag. [handwritten by Hagen]"; "G. severus Hag. / Colorado / Foot Hills End Septm / 1873 V. H[?]. Exped [handwritten]". ♂<sub>2</sub>: "Col Plains / Carp 1872 [handwritten]"; "Hagen. [printed]". MCZ ENT 1866. ♂<sub>3</sub>: "Yellowstone [handwritten] / U. S. [printed] / Hayden 1872 [handwritten]"; "Hagen. [printed]". MCZ ENT 12337.

Description based on 3 ♂♂ and 2 ♀♀ from Colorado and 1 ♂ from Yellowstone, with the following data: "Colorado (Mr. James Ridings); foothills and plains of Colorado. End of September (Lieutenant Carpenter); Fort Garland, Colorado, June 27, South Montana and Yellowstone (Mr. C. Thomas)". Currently *Ophiogomphus severus* Hagen, 1874.

**signata** Hagen in Selys (*Cyclophylla*) 1854a: 77 (58 reprint). Paralectotype ♀. "C. signata / Hag. Sel / \* C. clara Hag. [handwritten]"; "G. clavus. [handwritten]"; "signata [handwritten]"; "Venezuela / Appun. 2. [handwritten]"; "Hagen. [printed]". MCZ ENT 12380.

Description based on 1 ♂ and 1 ♀: "Un mâle du Brésil. (Musée de Berlin. Une femelle de la république de Vénézuëla. Coll. Hagen.)". Belle (1970: 68) noted that the ♂ deposited at MNB was illustrated by Hagen (*in Selys*, 1858), but incorrectly called it the holotype ("Dr. GÜNTHER of the Berlin Museum generously enabled me to study the holotype male of *Cyclophylla signata* Hagen in Selys from BRAZIL (Bull. Acad. Belg. (2) 21, p. 77):"...). We consider his statement above (Belle 1970) as a lectotype designation. Based on the description and later redescription of the ♀ (Hagen in Selys, 1854a; 1858), Needham (1943: 199) suspected that it had been incorrectly associated with the ♂ of *signata* from Brazil, and that it, instead, represented the ♀ of *Phyllocycla anduzei* (Needham, 1943), which was later confirmed by Belle's examination of the specimen ("NEEDHAM in his paper of 1943 justly remarks about the female referred to *Phyllocycla signata* by HAGEN (and by SELYS): "The first of these, a single Venezuelan female, was associated, I believe incorrectly, with the male type of *Cyclophylla signata* from Brazil. I have not seen the specimen, but the description given by DE SELYS, especially as amended by him in 1857 [1858] (Monogr. Gomp. p. 221, 222) fits much better the female of *Cyclophylla anduzei* sp.n., hereinafter described", (loc. cit., p. 198). HAGEN's supposed female of *Ph. signata* was kindly lent me by the Museum of Comparative Zoology, Cambridge (MCZ No. 12380). The abdomen cannot be studied because of its very dilapidated condition but the remaining part of the insect provides adequate information for recognition. I have compared the specimen with the female of *Ph. anduzei* and I have found no differences in the colour pattern of the pterothorax, the conformation of the occiput, vertex, frons, legs, etc. which may justify a racial distinction"). The MCZ ♀, though

a paralectotype of *Phyllocycla signata* (Hagen in Selys, 1854), is actually a ♀ of *Phyllocycla anduzei* (Needham, 1943).

**simillimus** Selys (**Gomphus**) 1840: 85. Syntype ♀. "simillimus, / de Selÿs. [handwritten]"; "Provence / de Selÿs / Hagen. [handwritten]"; "Hagen. [printed]". MCZ ENT 12363.

Description based on an unspecified number of ♂♂ and ♀♀ "Le *Gomphus simillimus* se trouve aux environs d'Aix en Provence, dans les endroits les plus secs et éloignés des eaux. D'après M. de Fonscolombe il est peu commun. Après avoir écrit cet article, j'en ai reconnu un individu en tout semblable dans la collection de M. Robyns, qui l'a pris dans la forêt de St-Germain, près de Paris, ce qui prouve qu'il est répandu dans toute la France". Even though Selys mentioned a single ♂ in his table of measurements (Selys, 1840: 174 "sur un individu male"), in the description he also includes the ♀: "La femelle, d'après M. de Fonscolombe, est analogue au male." Currently *Gomphus simillimus* Selys, 1840.

[*spectabilis* Eversmann (*Aeshna*) 1841: 356 (6 reprint). Pseudotype ♂. "spectabilis ♂. / Evsm. / serpentina / Charp. [handwritten by Hagen]"; "Eversmann / Russia. [handwritten]"; "[illegible] [handwritten]"; "Hagen. [printed]". MCZ ENT 12341.

Description based on a single ♀ "capta 9. Julii in sylvis districti Zarevo-Kokschaik Gubernii Casanensis". This male does not represent a type. Currently a junior synonym of *Ophiogomphus cecilia* (Geoffroy in Fourcroy, 1785).]

**specularis** Hagen in Selys (**Neogomphus?**) 1859b: 544 (18 reprint). Holotype ♀. "O. specularis / \* à renvoyer [handwritten on green label]"; "Ft. Tejon. California / Xanthus de Vesey. [handwritten by Hagen]"; "O. specularis / Hag. [handwritten]". MCZ ENT 12343.

Description based on a single ♀ from "Californie. (Collect. Hagen)". Currently *Octogomphus specularis* (Hagen in Selys, 1859).

**spicatus** Hagen in Selys (**Gomphus**) 1854a: 54 (35 reprint). Holotype ♂. "G. spicatus / Hag [handwritten by Hagen]"; "G. spicatus / nob. / New York. / Schaum [handwritten by Hagen]"; "Hagen. [printed]". MCZ ENT 12358.

Description based on a single ♂ from "New-York. (Collect. Hagen)". Currently *Phanogomphus spicatus* (Hagen in Selys, 1854).

**spinosus** Selys (**Gomphus**) 1854a: 59 (40 reprint). Syntype? ♂. "D. spinosus / Sel. [handwritten by Hagen]"; "Amer. bor. / Barton [handwritten]". MCZ ENT 12344.

Description based on 1 ♂ and ♀♀ from "États-Unis, Géorgie. (Musée britannique, Musée de Copenhague, Collect. Dale, Selys.)". The reprint copy of the description at MCZ has, added in Hagen's handwriting, "Coll. Hagen" after Collect. Dale, Selys.). Selys (1858: 382 [122 reprint]) further stated: "Patrie. La Géorgie (Amérique septentrionale) d'après des femelles de British Museum, un mâle adulte de la collection de M. Dale et un jeune du Musée de Copenhague." The juvenile syntype ♂ is present in the Dale collection at the Oxford Museum of Natural History ([http://www.oum.ox.ac.uk/cgi-bin/odonata.cgi?detail\\_oid=ODON0007](http://www.oum.ox.ac.uk/cgi-bin/odonata.cgi?detail_oid=ODON0007)). Kimmins (1969) did not list the type of spinosus as present at the BMNH nor is a specimen (type) listed from the Natural History Museum of Denmark (<http://www.daim.snm.ku.dk/search-in-types>). In his original description, Selys described a juvenile and that specimen may be either the one at ZMUC or the one in Hagen's collection at MCZ. Currently *Dromogomphus spinosus* Selys, 1854.

**spoliatus** Hagen in Selys (**Gomphus**) 1858: 669 (409 reprint). Holotype ♂. "D. spoliatus. / Hag. [handwritten by Hagen]"; "June / 28 [handwritten]"; "Pecos River / West. Texas. Cpt. Pope / type S. A. N. 103 No = 10 / G. spoliatus. [handwritten by Hagen]"; "Hagen. [printed]". MCZ ENT 12345.

Description based on a single ♂ from "La rivière Pécós (Texas occidental) en juin, d'après un mâle communiqué par la Smithsonian Institution". Currently *Dromogomphus spoliatus* (Hagen in Selys, 1858).

**tenuis** Selys (**Aphylla**) 1859b: 547 (21 reprint). Holotype ♂. "Aphylla / tenuis / à renvoyer [handwritten on green label]"; "brevipes [handwritten]"; "Neu Granada. Choco. / Schott. [handwritten by Hagen]"; "Hagen. [printed]"; "reviewed / Jean Belle / 1992. [handwritten]". MCZ ENT 12383.

Description based on a single ♂ from "Nouvelle-Grenade. (Collect. Hagen.)". As stated by Belle (1992: 253): "The male holotype (MCZ Type No. 12383), originally preserved in alcohol (cf. Hagen, 1861: 114) but now pinned up, is teneral and in poor condition. The head and the tip of the left fore wing are broken away, the thoracic colour pattern almost completely obliterated and the abdomen shriveled, distorted and broken off into two fragments with the left superior caudal appendage also broken off. The fragments are separately put in a triangular cellophane envelope and attached to the pin of the specimen. The type has a pin label with the following locality data in Hagen's handwriting: "Neu Granada" (the name of Colombia before 1863), "Choco" (referring to the Departamento del Choco situated in the north-west of Colombia bordering the Pacific coast and the Republic of Panama) and "Schott" (probably the name of the collector)." Currently *Aphylla tenuis* Hagen in Selys, 1859.

**uncata** Charpentier (**Aeschna**) 1840: 123. Syntypes 1 ♂, 1 ♀. ♂: "Montpellier / à renvoyer [handwritten]"; "Mont / pellier / Charp. [handwritten on small black-bordered yellow label]"; "uncatus Charp [handwritten]"; "Charp. [intricate black-bordered handwritten label]"; "O. uncatus / Chp [handwritten]". ♀: "Mont / pellier / Charp. [handwritten on small black-bordered yellow label]"; "Charp. [intricate black-bordered handwritten label]"; "Hagen. [printed]". MCZ ENT 12327.

Described and illustrated ("Tab. XLVI. Mas et foem.") based on 1 ♂ and 1 ♀: "Habitat in Gallia. — Ab amicissimo Prof. Kunze, Lipsiensi, Montispessulae in copula captus benigne mecum communicatus uterque sexus". Currently *Onychogomphus uncatu*s (Charpentier, 1840).

**vastus** Walsh (**Gomphus**) 1862: 391. Syntypes 1 ♂, 1 ♀. "G. vastus ♂ / Rock Island. / Walsh 1863, \* [handwritten by Hagen]"; "G. vastus / Walsh [handwritten by Hagen]"; "111 [handwritten]"; "Hagen [printed]". ♀: "G. vastus ♀ / Rock Island. / Walsh 1863. \* [handwritten by Hagen]"; "115 [handwritten]"; "Hagen [printed]". MCZ ENT 12351.

Description based on 11 ♂♂ and 3 ♀♀. Walsh (1862: 361) stated "the following species have been taken by myself within four miles of the city of Rock Island. The species with an exclamation point (!) affixed have been kindly identified by Dr. Hagen, from duplicates which I sent him in 1860; but to prevent possible mistakes I have compared most of them with his diagnoses". As noted above with other species described by Walsh, the date on the labels, 1863, postdates Walsh's publication but these labels may have been added (and dated) by Hagen a year after Walsh's paper was published; we suspect that these two specimens are part of the original type series. Currently *Gomphurus vastus* (Walsh, 1862).

**viridifrons** Hine (**Gomphus**) 1901: 60. Syntype ♂. "Gomphus / viridifrons / Hine / Type [handwritten]"; "Loudonville, [printed] / 0.6-14-00 [handwritten]". MCZ ENT 12356.

Description based on 14 ♂♂ and 1 ♀ taken at Loudonville, Ohio, June 14, 1900; and a male and female taken at Ohio Pile, Pa.—the latter two specimens by E. B. Williamson. Currently *Hylogomphus viridifrons* (Hine, 1901).

**zonatus** Hagen in Selys (**Progomphus**) 1854a: 72 (53 reprint). Holotype ♀. "P. zonatus / Hag / [handwritten by Hagen]"; "Mexico Thorey [handwritten by Hagen]"; "G. zonatus. [handwritten]"; "Hagen [printed]". MCZ ENT 12374.

Description based on a female from "Mexique. (Collect. Hagen.)." Belle (1973: 256) in his revision of the genus *Progomphus* remarked: "The holotype, female, of *Progomphus zonatus* is in the Museum of Comparative Zoology at Cambridge, Mass., and it bears the type number 12374 (Lawrence 1973, personal communication)." Currently *Progomphus zonatus* Hagen in Selys, 1854.

#### LIBELLULIDAE

**aequalis** Hagen (**Dythemis**) 1861: 167. Syntypes 3 ♂♂, 1 ♀. ♂<sub>1</sub>: "Cuba / Loew [handwritten by Hagen]"; "42 [handwritten]"; "Hagen [printed]". ♀<sub>2</sub>: "Cuba / Poey 1858 [handwritten by Hagen]"; "38 [penciled]". ♂<sub>3</sub>: "Matamoras [handwritten by Hagen]"; "Hagen [printed]". ♂<sub>4</sub>: "Cuba / Poey 1858 [handwritten by Hagen]"; "Micrathyrina / aequalis / Hagen [handwritten]". MCZ ENT 12489.

Described from an unspecified number of ♂♂ and ♀♀ from "Cuba (Poey); Matamoras, Mexico." All four specimens are lacking the posterior half of the abdomen. Currently *Micrathyrina aequalis* (Hagen, 1861).

**aequisetis** Calvert (**Nephepeltia**) 1909: 244. Paralectotypes 1 ♂, 1 ♀. ♂: "N. prodicta Hag. / Neur. Amer. P. 320. / N. inermis Selys [handwritten by Hagen]". Both specimens: "Cuyabá / Brazil"; NEPHEPELTIA / AEQUISETIS Calv. / PPCalvert def. 1909 Vlp.244 [both printed]". MCZ ENT 12502.

A lectotype ♂ at CM was selected by von Ellenrieder (2014: 123). Currently *Nephepeltia aequisetis* Calvert, 1909.

**albifrons** Burmeister (**Libellula**) 1839: 851. Paralectotype 1 ♂. "coll Germar / mesoleuca Imh[off]. / ~~caudalis Charp.~~ / albifrons B / Helvetia [handwritten]"; "1 [handwritten]"; "Hagen [printed]". MCZ ENT 12432.

The lectotype ♂ at MLU was selected by Calvert (1898b: 68): "One male (T[ype]) under the white drawer-label "albifrons Burm. Berlini" in B[urmeister].'s hand, at Halle; no pin-label. One male in the M. C. Z. with the written pin-label "Coll Germar. mesoleuca Imh. albifrons B. Helvetia"; the words "Coll. Germar" are in Hagen's hand." Currently *Leucorrhinia albifrons* (Burmeister, 1839).

**albifrons** Charpentier (**Libellula**) [nec Burmeister, 1839] 1840: 81. Holotype ♂. "L. albifrons / Chp \* / L. ambigua Rbr [handwritten by Hagen]"; "Charpen. [handwritten on intricate black-bordered label]"; "albifrons / Charp [handwritten probably by Charpentier]"; "Aus Basel / v Germar / 1836 [handwritten probably by Charpentier]"; "Hagen [printed]". MCZ ENT 12443.

According to the original description: "Haec Libellula, e regione Basileensi ad amicissimum Germar, Halensem, missa, mecum est communicata. Unum igitur tantum huius Libellulae exemplum examini potui subiicere." and was figured (Tab. XI, No. 3). Currently considered a synonym of *Sympetrum ambiguum* (Rambur, 1842).

**ambusta** Hagen (**Diplax**) 1867a: 293. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Cuba / Poey. 1868 [handwritten by Hagen]"; "ambusta [handwritten]"; "Hagen [printed]". ♀<sub>2</sub>: "Cuba / Poey. 1852 [handwritten by Hagen]"; "63 / ♀ [handwritten]"; "ambusta [handwritten]"; "Hagen [printed]". ♂<sub>3</sub>: "Cuba / Poey. 1852 [handwritten by Hagen]"; "63 [handwritten]"; "♂ [printed]"; "ambusta [handwritten]"; "Hagen [printed]". MCZ ENT 12465.

This name was introduced by Hagen (1867a: 293) as follows: "**Diplax ambusta** Hagen. Justiniana Hagen, of the Synops. N. Amer. Neur.; Scudder." ♂<sub>3</sub> is missing the fore wings and most of the abdomen. Currently a junior synonym of *Erythrodiplax justiniana* (Selys in Sagra, 1857).

**ampullacea** Schneider (**Libellula**) 1845: 110. Holotype ♂: "L. ampullacea / \* Schn [handwritten by Hagen]"; "ampulla- / cea Schnei / Kleinasi. Loew [handwritten possibly by Schneider, Fig. 2]"; "Löw. [handwritten on blue label]"; "Kellemisch [handwritten]"; "Hagen [printed]". MCZ ENT 12498.

Description based on "1 ♂ von Kellemisch in Kleinasien." Currently considered a junior synonym of *Orthetrum sabina* (Drury, 1773).

**analis** Burmeister (**Libellula**) 1839: 852. Paralectotype ♂. "Coll. Germar / analis d. H. / typus. Burm. II / 85:1. 23. / Java Br [handwritten on yellow label]"; "analis / Burm"; "Burm. Handb. Ent. / 1839. Vol. 2. Pt. 2, p. 852. [both handwritten]"; "Hagen [printed]". MCZ ENT 1768.

Calvert (1898b: 69) provided the following details of Burmeister's specimens: "Two males (T[ypes]) under the yellow drawer label "analis d. Haan Madras King Java Hoffm." in B[urmeister].s hand, at Halle; one has a pink pin-label "16", the other none. One male in the M. C. Z. with the yellow, written pin-label "coll. Germar analis d. H. Typus Burm. II. 85:1. 23. Java Br."; the words "coll. Germar" and "Typus Burm. II. 852. 23." in Hagen's hand. We consider Calvert's use of the letter "T" above (Calvert 1898b: 31) as designation of one of the males at Halle as lectotype: "Upon such specimens as, after study, I believed to be Burmeister's actual types, I placed the following written pin-label, "Considered by me as Burmeister's type of his.....[here the name of the species.....P. P. Calvert, " May, 1896." In the following pages such specimens are indicated by (T)." Currently a junior synonym of *Pantala flavescens* (Fabricius, 1798).

**anceps** Schneider (**Libellula**) 1845: 111. Lectotype ♀, Paralectotype 1 ♀ [=Orthetrum brunneum (Fonscolombe, 1837)]. Lectotype ♀: "L. anceps / \* Schneid. [handwritten by Hagen]"; "anceps Schneid. [handwritten]"; "Mermeriza [handwritten]"; "Löw. [handwritten on blue label]"; "Lectotypus, ♀ / Libellula anceps / SCHNEIDER, 1845 / des. W. Schneider, 1983 [handwritten]". Paralectotype ♀: "L. anceps / \* Schneid. [handwritten by Hagen]"; "anceps / Schneider / Kleinasien Loew [handwritten probably by Schneider]"; "Löw. [handwritten on blue label]"; "Mermeriza [handwritten]"; "Orthetrum brunneum / (FONSC., 1837), ♀ / [Syntypus von Libellula / anceps] SCHNEIDER, 1845] / def. W. Schneider, 1983". MCZ ENT 12497.

Original description based on at least 1 "♀ von Mermeriza [= Marmaris in Turkey]." Schneider (1985: 98) designated one as lectotype; the other syntype (paralectotype) being a ♀ of *O.*

*brunneum*. The lectotype is missing the distal half of the left fore wing and segments 4-10. The remainder of the abdomen has been placed within a card-backed glassine pouch. Currently *Orthetrum anceps* (Schneider, 1845).

**atripes** Hagen (**Diplax**) 1874b: 588. Syntypes 7 ♂♂, 3 ♀♀. "atripes / Hagen [handwritten]", all remaining specimens: "Yellowstone / Hayden 1872 [handwritten]". MCZ ENT 12441.

Described from "Yellowstone; some pairs in copula (Mr. Carpenter)." Currently a junior synonym of *Sympetrum costiferum* (Hagen, 1861).

**auripennis** Burmeister (**Libellula**) 1839: 861. Holotype ♂. "Libellula / contin. L.; L. auripennis / \* B[urmeister]r. / costalis / R[am]b[u]r [both handwritten by Hagen]"; "L. auripennis / Burm. / \* / Savanah [handwritten]"; "Winthem [printed]"; "Hagen [printed]". MCZ ENT 12478.

Currently *Libellula auripennis* Burmeister, 1839.

**aurora** Burmeister (**Libellula**) 1839: 859. Lectotype ♂, paralectotype ♂. Lectotype ♂: "Aurora / \* B[urmeister]r. / Manilla [handwritten, Fig. 3]"; "Winthem. [printed]". Paralectotype ♂: "L. Aurora Burm / \* [handwritten by Hagen]"; "aurora Burm. [handwritten]"; "Winthem. [printed]". MCZ ENT 12509.

Calvert (1898b: 89) discussed these two specimens as follows: "Two males in the M. C. Z. One with the pin-labels " Winthem" (printed), "Aurora \* Br. Manilla", (written, see fig. F, page 30), is referred to below as the "labeled type"; the other with merely the printed pin-label " Winthem" is the "unlabeled type". We consider Calvert's statement above as lectotype designation. Currently *Trithemis aurora* (Burmeister, 1839).

**australis** Hagen (**Tamea**) 1867d: 229. Syntypes 2 ♀♀. ♀<sub>1</sub>: "Cuba / Poey. 1866"; "Tamea / Iphigenia Hag. [both handwritten by Hagen]"; "37 / 6. ♀"; "Hagen [printed]". ♀<sub>2</sub>: same data but "60 / 95.♀ ♀"; "la moitié de / l'abdom. manque". MCZ ENT 12483.

Hagen (1877: 66) stated that Gundlach's description mentioned "Bei Cardenas im Walde, im Juli.", and he transcribed Gundlach's male and female descriptions. He noted (1867d: 230): "Mir liegen nur zwei Weibchen vor, die vielleicht nicht völlig ausgefärbt sind; nach denselben füge ich die Beschreibung hinzu." [I have only two females available, that are perhaps not fully colored yet, and I base the description upon them], and when describing the hindwing brown basal spot: "... an der Basis der Hinterflügel einen grossen dunkelbraunen gelbgeaderten Fleck, der bis zum Dreieck oder selbst hineinragt, den Vorderrand kaum, den Hinterrand gar nicht erreicht." These two MCZ females have a large brown hindwing basal spot extending to nearly the external tip of the triangle and encompassing the basal fourth of the anal loop—a condition somewhat atypical for the species. These two ♀♀ would seem to be the pair of females described by Hagen. See under *iphigenia* below. Currently *Tauriphila australis* (Hagen, 1867).

**balteata** Hagen (**Tetragoneuria**) 1861: 140. Holotype ♀. "T. balteata / \* Hag.;" "Pecos River / Texas [both handwritten by Hagen]"; "44. [handwritten]"; "Aug / 8 [handwritten]" "Lib. balteata / ♀ Hag. [handwritten on green label]"; "Hagen [printed]". MCZ ENT 12428.

Described based on a female from "Pecos River, Western Texas (Capt. Pope)." Hagen's description of the venational statistics matches that of the holotype. Currently *Macrodiplax balteata* (Hagen, 1861).

*basifusca* Calvert (*Trithemis*) 1895: 536. Paralectotypes 1 ♂, 1 ♀. Both specimens: "Mesa Verde / Baja Cal. / Oct. – 1893 ♂ / G. Eisen / P. P. Calvert. [handwritten]"; "Trithemis ♂ [or ♀] / basifusca / Type Calvert [handwritten]". MCZ ENT 8840.

Calvert (1947: 606) designated a lectotype as follows: "*Trithemis basifusca* n. sp., p. 536. (a) 101♂, 38♀; (b) 3♂, 2♀ San José del Cabo, Oct., '93; (c) 6♂, 3♀ same. I hereby designate a male, and a female in the California Academy of Sciences as the lectotype (C.A. S. No. 5606) and lectalotype (C. A. S. No. 5607) respectively of this species." Paulson (2003: 105) in his review of the *conata*-group of species of *Erythrodiplax* mentioned that he had examined one of the syntypes (= paralectotype) of *Trithemis basifusca* in the MCZ and that he was "herein designating this specimen as the lectotype of *T. basifusca*." This specimen is, however, a paralectotype since Calvert (1947) had already designated a lectotype at CAS. Currently *Erythrodiplax basifusca* (Calvert, 1895).

*bertha* Williamson (*Celithemis*) 1922: 8-10, 17. Paratypes 2 ♂♂. Both specimens: "Enterprise / Fla. J. H. / Williamson"; "April 21 [both handwritten by Williamson]" one ♂ in addition with red bordered label: *Celithemis / bertha / Will. / paratype*. MCZ ENT 14422.

The holotype of *Celithemis bertha* is at UMMZ (Garrison et al. 2003: 53). Currently *Celithemis bertha* Williamson, 1922.

*bispina* Hagen (*Diplax*) 1867c: 91. Syntypes 1 ♂, 1 ♀. ♂: "N. Halmadeira / Mus. Leiden 1863."; "Lib. bispina / Hag. [both handwritten by Hagen, Fig. 2]"; "thoracantha"; "39 [both handwritten]"; "Hagen [printed]". ♀: same labels except lacking "Lib. bispina / Hag.". MCZ ENT 12467.

Hagen's original description is short ("Von allen mir bekannten Odonaten hat nur *Diplax bispina* Hag. aus Morotai und Nord-Halmadeira, und zwar nur das Männchen, eine ähnliche Bewaffnung auf der Bauchseite des Thorax, aber hier zwei Dorne." Currently *Raphisia bispina* (Hagen, 1867).

*bistigma* Uhler (*Libellula*) 1858a: 87. Syntypes 2 ♂♂. ♂<sub>1</sub>: "L. bistigma \* / Uhler / Maryland. 1858 [handwritten by Hagen]"; "15 [printed]"; "Hagen [printed]". ♂<sub>2</sub>: same label data but also with small blank blue label. MCZ ENT 8852.

Description based on at least 1 ♂ from Baltimore. No original Uhler labels accompany either specimens but Hagen (1867c: 91) commented: "*Libellula bistigma* Uhler p. 87. 1 mas. Diese Art ist das blau bereifte Männchen von *L. quadrupla* Say, Hag. Synops. pag. 157. Uhler, von dem ich die Typen von *L. bistigma* mas und *L. quadrupla* mas fem. besitze, hat diese Bestimmung als richtig anerkannt." Currently a junior synonym of *Libellula cyanea* Fabricius, 1775.

*borealis* Hagen (*Leucorrhinia*) 1890a: 231. Syntypes 5 ♂♂, 3 ♀♀. ♂<sub>1, 3, 5, 6, 9</sub>, ♀<sub>4, 8</sub>: "Ft. Resolution / Huds. B. Territ / Kennic. 1861 [handwritten by Hagen]"; "*borealis* [handwritten]"; "Hagen [printed]". ♂<sub>2</sub>: "Saskatchewan / Hudsonia / Kennicott 1860 [handwritten by Hagen]"; "*borealis* [handwritten]"; "Hagen [printed]". MCZ ENT 12438.

The original description was based on "Six males and four females from Saskatchewan River and Fort Resolution, Hudson's Bay Territory by Kennicott." Currently *Leucorrhinia borealis* Hagen, 1890.

*catenata* Calvert (*Micrathyria*) 1909: 237. Holotype ♂. "*Libellula / catenata* Hagen [handwritten by Hagen]"; "Minas / Geraes [handwritten]"; "Hagen [printed]"; "TYPE ♂ [written] / MICRATHYRIA [printed] / *catenata* Calv. [written] / PP. Calvert det. 1909 / AnCarMus. Vlp. [printed] 238 [written]" MCZ ENT 12494.



Original description based on 1 ♂ from Minas Gerais, Brazil, at MCZ. Currently *Micrathyria catenata* Calvert, 1909.

**castanea** Burmeister (*Libellula*) 1839: 854. Syntypes 2 ♂♂. ♂<sub>(1)</sub>: "L. castanea Br. / ♂ & ♀ \* / Bahia [handwritten]"; "Calvert fig. [handwritten]"; "Winthem." / "Hagen [both printed]". ♂<sub>(2)</sub>: "L. castanea / \* Burm. [handwritten]"; "Brasil [handwritten]"; "Winthem." / "Hagen [both printed]". MCZ ENT 12473.

Calvert (1898b: 73) remarked on these two specimens as follows: "Two males in the M. C. Z., both with printed pin labels" Winthem"; one with the written pin -label "L. castanea Br. ♂ and ♀ \* Bahia" (I found no female to which this label refers); the other with the written pin -labels "Brasil" and "L. castanea \* Burm.," the last one in Hagen's hand." Currently *Erythrodiplax castanea* (Burmeister, 1839).

**caudalis** Charpentier (*Libellula*) 1840: 89. Syntype ♀. "caudalis / \* Charp."; "caudalis / \* Hisinger [both handwritten by Hagen]"; "Charpent. / Brieg 1837 [handwritten by Charpentier on intricate black-bordered label]". MCZ ENT 12429.

Original description based on at least 1 ♂ and 2 ♀♀ "In Silesia capta.". Charpentier (1840: 89) figured two forms of the ♂ and a ♀ ("Tab. XLIV. mas, foem. eiusque varietas. Tab. XLVII. Fig. 16. maris abdominis apex."). Currently *Leucorhina caudalis* (Charpentier, 1840).

**chrysostigma** Burmeister (*Libellula*) 1839: 857 Syntypes 2 ♂♂. ♂<sub>(1)</sub>: "L. auristigma / Br. / (in copula captae) \* Teneriffa"; ♂<sub>(2)</sub>: "L. chrysostig. / ma / \* Br. [handwritten by Hagen]"; "L. chrysostigma Br. / L. auristigma Br. / L. Barbara Selys. [handwritten]"; "L. auristigma / \*Br. / Teneriffa. [handwritten]"; "Calvert fig. [handwritten]"; both specimens: "Winthem"; "Hagen [both printed]". MCZ ENT 12471.

Calvert (1898b: 85) remarked on these two specimens as follows: "Two males in the M. C. Z. are thus labeled – one, the male of the above description, with the black abdomen pruinose at base, has the written pin-label "L. auristigma Br. (in copula captre) \* Teneriffa"; the other and younger male, the female of the description, has the pin-label "L. auristigma \* Br. Teneriffa" in Hagen's handwriting; both have the printed label "Winthem". These two males are apparently of the same species." Currently *Orthetrum chrysostigma* (Burmeister, 1839).

**citrina** Hagen (*Tholymis*) 1867d: 218. Syntypes 2 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "T. citrina / \* Hag."; "Cuba / Gundlach / 1864 [both handwritten by Hagen]"; "11 ♂ [handwritten]"; "Hagen [printed]". ♂<sub>2</sub>: "citrina / Hagen"; "Cuba / Poey [both handwritten by Hagen]"; "Hagen, S. E. Z., 1867 / vol. 28, p. 218 [handwritten]"; "68 / ♀ [handwritten]"; "Hagen [printed]". ♂<sub>3</sub>: "Cuba / Gundlach / 1863 [handwritten by Hagen]"; "citrina [handwritten]"; "11 ♂ Pantala / 68 Tillarga. [handwritten]"; "Hagen [printed]". ♂<sub>4</sub>: "Cuba / Poey [handwritten by Hagen]"; "citrina [handwritten]"; "68 / ♀ [handwritten]"; "Hagen [printed]". MCZ ENT 1767.

Hagen (1867a: 291) first introduced this name (*Pantala citrina* Hagen) as a nomen nudum. Described from at least 2 ♂♂ and at least 1 ♀ "Im Juli bei Cardenas im Walde". Currently *Tholymis citrina* Hagen, 1867.

**collocata** Hagen (*Mesothemis*) 1861: 171. Holotype ♂. "M. collocata / \* Hag."; "Pecos River"; L. collocata Hag [all handwritten by Hagen]"; "July / 2 [handwritten]"; "Hagen [printed]". MCZ ENT 1871.

Original description based on 1 teneral ♂ from "Pecos River, Western Texas (Capt. Pope). "Ris (1911b: 600) listed a ♀ ("Pecos River (4. VII. Hagen)") at RBINS but the original description stated that the description was based solely on 1 teneral ♂. Currently *Erythemis collocata* (Hagen, 1861).

**composita** Hagen (*Mesothemis*) 1873b: 728. Holotype ♀. "L. composita / \* Hag"; "Yellowstone / Hayden 1872 [both handwritten by Hagen]". MCZ ENT 12481.

Original description was based on "One female." The ♀ is pinned with the wings folded over its back. Currently *Libellula composita* (Hagen, 1873).

**confusa** Uhler (*Libellula*) 1858a: 87. Syntypes 1 ♂, 1 ♀. ♂: "L. pulchella/ Dr."; "L. confusa ♂ / Uhler. \* / Maryland. 1858 [both handwritten by Hagen]". ♀: "L. confusa ♀ / Uhler. \* / Maryland. 1858 [handwritten by Hagen]"; "3 [penciled]". MCZ ENT 8853.

Description based on a pair from "Baltimore and Boston." Neither specimen carries a Boston locality label; it is possible that one of the specimens later labeled by Hagen was mislabeled as to locality. The ♂ is lacking abdominal segments 4-10. Currently a junior synonym of *Libellula pulchella* Drury, 1773.

**connata** Burmeister (*Libellula*) 1839: 855. Holotype ♂. "L. connata / \* B[urmeister]r. / Somer / Valparaiso / Peru [handwritten]"; "Hagen [printed]". MCZ ENT 12507.

Calvert (1898b: 77) stated: "One male in the M. C. Z. with the written pin label "L. connata \* Br. Valparaiso Peru" in an unknown hand., to which the words "coll Somer" have been added by Hagen." Currently *Erythrodiplax connata* (Burmeister, 1839).

**cophysa** Hagen (*Tamea*) 1867d: 226. Holotype ♂. "T. cophysa / \* Koll. [handwritten by Hagen]"; "L. cophysa / Bras. Kllr. [handwritten in an unknown hand]"; "Hagen [printed]"; "Trapezostigma / cophysum ♀ / J. RACENIS det. / 1965 No. 5148. [typewritten]". MCZ ENT 12486.

Hagen noted: "T. cophysa stammt aus Brasilien und ist ein Manuscriptname des Wiener Museums." The holotype is missing the right fore wing and the last five abdominal segments. Currently *Tamea cophysa* Hagen, 1867.

**constricta** Calvert (*Dythemis*) 1898a: 311. Holotype ♂. "P. Br." & "L. constricta" [in Selys's handwriting]. MCZ ENT 136.

The name was first introduced as a *nomen nudum* by Hagen (1877: 86) with authorship attributed to Selys. Currently *Elasmothermis constricta* (Calvert, 1898).

**corrupta** Hagen (*Mesothemis*) 1861: 171. Syntypes 2 ♂♂, 3 ♀♀. ♂<sub>1</sub>: "M. corrupta / \* Hag."; "Pecos River / Texas [both handwritten by Hagen]"; "corruptum / Hagen [handwritten]"; "June 4 [handwritten]"; "Hagen [printed]". ♀<sub>2</sub>: "Pecos River / Texas [handwritten by Hagen]"; "May 31 [handwritten]"; "Hagen [printed]". ♀<sub>3</sub>: same data as ♀<sub>2</sub> but "May 27 [handwritten]". ♀<sub>6</sub>: "Matamoras [handwritten]"; "Hagen [printed]". ♀<sub>7</sub>: "Ajan [handwritten]"; "Asahn. [handwritten]"; "Mus. Petrog [handwritten]"; "♀ [handwritten]"; "Hagen [printed]". MCZ ENT 1867.

Description based on an unspecified series of specimens from "Pecos River, Western Texas (Capt. Pope); Illinois (Kennicott); Matamoras, Mexico; Ajan, Sea of Ochotsk." Ris (1911b: 679) mentioned "1 ♂, 1 ♀ Pecos River, Texas (HAGEN's Cotypen)" at RBINS. Currently *Sympetrum corruptum* (Hagen, 1861).

**costifera** Hagen (**Diplax**) 1861: 175. Syntype 1 ♀. "D. costifera / \* Uhler.; "L. costifera / Uhler \* / Massachusetts / 1858 [both handwritten by Hagen]"; "Hagen, Synop. Neur. N. / Amer., 1861. P. 175 [handwritten]"; "♀ / Boot. [handwritten]"; "90 [printed]". MCZ ENT 12447.

Description based on an unspecified series of specimens from "Massachusetts (Scudder); New York (Edwards)." The ♀ is missing the apical half of the left wings, the entire right fore wing, and the latter half of the abdomen. Ris (1911b: 692) mentioned "1 ♀ Natick, Massachusetts (19. VIII. 64 UHLER) HAGEN's Cotype" at RBINS, but this is not a syntype. Currently *Sympetrum costiferum* (Hagen, 1861).

**credula** Hagen (**Diplax**) 1861: 184. Syntypes 1 ♂, 1 adult missing entire abdomen. Specimen<sub>(1)</sub> (abdomen missing): "Lib. / credula / Hag. [handwritten by Hagen]"; "St. Thomas [handwritten on green label]"; "Hagen [printed]". ♂<sub>(2)</sub>: "Minas / Geraes [handwritten]"; "credula Hag. [handwritten]". MCZ ENT 1877.

Original description based on at least two specimens from "Island of St. Thomas; Minas Geraes, Brazil." The St. Thomas locality is probably erroneous as this species is not known to occur there. Currently *Erythemis credula* (Hagen, 1861).

**cultriformis** Calvert (*Orthemis*) 1899b: 31. Paralectotype 1 ♂. "L. cultriformis nob./ Mus. Berol ♀ handwritten by Hagen"; "TYPE ♂ / Orthemis / cultriformis Calv. [written] / P. P. Calvert det.[printed] 1899. / An. Mus. Nac. Buen. Air. / VII, p. 31 [handwritten]"; "Mus. Berol."; "Hagen [both printed]". MCZ ENT 12468.

Calvert's original description cited "Two males and one female; in making the description, Hagen's type, marked «Mus. Berol.» and «Bresil? », now in the Museum of Comparative Zoology, Cambridge, Mass., has also been used. A ♂ at ANSP that served as figure 4 in Calvert's original description was designated as lectotype by von Ellenrieder (2009: 351). Currently *Orthemis cultriformis* Calvert, 1899.

**cydippe** Calvert (**Macrothemis**) 1898a: 332. Holotype ♀. "D. cydippe / \* Hag."; "Rio / Olfers [both handwritten by Hagen]"; "cydippe Hag. [handwritten]"; "Mus. Berol."; "Hagen [printed]"; "Macr. cydippe ♂ / Type of Calvert / Proc. B. S. N. H. 28, / p. 332. Author's / label. Orig. of Pl. II / f. 28. [handwritten]". MCZ ENT 150.

The name was first introduced as a nomen nudum by Hagen (1861: 317) in his list of South American Odonata. Calvert (1898a: 328) stated: "Very similar to the above-described males of *hemichlora* is one at Cambridge labeled "Rio. Olfers" placed after the label" *D. cydippe* Hag." Currently a junior synonym of *Macrothemis hemichlora* (Burmeister, 1839).

**debilis** Hagen (**Dythemis**) 1861: 168. Holotype 1 ♂. "L. debilis / Hagen."; "Cuba / Loew. [both handwritten by Hagen]"; "41 ♂ [handwritten]"; "Hagen [printed]". MCZ ENT 12490.

Description based on 1 ♂ from "Cuba (Poey)." The original description mentioned "Six antecubitals; four postcubitals; two discoidal aerolets." The MCZ ♂ has 7 postnodal veins in the left fore wing and 6 in the right, 5 postnodals in the left fore wing and 4 in the right. Calvert (1906: 229) stated: "In 1897 noted from Hagen's (male) type...". Currently *Micrathyria debilis* (Hagen, 1861).

**decisa** Hagen (**Diplax**) 1874b: 588. Syntypes 4 ♂♂, 5 ♀♀. ♂<sub>1</sub>: "D. decisa / Hag."; "Ft. Hill Col. / Carpenter 78 [both handwritten by Hagen]"; "decisum [handwritten]". ♀<sub>2</sub>, 8, ♂<sub>4</sub>, 9, 10:

"Ft. Hill Col. / Carpenter 78 [handwritten by Hagen]"; "Type Series / Sympetrum / decisum Hagen [handwritten on red label]"; "Sympetrum obtusum (Hagen) / Det. F. L. Carle 1992 [typed]". ♀<sub>3,6,7</sub>. "Ft. Hill Col. / Carpenter 78 [handwritten by Hagen]". MCZ ENT 12442.

Description based on an unspecified series of ♂♂ and ♀♀ from "Foot-hills, Colorado; Colorado Mountains, Pacific slope, August 15 to September 6 (Lieutenant Carpenter), several pairs." Currently a junior synonym of *Sympetrum obtusum* (Hagen, 1867).

**dicrota** Hagen (**Dythemis**) 1861: 166. Syntypes 2 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "D. dicrota / \* Hag."; "Cuba / Loew [both handwritten by Hagen]"; "10 [written]"; "Hagen [printed]". ♀<sub>2,3</sub>: "Cuba / Loew [handwritten by Hagen]"; "17 a ♀ [handwritten]"; "Hagen [printed]". ♂<sub>4</sub>: same data as ♀<sub>2,3</sub> but "17 a ♂. [handwritten]". MCZ ENT 12500.

Description based on an unspecified number of specimens from "Cuba (Poey)". Currently a junior synonym of *Micrathyria didyma* (Selys in Sagra, 1857).

**dythemoides** Calvert (**Micrathyria**) 1909: 232. Syntype ♂. "Paramaribo / Thorey. [handwritten]"; "Hagen [printed]"; "TYPE ♂ [handwritten] / MICRATHYRIA [printed] / dythemoides Calv. [written] / PP Calvert det. 1909 / AnCarMus. Vlp. [printed] 233 / ORIG. PL. VII, f. 135[handwritten]". MCZ ENT 12492.

Originally described from "SURINAM, 1 ♀, Paramaribo by Thorey, 1 ♂. Museum of Comparative Zoölogy, Cambridge, Mass." We were unable to find the syntype ♀ at MCZ. Currently *Micrathyria dythemoides* Calvert, 1909.

**elisa** Hagen (**Diplax**) 1861: 182. Syntypes 4 ♂♂, 2 ♀♀. ♂<sub>1</sub>, ♀<sub>2</sub>: "New Jers / Guex [handwritten by Hagen]". ♂<sub>3</sub>: "L. Elisa / \* Hagen"; "New Jers / Guex [both handwritten by Hagen]"; "Cabot Mem. M. C. Z. / vol. p. pl. 3. f. 4. [handwritten]"; "Hagen [printed]". ♂<sub>4</sub>: "Chicago / Sacken [handwritten by Hagen]". ♀<sub>5</sub>: "N. Y. / O. Sacken [handwritten by Hagen]". ♂<sub>6</sub>: "N. Y. / O. Sacken [handwritten by Hagen]"; "elisa [handwritten]"; "Hagen [printed]". MCZ ENT 8837.

Description based on an unspecified series from: "Bergen Hill, New Jersey (Guex); Chicago; New York (Osten Sacken)." ♂<sub>3</sub> is a mature male and the reference to Cabot is apparently an unpublished citation. Currently *Celithemis elisa* (Hagen, 1861).

**erythroneura** Schneider (**Libellula**) 1845: 111. Syntype 1 ♂. "Patara [handwritten]"; "L. erythro- / neura Schn. [handwritten probably by Schneider]"; "L. erythroneura / Schneider / Asia minor Loew. [handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12450.

Original description based on "1 ♂ von Kellemsch und 1 von Patara." Currently a junior synonym of *Sympetrum fonscolombii* (Selys, 1840).

**exusta** Say (**Libellula**) 1840: 29. Holotype 1 ♂. "Dr. Smith / Sutton. [handwritten]"; "55 [handwritten]"; "Libellula exusta Say\* / Lib. Julia Uhler; Hag. Syn 153.7. / Har[r]is. Cat. 55. ♂♀ [handwritten by Hagen]". MCZ ENT 26474.

The original description mentioned "Massachusetts" as its locality and Say added "I have not seen the female. From Dr. Harris." Hagen (1873a: 265) noted the following: "**Libellula exusta** Say. *Lib. Julia Uhler*, Hag. Syn., 153, 7. No. 55. ♂♀. *Lib. exustus* (sic) Say MSS. (Say's determ.) Dr. Smith, Sutton. Say, loc. cit., 29, 18, described only the ♂, and added, "I have not seen the female. From Dr. Harris." The specimen in the collection is also surely a typical one." Bennefield (1965: 378) in his revision of *Libellula* (*Ladona*) recorded the following: "TYPES. Male holotype located in Museum

of Comparative Zoology, Harvard University, Cambridge, Massachusetts." Currently *Ladona exusta* (Say, 1840).

**fallax** Eversmann (*Libellula*) 1841: 353 (3 reprint) Syntype ♂. "Eversm / Kasan [handprinted on small round label]"; "Kas. / 15. VI [handprinted]"; "L. fallax. ♂. [printed]"; "fallax / \* Eversmann [handprinted by Hagen]"; "Hagen [printed]". MCZ ENT 12431.

Description based on an unspecified number of specimens from "Casan [Volat haec *Libellula* in societate cum L. Hellmanni eodem loco ac tempore; alibi nondum vidi]." According to Seehausen (*pers. comm.*) there is another syntype at NHMW. Currently a junior synonym of *Leucorrhinia caudalis* (Charpentier, 1840).

**fastigiata** Burmeister (*Libellula*) 1839: 850. Holotype ♂. "L. fastigiata / Burm. / Bahia [handwritten by Hagen]"; "Winthem"; "Hagen [printed]". MCZ ENT 12504.

Calvert (1898b: 64) stated the following concerning this specimen: "In the M. C. Z. one male with the written pin-label "L. fastigiata Burm. Bahia", and the printed pin-label "Winthem"." Currently *Uracis fastigiata* (Burmeister, 1839).

**flavicosta** Hagen (*Diplax*) 1890b: 386. Syntype ♂. "S. Diego Cal. / Crotch IV [handwritten]"; "D. flavicosta / Hag. [both handwritten by Hagen]". MCZ ENT 12445.

The name was first introduced as a *nomen nudum* by Hagen (1877: 81) based on 1 ♂ and 1 ♀ from San Diego. The species was subsequently described in 1890 by Hagen who considered it a variety of *S. madidum*. Currently a junior synonym of *Sympetrum madidum* (Hagen, 1861).

**frigida** Hagen (*Leucorrhinia*) 1890a: 231. Syntypes 3 ♂♂, 1 ♀. ♂<sub>1</sub>: "L. frigid / \* Hag. [handwritten by Hagen]"; ♂ / *Diplax* / Natick Mass. / 1864 [handprinted on large white round label]. ♂<sub>2</sub>: North Red River / Uhler 1864 [handwritten by Hagen]"; "112 [printed]"; "Hagen [printed]". ♂<sub>3</sub>: "Sank. [handwritten] / Mass. [printed]"; "J. I. B. [penciled]". ♀<sub>4</sub>: "J. 6 [penciled]". MCZ ENT 12437.

Original description based on "♂, ♀ Massachusetts; ♂ N. Red River, British America; Ontario; Dakota." Currently *Leucorrhinia frigida* Hagen, 1890.

**fugax** Hagen (*Dythemis*) 1861: 163. Syntypes 2 ♂♂, 3 ♀♀. ♀<sub>1</sub>: "L. fugax Hag"; "Pecos River"; "Aug / 8 [all handwritten by Hagen]". ♀<sub>2</sub>: same label data but "July / 5 [handwritten by Hagen]". ♂<sub>3</sub>: "Pecos River"; "July / 15 [all handwritten by Hagen]"; "fugax [handwritten]"; "Hagen [printed]". ♀<sub>4</sub>: "Lib / affiliata / Mihi / Texas. Pecos / River 7/C Pope"; "July / 7 [both handwritten by Hagen]"; "fugax [handwritten]"; "Hagen [printed]". ♂<sub>5</sub>: "Pecos River"; "July / 4 [all handwritten by Hagen]"; "fugax [handwritten]"; "Hagen [printed]". MCZ ENT 132.

Additional syntypes ♂ and ♀ ("Pecos River Uhler, July 10") are present at Selys Collection, RBINS according to Ris (1913a: 839). Currently *Dythemis fugax* Hagen, 1861.

**funerea** Hagen (*Libellula*) 1861: 158. Holotype ♂. "Mexico Thorey [handwritten by Hagen]"; "Hagen [printed]"; small blank blue label. MCZ ENT 12480.

Description based on 1 ♂ from "Mexico." Currently *Erythrodiplax funerea* (Hagen, 1861).

**furcata** Hagen (*Erythemis*) 1861: 169. Syntype ♀. "L. furcata. / Hagen"; "Cuba / O. Sacken / March 1858. [both handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12475.

Description based on an unspecified number of specimens from "Cuba (Osten Sacken); Bahia, Brazil; Tampico, Mexico (Saussure)". Currently *Brachymesia furcata* (Hagen, 1861).

**glacialis** Hagen (**Leucorrhinia**) 1890a: 234. Syntypes 13 ♂♂, 1 ♀. ♂<sub>1</sub>; "L. glacialis / \* Hag."; "L. glacialis / Hag [both handwritten by Hagen]"; "Sank. [handwritten] / Mass. [printed]". ♂<sub>2, 3, 4, 5, 6, 9, 10, 11</sub>, ♀<sub>12</sub>; "Reno, Nev. / Morrison, 1878. [printed]"; some also with "glacialis [handwritten]". ♂<sub>13</sub>; "Michipicoten / Lake Superior / Barriston 1862 [handwritten by Hagen]"; ♂<sub>14</sub>; Cape Breton / A.F. S. [handwritten]"; "glacialis [handwritten]". ♂<sub>15, 16</sub>; "London / Ontario / Canada [handwritten]"; "glacialis [handwritten]". MCZ ENT 12439.

Hagen stated: "I have sixteen males before me from Massachusetts; Cape Breton, Nova Scotia; London, Ontario; Michipicoten on Lake Superior; and Reno, Nevada (Mr. Morrison, 1878)." Hagen further stated concerning ♀<sub>12</sub>: "I do not know the female. The only female from Reno belongs to intacta?". Currently *Leucorrhinia glacialis* Hagen, 1890.

**gravida** Calvert (**Lepthemis**) 1890: 35. Syntype ♂. "C. gravida / n sp Hag. [handwritten by Hagen]"; "Lepthemis / gravida / (Hag. MS) Calv. / Type. Young ♂ / Florida. [handwritten]"; "Calvert Trans. A. E. S. / 1890. V. 17, p. 35, pl. 5 f. 11-13 [handwritten]". MCZ ENT 12503.

Calvert (1890: 36): recorded the following concerning this species: "The above description is based on eleven males, ten females from Florida, and four males, ten females from Texas. Mr. E. M. Aaron tells me that he has taken this species at Tarpon Springs and Ponto Rasso, on the Gulf coast of Florida, and that the Texan specimens just referred to were taken by Mr. S. F. Aaron near Corpus Christi and the Nueces River." Currently *Brachymesia gravida* (Calvert, 1890).

**guttata** Erichson in Schomburgk, 1848 (*Libellula*): 584. Paralectotype ♀. "U. guttata / \* Erichs. [handwritten by Hagen]"; "Anatya / Kirby [handwritten]"; "guttata / N / ♀."; "Guyana [both handwritten]"; "Mus. Berol."; "Hagen [printed]". MCZ ENT 12511.

The original description (Erichson 1848: 584) included a pair ("Der Mittelleib ist beim Männchen oben dunkelbraun marmoriert, an den Seiten hellgrau..." and "Der Hinterleib ist bei beiden Geschlechtern schwarz..."). We consider the statement by Karsch (1890: 374): "Als Type seiner Gattung *Anatya* beschreibt Kirby eine *Anatya anomala* n. sp. von Brasilien. Sie ist synonym mit *Libellula guttata* Erichson (*Uracis guttata* Brauer), deren Type das Königliche Museum für Naturkunde zu Berlin besitzt." as lectotype designation. Currently *Anatya guttata* (Erichson in Schomburgk, 1848).

**heliophila** Borror (*Oligoclada*) 1931: 32. Paratype ♂. "Oligoclada / heliophila Wm"; Rio Frio / Colombia / J. H. & E. B. Williamson / Jan. 17, 1917 / No. 47 [both handwritten by Williamson]". MCZ ENT 16565.

The holotype is at UMMZ (Garrison et al. 2003: 57). Currently *Oligoclada heliophila* Borror, 1931.

**hellmanni** Eversmann (**Libellula**) 1841: 351 (1 reprint). Syntype ♂. "L. Hellmanni / Evers. ♂ [handwritten]"; "Eversm / Kasan [handprinted on small round label]"; "Kas. / 15. VI [handprinted]"; "female var. / apic. al. macula [apicali alarum macula]"; "Hellmanni / \* Eversman [both handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12430.

Description based on an unspecified number of specimens from "Casan ("Frequentissima volitabat hoc anno (1840) primis diebus mensis Junii ad lacum Glubokoje, 12 stadia ab urbe Casan remotum, alibi nunquam vidi."). Currently a junior synonym of *Leucorrhinia caudalis* (Charpentier, 1840).

**hemichlora** Burmeister (**Libellula**) 1839: 849. Syntype ♀. "D. hemichlora / \* B[urmeister] [handwritten by Hagen]"; "hemi- / chlora / Burm \* / Bahia [handwritten]"; "Macr. hemichlora ♀ / Burm. Original / of Pl. II, 32, Proc. B. / S. N. H. 28. P.P. Calvert [handwritten]"; "Winthem. [printed]". MCZ ENT 149.

Calvert (1898b: 61-62) provided details of the Burmeister's syntype as follows: "In the M. C. Z. one female with the written pin-label 'hemichlora Burm. \*. Bahia' and the printed pin-label 'Winthem'. A second female has the written pin-label 'Bahia' and the printed pin-label 'Winthem'; it may or may not have been seen by B[urmeister]." The second ♀ lacks an MCZ type label. Calvert (1898a: 330) cited these two ♀♀ ("♀ (two types of Burmeister)....") in describing *Macrothemis hemichlora*. The syntype listed above is missing the right hind wing. Currently *Macrothemis hemichlora* (Burmeister, 1839).

**hinei** Calvert (*Rhodopygia*) 1907: 319. Paratype ♂. "Obispo / Hasler Exp. [handwritten] / Panama. [printed]"; "Rhodopygia / hinei Calv [handwritten] / P. P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed]"; "319 [handwritten]"; "Hagen [printed]". MCZ ENT 14435.

The holotype is presumably at Ohio State University. Currently *Rhodopygia hinei* Calvert, 1907.

**histro** Burmeister (**Libellula**) 1839: 849. Holotype ♀. "L. Berenice / Dr. / L. histrio Br. \* [handwritten by Hagen]"; "L. histrio / \* Burm. / New York [handwritten, Fig. 3]"; "Winthem."; "Hagen [both printed]". MCZ ENT 12501.

Calvert (1898b: 61-62) provided details of Burmeister's holotype as follows: "In the M. C. Z. one female with the written pin-label 'L. histrio \* Burm. New York', and the printed pin-label 'Winthem'. Currently a junior synonym of *Erythrodiplax berenice berenice* (Drury, 1773).

**illota** Hagen (**Mesothemis**) 1861: 172. Syntype ♂. "illotum / Hagen [handwritten]"; "Nord Cali / fornia"; "Mus. Petrog [both handwritten by Hagen]"; "illota"; "Hagen, Synop. Neur. / N. Amer. 1861, p. 172 [both handwritten]". MCZ ENT 1868.

Description based on at least 2 ♂♂ from "North California; Mexico." The venation statistics given by Hagen ("Nine antecubitals; seven postcubitals; three discoidal areolets.") match those for the MCZ ♂. The last five abdominal segments are glued to a label pinned beneath the specimen with a penned note that is undecipherable. We were unable to find the specimen labeled from Mexico. Currently *Sympetrum illotum* (Hagen, 1861).

**imbuta** Burmeister (**Libellula**) 1839: 850. Syntypes? ♂, ♀. Both specimens: "Bahia [handwritten]"; "Winthem. [printed]"; "Probable type / Libellula ♂ [or ♀] / imbuta Burm. / P.P. Calvert, July / 1897 [handwritten]". MCZ ENT 12505.

Calvert (1898b: 64) provided the following concerning these specimens: "One male and one female, in the M. C. Z., each with the written pin-label 'Bahia', and the printed pin-label 'Winthem', may be types." Currently *Uracis imbuta* (Burmeister, 1839).

**inacuta** Calvert (*Macrothemis*) 1898a: 328. Paralectotypes 3 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "Macr. inacuta. ♂ / Type of Calvert, / Proc. B. S. N. H. 28 / p. 318. Author's / label [handwritten]"; "a [handwritten]"; "Acapulco. / A. Agassiz. [printed]". ♀<sub>2,3</sub>, ♂<sub>4</sub>: same handwritten Calvert labels (except for ♂ or ♀) but "F. Sumichrast / lsth. of Tehuantepec. [printed]"; ♂<sub>5</sub>: same labels but "Guatemala. / Coll. Van. Patten. [printed]". MCZ ENT 147.



Calvert (1898a: 328-329) introduced the name providing a brief diagnosis of this species whose description was later (Calvert 1899a: 395) given in more detail. Calvert (1947: 608) later designated a ♂ at CAS as lectotype as follows: "*Macrothemis inacuta* Calvert, p. 395. (a) 1♂; (b) 1♂ Oct., '94; (c) 0. A brief diagnosis of this species was first published in Proc. Bost. Soc. Nat. Hist. 28 (12): 328, 1898. I hereby designate the male in the California Academy of Sciences as the lectotype (C. A. S. No. 5612)." Currently *Macrothemis inacuta* Calvert, 1898.

**incesta** Hagen (**Libellula**) 1861: 155. Holotype ♂. "L. incest / \* Hag. [handwritten by Hagen]"; Coll. Germar / L. incesta Hagen / Zimmermann / Carolina"; "Carolina [both handwritten on green labels]"; "Hagen [printed]". MCZ ENT 12479.

Original description based on 1 ♂ from "Carolina (Zimmermann)". Currently *Libellula incesta* Hagen, 1861.

**insularis** Hagen (**Tamea**) 1861:146. Syntypes ♂, ♀. ♂: "L. insularis Hag. / Cuba [handwritten by Hagen]"; "Hagen [printed]". ♀: "Cuba / Poey. 1852 [handwritten by Hagen]"; "37 "; "♀ [both handwritten]"; "Hagen [printed]". MCZ ENT 12487.

Original description based on a pair from "Cuba (Poey)". Hagen cited "nine postcubitals [post-nodals]" but both specimens have 10 antenodal crossveins in each fore wing. Currently *Tamea insularis* Hagen, 1861.

**intacta** Hagen (**Diplax**) 1861: 179. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "L. intacta / \* Hag." "L. intact / Hag. / Chic Schaum [both handwritten by Hagen]". ♂<sub>2</sub>: "Chicago / Schaum [handwritten by Hagen]". ♀<sub>3</sub>: "Wisconsin / Uhler 1854 [handprinted by Hagen]"; "Racine / Dr. Hoy [penciled]"; all three with "Hagen [printed]". MCZ ENT 12434.

Original description based on an unspecified number of specimens from "Wisconsin (Dr. Hoy); Chicago (Osten Sacken); Ohio (Schaum); Massachusetts (Scudder)." Another syntype ♂ (Massachusetts) is listed by Ris (1912: 717) at RBINS. Currently *Leucorhina intacta* (Hagen, 1861).

**internum** Montgomery (**Sympetrum**) 1943: 58. Syntypes 7 ♂♂, 6 ♀♀. 7 ♂♂, 3 ♀♀: "Saskat. Scudder. / F. C. Gray's Fund. [printed]"; "Sympetrum / internum Montg. [handwritten] / def. M. A. Evans 198[printed] 4 [handwritten]". ♀: "Minnesota [handwritten]"; "Sympetrum internum Montgomery / Def. F. L. Carle 1992 [printed]"; ♀♀: "Dacota / Dr. Mark [handprinted]". MCZ ENT 36154.

Montgomery (1943: 58) cited the following as types: "Types: male holotype, female allotype and 5 males 3 females paratypes-"Saskat. Scudder. F. C. Gray's Fund" (cited by Hagen, 1875, as "Saskatchewan, Southern Lake Winnipeg, British America"); female paratype-"Minnesota", 2 female paratypes" Dakota. North Atle Cr. Dr. Mark.". We found the 13 specimens mentioned for the type series but none was marked as type in any way nor did Montgomery provide any specific data that might allow one to determine which male was the holotype. We have therefore applied syntype labels to the entire series and suggest that one of the males from Saskatchewan be selected as a lectotype. Currently *Sympetrum internum* Montgomery, 1943.

**iphigenia** Hagen (**Tamea**) 1867d: 230. Holotype ♂. "St. Fe de Bogota / Lindig. 1863"; "Tamea / Iphigenia Hag. [both handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12482.

The original description was based on only 1 ♂ ("Sehr möglicher Weise ist I. iphigenia Hag., von der ich nur ein Männchen aus St. Fe de Bogota, gesammelt von Lindig, besitze, das andere Geschlecht

[referring to *T. australis*]. Ich setze die früher von mir gefertigte Diagnose her."). The holotype lacks the last five abdominal segments. There are currently two other ♀♀ labeled as *T. iphigenia* from "Cuba / Poey / 1866" labeled as MCZ Types 12483; these are syntypes of *T. australis* and are referenced above under that name. Currently a junior synonym of *Tauriphila australis* (Hagen, 1867).

**japonica** Uhler (*Libellula*) 1858b: 29. Holotype ♂. "L. japonica / \* Uhler."; "L. japonica / Uhler. \* [both handwritten by Hagen]"; "P. R. Uhler [handwritten]"; "Hako/ dadi / Japan"; "japonica [both penciled]". MCZ ENT 12510.

Original description based on 1 ♂ from "Hakodadi, Japan." The holotype is in poor condition and lacks the head and abdominal segments 2-10; the thorax has also sustained dermestid damage. Currently *Orthetrum japonicum* (Uhler, 1858).

**jesseana** Williamson (*Libellula*) 1922: 13. Paratype ♂. "Libellula / jesseana / Paratype Will. [handwritten]"; "Enterprise / Fla. J. H. / Williamson"; "April 23 [both handwritten by Williamson]". MCZ ENT 14421.

The holotype is at UMMZ (Garrison et al. 2003: 57). Currently *Libellula jesseana* Williamson, 1922.

**julia** Uhler (*Libellula*) 1858a: 88. Holotype ♂. "L. Julia \* / Uhler. 1858 / Puget Sound. [handwritten by Hagen]"; "25 [printed]"; "Hagen [printed]". MCZ ENT 12477.

Bennefield (1965: 366) in his revision of *Libellula (Ladona)* recorded the following: "TYPES. Male holotype, located in the Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts. Type with most of right forewing missing, the tips of both hind wings and both hind tarsi missing." Currently *Ladona julia* (Uhler, 1858).

[*juliana* Selys in Hagen (*Libellula*) 1855: 125. Pseudotype ♂. "L. Juliana. / \* Selys." "Lib. Juliana Selys"; "Lagoa Santa / Lund [all handwritten by Hagen]"; "MCZ [handwritten]".

The name was first introduced as a nomen nudum by Hagen (1855: 125) as *Libellula Juliana* var♀ and again (1861: 319) as *Libellula juliana* with authorship attributed to Selys and again (Hagen 1877: 91) as *Diplax juliana* Hagen. The name was later applied to a new (sub)species *Erythrodiplax nigricans juliana* (Selys ms) by Ris (1911a: 513, 514), who considered the male specimens from S. João del Rey in Selys' collection as the types. The abdomen is glued to the Lagoa locality label. Currently *Erythrodiplax juliana* Ris, 1911.]

**lacerata** Hagen (*Tamea*) 1861: 145. Syntypes 4 ♂♂, 1 ♀. ♂<sub>1</sub>: "T. lacerata / \* Hag"; "Pecos River"; "July / 16 [all handwritten by Hagen]"; "Hagen [printed]". ♂<sub>2, 4, 5</sub>, ♀: "Matamoros [written by Hagen]". MCZ ENT 12484.

Original description based on an unspecified number of specimens from "Pecos River, Western Texas (Capt. Pope); Matamoros, Mexico; Maryland (Uhler)." Three other syntypes of Hagen ("1 ♀ Pecos River, 2 ♂ Matamoros (HAGEN)") are listed by Ris (1913b: 999) at RBINS. The head is missing on 2 of the MCZ Matamoros ♂♂. Currently *Tamea lacerata* Hagen, 1861.

**lateralis** Burmeister (*Libellula*) 1839: 850. Syntype 1 ♀. "lateralis / Burm. [handwritten]"; "L. lateralis Burm / \* coll. Somer / Comor. Insel St. Juan."; "Cap. Dr. [?] [handwritten]"; "61 [handwritten]"; "Hagen [printed]". MCZ ENT 1869.

Calvert (1898b: 64) provided the following concerning this name: "One female under the blue drawer-label "lateralis Burm. Ins. Com. Sm." in B[urmeister].s hand, at Halle; no pin-label. One

female, in the M. C. Z., with written pin-label "L. lateralis Burm. \* coll. Somer. Comor. Insel St. Juan" in Hagen's hand." Currently a junior synonym of *Trithemis arteriosa* (Burmeister, 1839).

**leucorhinus** Charpentier (*Libellula*) 1840: 87. Syntype ♂. "Lib. leucorhinus / Charp / L. albifrons Bur. [handwritten]; "Alto aber Seb?? / ???hoen [handwritten label largely undecipherable]"; "Charpent. [handwritten on intricate black-bordered label]"; "Hagen [printed]". MCZ ENT 12436.

Charpentier (1840: 87) introduced this name ("Lib. leucorhinus") within his species account of *Libellula pectoralis* under a note: "Eiusdem Libellulae exempla nonnulla, in Moraviae montibus capta". Hagen (1840: 38) listed *leucorhinus* as good species and *albifrons* as its synonym. Selys (1840) did not list *leucorhinus*, but did include *albifrons*. He later (Selys 1850: 59) placed *leucorhinus* as synonym of *albifrons*. This has been followed by later authors. Currently considered a junior synonym of *Leucorrhinia albifrons* (Burmeister, 1839).

*leucosticta* Burmeister (*Libellula*) 1839: 849. Paralectotypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "albisti / cta Br. / Senegal. [handwritten]"; "leucosticta / Burm. [handwritten]". ♂<sub>2</sub>: "L. unifasciata / Oliv. / L. leucosticta / \* Br. [handwritten by Hagen]". ♀<sub>3</sub>: "Senegal"; "leucosticta [both handwritten]". All three with: "Winthem"; "Hagen [both printed]". MCZ ENT 1872.

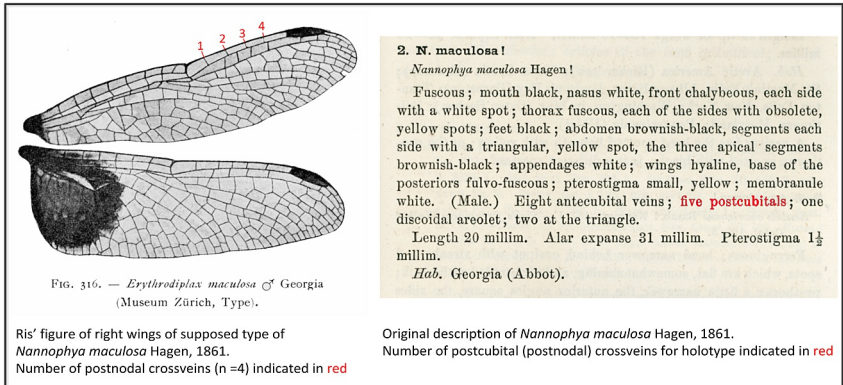
Calvert (1898b: 63) selected a lectotype at MLU as follows: "One male (T[ype]) under the blue drawer-label "leucosticta Burm. Port. nat. Drg." in B[urmeister].':s hand, at Halle; no pin-label other than a bit of unmarked blue paper. In the M. C. Z.: one male with the written pin-label "albisticta Br. Senegal", and the printed pin-label "Winthem"; one male with the written pin-label "Senegal", and the printed pin-label "Winthem". Dijkstra & Matushkina (2009: 241) in their analysis of the *leucosticta* group of species remarked: "Burmeister (1839) described *L. leucosticta* "vom Port natal ... auch in Aegypten und Senegambien" but Calvert (1898) selected a South African male as the "actual type". The specimen is in good condition and has labels: "Considered by me as Burmeister's type of his *Libellula leucosticta* P.P. Calvert. May 1896" [white] and "*Leucosticta* Burmeister. Port. nat. Drg." [blue]." Currently *Brachythemis leucosticta* (Burmeister, 1839).

**longipes** Hagen (*Erythemis*) 1861: 169. Syntypes 1 ♂, 1 ♀. ♂: "L. longipes [handwritten in green label]"; "Mg. [handwritten in blue label]"; "Hagen [printed]"; "EPHIDATIA / LONGIPES CUBENSIS Scud [printed] Hagen [Handwritten] / P. P. Calvert, det. 1906 / B. C. A., p. 216 [printed]"; "Idiataphe longipes ♂ / J. RACENIS det. / 1965 No. 5128. [printed]". ♀: "Rio de Janeiro / Reinhardt [handwritten]"; "Hagen [printed]"; "EPHIDATIA / LONGIPES CUBENSIS Scud [printed] Hagen [Handwritten] / P. P. Calvert, det. 1906 / B. C. A., p. 216 [printed]"; "Idiataphe longipes ♀ / J. RACENIS det. / 1965 No. 5129. [printed]". MCZ ENT 12469.

Original description based on an unspecified number of specimens from "Cuba (Poey); Minas Geraes, Rio Janeiro, Brazil.)." The Cuban specimen/s, which we could not locate at MCZ, probably represent/s *Idiataphe cubensis* Scudder. There are 2 ♂♂ of *E. longipes* from Minas Gerais ("mg.") and 1 ♀ from Rio de Janeiro at MCZ. One of the ♂ has the identification label '*Libellula tenuipes*' written by Hagen; this is a *nomen nudum* (Hagen 1855: 125) which Hagen himself synonymized to *E. longipes* (Hagen 1877: 89) but after the original description of *E. longipes* in 1861. Therefore, we disagree with Rácenis (1969: 6) who stated that this male should be considered the holotype of *E. longipes*, 1861, and agree with Calvert (1906: 216) who considered the second male of Minas Geraes, which bears the identification label '*L. longipes*' in Hagen's

hand, and the female from Rio de Janeiro as part of the original series of syntypes. Currently *Idiataphe longipes* (Hagen, 1861).

**maculosa** Hagen (**Nannophya**) 1861: 187. Holotype ♂ (Fig. 9). "N. maculosa / Hag / \* North Amer. Neur"; "N. maculosa Hag. / Georgia. Abbot / E. Zollicofer [both handwritten by Hagen]"; "Hagen, Synop. Neurop. / N. Amer., 1861. P. 187 [handwritten]"; "maculosa / Hagen [handwritten]". MCZ ENT 1755.



**Figure 9. *Nannophya maculosa* Hagen.**

Borror (1942: 9) in his revision of the genus cited "Mus. Zurich (♂)" for the type of this name and noted that the locality given for this South American species (Georgia) was incorrect. Later, Borror (1944: 393) stated: "At the time of the writer's revision of the genus *Erythrodiplax* only three specimens of this species were known, the type male and a female in European collections, and a female (Förster's type of *Diplacodes friedericella*) in the Museum of Zoology at Ann Arbor, Michigan." Borror's data were likely taken from Ris (1911a: 526) who listed a ♂ with the following data: "Mus. Zürich: 1 ♂ [ohne Loc. Lib. maculosa HAGEN's Hd.], – HAGEN's Type." The photo of the right pair of wings (fig. 316) that accompanies Ris' description shows eight antecubital (antenodal) veins and four postcubital (postnodal) veins. The MCZ ♂ has "Eight antecubital veins; five postcubitals" and tallies with Hagen's original description. Hagen's original description was based on a single ♂ from "Georgia (Abbot)," and the MCZ ♂ is, therefore the holotype. The head of the holotype is missing. Currently *Erythrodiplax maculosa* (Hagen, 1861).

**madida** Hagen (**Diplax**) 1861:174. Holotype ♀. "D. madida / Hagen."; "L. madida H."; Upper Missouri [all three handwritten by Hagen]; "Hagen, Synop. Neurop. N. / Amer., 1861. P. 174 [handwritten]"; "Hagen [printed]". MCZ ENT 12444.

Original description based on 1 ♀ from "Upper Missouri." The specimen is an old female with frayed wings, lacking the head and terminal six abdominal segments". Described from a single, mutilated specimen; the head, and apex of the abdomen are destroyed. Currently *Sympetrum madidum* (Hagen, 1861).

**marmorata** Hagen (**Macrothemis**) 1868: 286. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "M. marmorata / \* Hag."; "Macr. marmorata ♂ / Hag. Original of / Pl. II, 33, Proc. B. S. / N. H. 28. P.P. Calvert [handwritten]"; "Hagen [printed]". All three specimens: "marmorata Hagen ♂ [or ♀] [handwritten]"; "Beschke [handwritten by Hagen]". MCZ ENT 144.

Described by Hagen from "Neu-Freiburg bei Rio von Beschke." Calvert (1898a: 322-324) suspected that Hagen's ♀ might really be *M. tenuis*: "The female type of *marmorata* has this color pattern of *tenuis*, hence I suspect it may be really the female of *tenuis*; Dr. Hagen probably considered it as *marmorata* on account of the "schwarzblaue metallische Färbung nur oben auf der Stirn" lacking in the males of *tenuis*, present in the males of *marmorata*." Currently *Macrothemis marmorata* Hagen, 1868.

**martha** Williamson (**Celithemis**) 1922: 4. Paratypes 5 ♂♂, 4 ♀♀. 3 ♂♂: "Wareham / Mass. 20-VII / O. Bangs [handwritten]"; "martha [handwritten]." ♀: "Wareham / Mass. 8-VII / O. Bangs [handwritten]"; "ornata [handwritten]." ♂, 2 ♀♀: "Mass.: / Wareham / 30 [or 31] July 1912 / O. Bangs. [handwritten]"; "martha [handwritten]". ♀: "N. J. / Uhler [handwritten]"; "martha [handwritten]". ♂: "N. J. [printed]"; "martha [handwritten]". MCZ ENT 14423.

The holotype is at UMMZ (Garrison et al. 2003: 58). White & Calhoun (2009: 422) provided an interesting account on the naming of this species. Currently *Celithemis martha* Williamson, 1922.

**melanostigma** Eversmann (**Libellula**) 1836: 238. Syntypes 2 ♂♂, 2 ♀♀. ♂<sub>1</sub>: "melano- / stigma Eversm. ♂"; "Eversm / Kasan [handprinted on small round label]". ♂<sub>2</sub>: "melanostigma / ♂. Evm. [handwritten]"; "Eversm / Kasan [handwritten on small round label]"; 19 VI [handwritten]; "melanostigma / \* Eversm. / Kasan Russia [handwritten by Hagen]". ♀♀: "melanostigma / fem."; "Kas. / 10.vi [all handwritten]"; Eversm / Kasan [handwritten on small round label]". All four specimens with "Hagen [printed]". MCZ ENT 12435.

Original description based on an unspecified number of specimens: "Volat haud rara mense Majo in provincia Casanensi." Currently a junior synonym of *Leucorhina dubia* (Vander Linden, 1825).

**mendax** Hagen (*Dythemis*) 1861: 164. Syntypes 2 ♂♂, 3 ♀♀. ♂: "Brech. / mendax [handwritten]"; "Brech. mendax ♂ / Original of / Pl. II, / fig. 23, Proc. B. S. / N. H. 28. P.P. Calvert [handwritten]". All specimens with "Pecos River [handwritten]"; "Hagen [printed]"; dated "July / 2 [♂]", "Aug / 7 [♀]", "Aug / 24 [♀♀]", "Aug / 5 [♀ also with: "Brech. mendax ♀ / Original of / Pl. II, / fig. 30, Proc. B. S. N. / H. 28. P.P. Calvert [handwritten]"]. ♀: "Mexico Thorey [handwritten by Hagen]"; "Brech. mendax ♀ / Original of / Pl. II, / fig. 25, 29, Proc. B. / S. N. H. 28. P.P. Calvert [handwritten]". MCZ ENT 137.

Originally described from an unspecified number of specimens from "Pecos River, Western Texas (Capt. Pope)." Currently *Brechmorhoga mendax* (Hagen, 1861).

**morio** Schneider (*Libellula*) 1845:112. Syntypes 1 ♂, 2 ♀♀. ♂: "morio, / Schneid. [handwritten]"; "L. morio / Schneid / Asia minor Loew. [handwritten by Hagen]"; "Kellemish [handwritten]"; "Löw [handwritten on green label]". ♀♀: "Kellemish Sch [handwritten]"; "Löw [handwritten on green label]"; "Hagen [printed]", one ♀ with additional labels "37.", "L. morio Sch. [both handwritten]". MCZ ENT 14433.

Original description based on "1 ♂ u[nd]. 2 ♀ von Kellemisch." Currently a junior synonym of *Diplacodes lefebvrui* (Rambur, 1842).

**musiva** Calvert (*Macrothemis*) 1898a: 326. Holotype ♀. "Brazil, Heyer. [handwritten by Hagen]"; "musiva [handwritten]"; "32 [handwritten]"; "Macr. musiva ♀ / Type of Calvert, / Proc. B. S. N. H. 28, p. / 326. Author's label [handwritten]"; "Hagen [printed]". Paratype ♀: "Canta Gallo. / Brazil. / Dr. Teuscher. / Thayer Exped. [printed]"; "musiva [handwritten]"; "Macr. musiva ♀ / Type of Calvert, / Proc. B. S. N. H. 28, p. / 326. Author's / label. [handwritten]" MCZ ENT 146.

The name was first introduced as a *nomen nudum* by Hagen (1861: 317) in his list of South American Odonata. We consider the statement by Calvert 1898a: 328: "One female, Brazil, Heyer, the original type of Hagen, the last five segments of the abdomen lost." as holotype designation. Currently *Macrothemis musiva* Calvert, 1898.

**naeva** Hagen (*Dythemis*) 1861: 167. Syntypes 1 ♂, 1 ♀. Both specimens: "75 / ♂ [or ♀] [handwritten]"; "Cuba / Loew [handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12491.

Description based on a pair (Calvert 1906: 270) from "Cuba (Poey)." Currently *Erythrodiplax berenice naeva* (Hagen, 1861).

**needhami** Westfall (*Libellula* (*Holotania*)) 1943: 22. Paratypes 12 ♂♂, 8 ♀♀. All specimens: "PARATYPE / Libellula / needhami / M. J. Westfall, Jr. [printed on blue label]." ♂: "N. J. [handwritten]." ♀♀: "Wareham / Mass. / O. Bangs [printed]." ♂: "Winthem. [printed]." ♂: "VOLLASTON / MASS. / F. H. SPRAGUE / JUNE [printed] 21 [handwritten] 1896 [printed]"; "F. H. Sprague / Collection. [printed]." ♂: "22 [printed]"; "L. costalis / Uhler. 1858 / Maryland. [handwritten by Hagen]"; "Hagen [printed]." ♂: "West Jupiter / Fla. / Apr. 13, 1896 / Mrs. C. B. Cory. [handwritten]." ♂: "L. costalis Uhler. / Louisiana Schaum [handwritten by Hagen]." ♂: "Rockledge / Fla. March / S. E. Cassino [handwritten]." ♂: "Provincetown / July 22. 77



[handwritten]." ♂: "Ft. Lauderdale / Fla. 16. VI. Bates [handwritten]." ♀: "Jupiter, Fla / Mch 21, 1919 / Thomas Barbour [handwritten]." ♀♀: "Amer. Sep / Guex [handwritten by Hagen]." ♀: Wareham / Mass 10-VII / O. Bangs [handwritten]." ♀: "Maryland. / Frede[rick]. Co [handwritten]." ♀: "Block Island, R. I. / Aug. 28, 1891.;" "♀"; "A. P. Morse / Coll. [all printed]." ♀: "Haulover / March [printed] 11 [handwritten] Fla [printed]". MCZ ENT 25893.

The holotype ♂ is at Cornell University collection (Westfall 1943: 23). Currently *Libellula needhami* Westfall, 1943.

*nigrescens* Calvert (*Dythemis*) 1899a: 390. Paralectotype ♂. "Tepic, Mexico / Oct., 1894. Eisen & Vasliitt"; "Dythemis / velox / var. nigrescens / type of Calvert [both handwritten by Calvert]". MCZ ENT 12488.

Calvert (1947: 608) designated a ♂ at CAS as lectotype as follows: "Dythemis velox Hagen, var. (?) *nigrescens* var. nov., p. 390. (a) 2♂, 32♀; (b) 5♂, 5♀ Oct., '94; (c) 5♂, 5♀ same date. I hereby designate one male and one female in the California Academy of Sciences as lectotype (C. A. S. No. 5610) and lectallotype (C. A. S.No. 5611) respectively." Currently *Dythemis nigrescens* Calvert, 1899.

**nigricula** Eversmann (*Libellula*) 1836: 240. Syntypes 2 ♂♂, 1 ♀. ♂<sub>1</sub>: "Kasan. / Hagen. [handwritten on blue label]"; "nigricula / Evsm. ♂ [handwritten]"; "Eversm / Kasan [handwritten on small round label]"; "[undecipherable handwritten label]"; "Hagen [printed]". ♂<sub>2</sub>: "nigricula / Evsm. ♂ [handwritten]"; Eversm / Kasan [handwritten on small round label]"; "[undecipherable handwritten label]"; "Hagen [printed]". ♀: "Kasan. / Hagen. [handwritten on blue label]"; "nigricula / Evsm. ♀ [handwritten]"; "Eversm / Kasan [handwritten on small round label]"; "V. af [??]"; "Hagen [printed]"; "Hagen [printed]". MCZ ENT 12464.

Original description based on at least a pair: "frequens in provincia casanensi, mense Augusto." Currently a junior synonym of *Sympetrum danae* (Sulzer, 1776).

**obtrusa** Hagen (*Diplax*) 1867c: 95. Holotype 1 ♂. "Diplax / obtrusa / \* Hagen [handwritten]"; "L. rubicundula / Hag ♀ / D. obtrusa Hag. / var. Amer. Syn / p. 177 [handwritten by Hagen; the notation " D. obtrusa Hag." was written at a later date as this partially overwrites the previous text "Hag ♀?"]"; "Chicago / Sacken"; "var. rubicundula / [?]. hamula !! [all handwritten by Hagen]". MCZ ENT 12448.

Hagen (1867c: 95) introduced this name as follows: "Das von mir bei L. rubicundula Synops. p. 177 zuletzt erwähnte Männchen aus Chicago bildet eine neue Art, D. obtrusa Hagen." thus referencing a specimen from Hagen (1861: 177): "I possess a male from Chicago most like this species, except that the form of the hamules is different; being shorter, the apex only bifid, the external branch broad, truncated; the internal branch small, unguiculated;-is it a distinct species?". The holotype lacks the head. Currently *Sympetrum obtrusum* (Hagen, 1867).

**ochracea** Burmeister (*Libellula*) 1839: 854. Syntypes 1 ♂, 1 specimen lacking abdomen. ♂ "L. ~~ochr~~ / ochracea / Br. Bahia \* [handwritten]". Other specimen: "L. ochracea. / \* Br. [handwritten]". Both specimens with: "Winthem"; "Hagen [both printed]". MCZ ENT 1878.

Calvert (1898b: 71-72) provided the following concerning this name: "Two males in the M. C. Z., one with the written pin-label "L. ochracea Br. \* Bahia"; the other with the written pin.label "L. ochracea \* Br." in Hagen's hand; both have printed pin-labels " Winthem"; the second male mentioned has lost the abdomen so that its sex as given, although probable, is not certain.



Hagen says (Proc. Bost. Soc. Nat. Hist. xv, p. 375, 1873) "Having before me the type of *D. ochracea*, Burm.," etc.". Currently *Erythrodiplax ochracea* (Burmeister, 1839).

**odiosa** Hagen (*Libellula*) 1861: 152. Syntypes 3 ♂♂, 2 ♀♀. ♂: "L. odiosa Hag.". The following labels on all specimens: "Pecos River / Texas" [handwritten by Hagen]; "Hagen [printed]". ♂♀: "July / 10". ♂: "Aug / 12". ♂: "Aug / 13". ♀: "Aug / 21". MCZ ENT 8839.

Original description based on an unspecified number of specimens from "Pecos River, Western Texas (Capt. Pope)." Ris (1910: 263) noted that there is a pair of syntypes ("1 ♂ [L. odiosa HAGEN, Pecos River | July 5], 1 ♀ [L. odiosa HAGEN Pecos River | Aug. 13]." at RBINS. Garrison (1976: 186) provided the following concerning Hagen's syntypes: "Excessive heat can also cause the wings and body to glisten like teneral immediately after eclosion. The types of *L. odiosa* are in this condition and were so described by Hagen (1861): "Entirely brassy-black...". Currently a junior synonym of *Libellula luctuosa* Burmeister, 1839.

**onusta** Hagen (*Tramea*) 1861: 144. Syntypes 6 ♂♂, 2 ♀♀. 1 ♂: T. onusta / \* Hag. [handwritten by Hagen]. 5 ♂♂, ♀: "Matamoros [handwritten by Hagen]". ♂♀: "Pecos River"; "Aug / 13 [♂], June / 4 [♀]". All specimens with "Hagen [printed]". MCZ ENT 12485.

Ris (1913b: 996) mentioned a syntype ♂ (Matamoros) at RBINS. Currently *Tramea onusta* Hagen, 1861.

**ovata** Calvert (*Uracis*) 1909: 227, 228. Syntype 1 ♂. "guttata. / n. / Bahia. [handwritten on green label]"; "ovata [handwritten]"; "Hagen [printed]"; "TYPE ♂ / Uracis / ovata Calv. [written] / P.P. Calvert def. 1909 / AnCarMus. Vlp. [printed] 228 [handwritten]". MCZ ENT 12506.

The original description is based on the following: "BRAZIL, 1 ♀ without further locality, Bahia, 1 ♂, 1 ♀; 1 ♀ without locality-label. Museum of Comparative Zoology, Cambridge, Mass." Other syntypes are likely at CM from which a lectotype should be selected. Currently a junior synonym of *Uracis infumata* (Rambur, 1842).

**pallipes** Hagen (*Diplax*) 1874b: 589. Holotype ♂. "Ft. Hill Col. / Carpenter '73 [handwritten]"; "pallipes [handwritten]"; "Hagen. Rept. U. S. Geol. / surv., 1873, 1874. P. 589. [handwritten]". MCZ ENT 12446.

Original description based on 1 ♂ from "Foot-hills, Colorado (Lieutenant Carpenter)." Currently *Sympetrum pallipes* (Hagen, 1874).

**pectoralis** Charpentier (*Libellula*) 1825: 46. Syntypes 1 ♂, 2 ♀♀. All three specimens: "Charp. [handwritten on intricate black-bordered label]"; "Hagen [printed]". MCZ ENT 12433.

Described from "Silesia et Saxonia ad aquas stagnantes". Currently *Leucorhina pectoralis* (Charpentier, 1825).

**pertinax** Hagen (*Dythemis*) 1861: 166. Holotype ♂. "Hell / 6 [handwritten]"; "67 [handwritten]"; "L. pertinax / Hag. [handwritten by Hagen]"; "Hagen [printed]"; "Brech. pertinax ♂ / Original of Pl. I / f. 20, Pl. II. f 21. Proc. / B. S. N. H. 28 / P.P. Calvert [handwritten]". MCZ ENT 141.

Hagen (1861: 167) cited "Mexico (Vienna Museum)" but no type is listed for that institution by St. Quentin. Calvert (1898a: 316) cited 1 ♂ with the label "Hell 6" at Cambridge. Currently *Brechmorhoga pertinax pertinax* (Hagen, 1861).

**phalerata** Uhler (*Libellula*) 1858b: 30. Holotype ♀. "L. trivialis Ramb. / L. phalerata \* Uhler / MB / [undescipherable but possibly "de Ham"] [handwritten by Hagen]"; "L. / phalerata / 2, Mihi / Takanosima / Japan [handwritten probably by Uhler]"; "Hagen [printed]". MCZ ENT 12474.

Original description based on 1 ♀ from "Takanosima, Japan." Currently a junior synonym of *Diplacodes trivialis* (Rambur, 1842).

**pleurosticta** Burmeister (*Libellula*) 1839: 849. Holotype ♂. "M. pleurosticta / \* Br [handwritten by Hagen]"; "pleurosti / cta Br. \* / Brasilia [handwritten]"; "Macr. pleurosticta ♂ / Burm. Original / of Pl II, f 34, Proc. / B. S. N. H. 28. / P.P. Calvert. [handwritten]"; "Winthem."; "Hagen [both printed]". MCZ ENT 145.

Calvert (1898b: 61) provided details of the Burmeister's holotype as follows: "In the M. C. Z. one male, with the written pin-label "pleurosticta Br. \* Brasilia", and the printed pin-label "Winthem". Describing *Macrothemis pleurosticta* Hagen says "Mir liegt nur ein Männchen aus Brasilien vor, Burmeister's Type aus Winthems, jetzt in meiner Sammlung" (Stet. Ent. Zeit. xxix, p. 286, 1868)" and earlier (1898a: 324) provides a full description of Burmeister's type. Currently *Macrothemis pleurosticta* (Burmeister, 1839).

**plumbea** Uhler (*Libellula*) 1858a: 87. Syntype ♂. "L. plumbea / \* Uhler."; "L. flavida / Rbr"; L. plumbea \* / Uhler / Maryland. 1858 [all three handwritten by Hagen]"; "18"; "Hagen [both printed]". MCZ ENT 8851.

Original description based on at least a pair from "Baltimore. July." The abdomen and head are glued to a card below the specimen. Currently a junior synonym of *Libellula flavida* Rambur, 1842.

**postlobata** Calvert (*Brechmorhoga*) 1898a: 314. Lectotype ♂. "postlobata / Calvert [handwritten]"; "Mazatlan / Mex. Crotch / October 1879. [handprinted]"; "Brech. postlobata ♂ / Type of Calvert. / Proc. / B. S. N. H. 28, P. / 314. Author's label. [handwritten]"; "Hagen, Syn. Neur. / N. Amer., 1861, p. 164"; "Calvert Proc. B. S. N. H. / 1898, v. 28, p. 314, pl. 1f13, pl 2 f. 26 [both handwritten]". MCZ ENT 138.

Description originally based on 3 ♂♂ from "Mexico; Tepic, two males, November (Cal. Acad.Sci. Coll. Coll. P. P. C.); Mazatlan, October, 1873, by Crotch (Mus. Comp. Zool.). Calvert (1947: 608) later designated the MCZ ♂ as lectotype as follows: "Brechmorhoga postlobata Calvert, p. 392. (a) 2♂..... Both of these males presumably having been destroyed in the fire of 1906, without designation of type, I hereby designate the male from Mazatlan, Mexico, in the Museum of Comparative Zoology, Cambridge, Massachusetts, cited in the original description (Proc. Bost. Soc. Nat. Hist. 28 (12): 314, 1898) as the lectotype." Currently *Brechmorhoga praecox postlobata* Calvert, 1898.

**praecox** Hagen (*Dythemis*) 1861: 164. Holotype ♀. "Mexico Thorey [handwritten by Hagen]"; "praecox [handwritten]"; "Brech. praecox ♀ / Original of Pl II, / fs 25, 29, Proc. B. / S. N. H. 28. P.P. Calvert. [handwritten, Fig. 3]"; "Hagen [printed]"; small blue blank label. MCZ ENT 139.

Original description based on 1 ♀ from "Mexico (Collection of Hagen)." Calvert (1898a: 315) mentioned Hagen's type as follows: "Mexico: one female by Thorey, Hagen's type (M. C. Z.)". Currently *Brechmorhoga praecox* (Hagen, 1861).

*pseudimitans* Calvert (*Macrothemis*) 1898a: 329. Paralectotypes 3 ♂♂, 1 ♀. ♂: "pseudimitans / Calvert. [handwritten]"; "Calvert, Proc. B. S. N. H., / 1898, v. 28, p. 329, pl 2, f. 35. All four specimens: "F. Sumichrast, / Isth. of Tehuantepec. [printed]"; "b [handwritten]"; "Macr. pseudo- ♂ [or ♀] / imitans Calv. / Proc. B. S. N. H. 28, / p. 329. P.P. Calvert. [handwritten]". MCZ ENT 148.

This name was applied to "Three males, with the abdomen pruinose, and a female from the Isthmus of Tehuantepec by F. Sumichrast, in the M. C. Z. (Calvert 1898a: 329)", and a ♀ from Tepic and 7 ♂♂, 3 ♀♀ from San José del Cabo all previously misidentified as *M. imitans* Karsch, 1890 by Calvert (1895: 531). Calvert (1947: 606) later designated a ♂ at CAS as lectotype as follows: "*Macrothemis imitans* Karsch, p. 531. [= *M. pseudimitans* Calvert; Proc. Bost. Soc. Nat. Hist. 28 (12): 329, 1898....] (a) 8 ♂, 3 ♀; (b) 1 ♂, 1 ♀ San José del Cabo, Oct., '93; (c) 2 ♂ same locality and date. I hereby designate the male and female in the California Academy of Sciences as the lectotype (C. A. S. No. 5602) and lectallotype (C. A. S. No. 5603) respectively of *M. pseudimitans*." Currently *Macrothemis pseudimitans* Calvert 1898.

**pulchella** Burmeister (*Libellula*) 1839 [nec Drury, 1773]: 849. Holotype 1 ♀. "L. amanda / \* Hag"; "L. amanda / Hag. / L. pulchella / Burm. \* [both handwritten by Hagen]"; "L pulchella / Burm. \* / Savannah. [handwritten]"; "Winthem."; "Hagen [both printed]". MCZ ENT 12427.

Calvert (1898b: 61) provided the following concerning this name: "In the M. C. Z. one female with the written pin-labels. "L. pulchella Burm. \* Savannah", and "L. amanda Hag. L. pulchella Burm. \*," the latter in Hagen's hand, and the printed pin-label "Winthem". Writing of *Celithemis amanda* Hagen says (Psyche v, p. 384, 1890) "I have in my Synopsis (1861, p. 183) described this species after the type (♀) of Burmeister from Georgia (his *Libellula pulchella*, a name used long before)." Following a suggestion of Hagen's I have included this species in *Celithemis ornata* Rambur (Trans. Am. Ent. Soc. xx, p. 261, 1893)." A junior homonym of *Libellula pulchella* Drury. Currently *Celithemis amanda* (Hagen, 1861).

**quadrupla** Say (*Libellula*) 1840: 23. Syntypes 1 ♂, 1 ♀. ♂: "Libellula quadrupla Say \* / Hag. Syn. 157. 1b / nos 21 ♂♂. nos. 22 ♂ / nos 68 ♀♀ [handwritten header label by Hagen]"; "21. [handwritten]"; "July 1826 [handwritten]". ♀: "68 [handwritten]"; "Cambridge / Bethune. [handwritten by Hagen]". MCZ ENT 26475.

Original description based on a pair from Massachusetts of which "The sexes were sent to me by Dr. Harris." Hagen (1873a: 266) stated the following concerning this name: "**Libellula quadrupla** Say. Hag. Syn., 157, 16. No. 21. ♂♂, *Lib. quadrupla* Say MSS., male, see No. 68 (Say's determ.), Milton, Mass. Borders of ponds, July, 1826. No. 22. ♂, immature, same locality. No. 68. ♀ ♀, *Lib. quadrupla* Say MSS., female, see No. 21 (Say's determ.), Cambridge, Bethune. Say describes the species from Massachusetts; the sexes were sent by Dr. Harris. Of course the specimens in the collection are types." The ♀ lacks the head. Currently a junior synonym of *Libellula cyanea* Fabricius, 1775.

**rapax** Calvert (*Brechmorhoga*) 1898a: 316. Syntypes 2 ♂♂. Both specimens: "rapax [handwritten]"; "Brech. rapax ♂ / Type of Calvert. / Proc. / B. S. N. H. 28, P. / 316. Author's label. [handwritten]"; "Hagen [printed]". One ♂ with additional labels: "D. rapax / \* Hag."; "Venezuela [both handwritten by Hagen]". The other male with "(Brechmorhoga) / Calvert fig. [handwritten]". MCZ ENT 140.

The name was first introduced as a nomen nudum by Hagen (1861: 317) in his list of South American Odonata. The original description recorded this species from: "Venezuela: two males, types of Hagen (M. C. Z.)." Currently *Brechmorhoga rapax rapax* Calvert, 1898.

***rubicundula* Say (*Libellula*)** 1840: 26. Syntype? 1 ♀. "Diplax rubicundula Say. / Hag. Syn. 176.6 / Harr. Cat. 6. ♂♀ - / 7. ♂ [handwritten header label by Hagen]"; "Sept. 30. 1821 [handwritten by Hagen]"; "6 [handwritten]". MCZ ENT 26478.

Say describe a ♂ stating that it "Inhabits Indiana and Massachusetts." Hagen (1873a: 267) state the following concerning this name under *Diplax vicina*: "No.6. Lib. rubicundula Say MSS. (Say's determ.). ♂♀♂. The catalogue mentions the following six specimens: Milton, 1820, Sept. 30, 1821; Sept., 1829; ♂♀, Oct. 7, 1837. There are only four specimens in the collection, the same number as stated by Mr. S. H. Scudder, Proc. B. S. N. H., x., p. 221. Two of them have labels written on apparently newer paper and marked ♂ and ♀ Apparently those are the specimens taken Oct. 7, 1837. Of the two remaining the male is *D. vicina*, the female is probably *D. rubicundula* Say. I say probably, and it is stated to be so in Mr. Scudder's very elaborate paper, but as the specimen is in very bad condition, even the vulva lamina wanting, there is no absolute certainty." Under *Diplax rubicundula* Say, Hagen added the following: "No. 6. ♀♂. Lib. rubicundula Say; New York, Mr. Calverley. The female is spoken of above from Massachusetts, belonging to one of the three first given dates." We consider the type status of this MCZ ♀ to be uncertain. Currently *Sympetrum rubicundulum* (Say, 1840).

***ruficollis* Charpentier (*Libellula*)** 1840: 80. Syntypes 2 ♂♂. ♂: "ruficollis / collect. / Charp. Charp."; "Portugal [both handwritten]"; "♂: "ruficollis / Portugal / Charp. [handwritten]"; "Hagen [printed]". MCZ ENT 12451.

Original description based on at least 1 ♂ with a "Habitat in Lusitania." Selys (1850: 45) included the following concerning the types of this name: "...et M. Hagen m'a communiqué deux des trois exemplaires types reçus de Portugal par M. de Charpentier..." Currently a junior synonym of *Sympetrum striolatum* (Charpentier, 1840).

***sanguiventris* Calvert (*Platyplax*)** 1907: 327. Paratype 1 ♂. "Livingston, / Guatem Feb. / H. Wilson Ap. 85 [handwritten]"; "Platyplax / sanguiventris Calv. [handwritten] / P.P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed] 327". MCZ ENT 14436.

Original description was based on 3 ♂♂ as follows: "MEXICO, Altamira in Tamaulipas (Hoag, coll. P. P. C.: 2 ♂); GUATEMALA, Livingston (Wilson, M. C. Z.: 1 ♂)." The illustrations of the holotype accompanying the description were from one of the Altamira males which should be lodged at ANSP. Currently *Planiplax sanguiventris* (Calvert, 1907).

***sanguinolenta* Burmeister (*Libellula*)** 1839: 859. Syntypes 2 ♂♂. ♂: "L. sanguinolenta / \*Burm. / L. ferrugaria Rbr. [handwritten by Hagen]"; "sanguino / lenta \* Br. / Prom. Bon. sp. [handwritten]"; "♂: "sanguinolenta [handwritten]". Both specimens: "Winthem."; "Hagen [both printed]". MCZ ENT 1870.

Calvert (1898b: 90) remarked concerning these two specimens: "Two ♂♂ in the M. C. Z. One has the pin-labels "Winthem" (printed), "Sanguinolenta \* Br. Prom bon. sp." (written)," the other has merely the printed pin-label "Winthem" and the drawer-label in Dr. Hagen's

handwriting after which these two types are placed reads "L. sanguinolenta Burm. L. ferrugaria Ramb." Currently *Crocothemis sanguinolenta* (Burmeister, 1839).

[*semicincta* Say (*Libellula*) 1840: 27. Pseudotype 1 ♀. "Diplax semicincta Say / Harr. Cat. 7. ♀ [header label handwritten by Hagen]"; "7. [printed]"; "1820. [handwritten]". MCZ ENT 26477.

Say described a ♂ stating that it "Inhabits Indiana and Massachusetts." Hagen (1873a: 267-268) stated the following concerning this name under *Diplax semicincta*: "No.7. *Lib. semicincta* Say MSS. (Say's determ.). Milton, 1820, and a later addition, Maine, Randal[], ♀♂. Of the Maine specimens only a fragment of the male exists, belonging to *D. rubicundula*. The female taken in 1820 is *D. semicincta*, a fragment without the head, but as Say only describes the male, it cannot be his type." Currently *Sympetrum semicinctum* (Say, 1840).

***semihyalina*** Desjardins (*Libellula*) 1835: IV. Syntypes 1 ♂, 1 ♀. ♂: "Libellula hemihyalina / J. Desjardins / disparata / Ramb. / Maurice [handwritten on blue label]"; "Desjard. [handwritten]"; "Hagen [printed]". ♀: "R. hemihya- / lina / Desj. [handwritten by Hagen]"; "Desjard. [handwritten]"; "7 [handwritten]"; small silver blank label; "L. hemihyalina [handwritten on blue label]"; "Hagen [printed]". MCZ ENT 12426.

Originally described as "Libellula semi-hyalina...qui existent à Maurice." (Desjardins 1835: IV). The ♂ is in poor condition and lacks the head, fore wings, most of the thorax and most of the abdomen. Ris (1913a: 964) mentioned the following specimens at RBINS: "Coll. SELYS: 1 ♀ [silber | *L. hemihyalina* JUL. DESJ., n° 7], 1 ♀ [silber | DESJ. | 7], 1 ♀ [51 | disparata] diese Exemplare jedenfalls VON DESJARDINS und RAMBUR stammend...". The MCZ specimens seem to be part of the original type series. Currently *Rhyothemis semihyalina* (Desjardins, 1835).

*sicula* Hagen (*Libellula*) 1840: 35. Syntype 1 ♂. "Lib. sicula / Hagen. [handwritten]"; "Hagen [printed]". MCZ ENT 12453.

In describing this species, Hagen (1840: 35) stated: "Possideo mares duos captos in la Prise prope Calata Girone in Sicilia. Habitat ad Aquas Sextias, in Sicilia." Currently a junior synonym of *Sympetrum striolatum* (Charpentier, 1840).

*simplicicollis* Say (*Libellula*) 1840: 28. Lectotype 1 ♂. "Mesothemis simplicicollis Say \* / Harr. Cat. 50 ♂ [header label handwritten by Hagen]"; "50. / u [handwritten]"; "Aug. 10. 1832 [handwritten]". MCZ ENT 26476.

Say described a ♀ stating that it "Inhabits Indiana and Massachusetts." and "Of the male I have but one specimen..." and "Dr. Harris sent me a specimen for examination." Hagen (1873a: 266) stated the following concerning this name: "No. 50. ♂, *Lib. simplicicollis*; Say MSS. 36, Aug. 10, 1832. Say, 1. c., p. 28,16, adds, of the male, – I have but one specimen ...Dr. Harris sent me a specimen for examination. As the male fragment in the collection is marked u, there is no doubt that it was the type." We consider the statement by Hagen ("there is no doubt that it [the ♂] was the type" as lectotype designation. Only the synthorax, abdominal segments 1-3 and wing bases remain of the lectotype. Currently *Erythemis simplicicollis* (Say, 1840).

***speciosa*** Uhler (*Libellula*) 1858b: 30. Syntypes 1 ♂, 1 ♀. ♂<sub>1</sub>: "Hakodadi / Japan [handwritten]"; "albistyla [handwritten]"; "L. speciosa Uhler / (s L. japonica.); "Uhler hat nicht / bemerkt dass dies / Stueck mas ist. / Er beschreibt nur ♀ [both handwritten by Hagen]". ♀<sub>2</sub>:

"Hakodadi / Japan [handwritten]"; "albistyla [handwritten]"; "L. speciosa Uhler / (s. L. japonica.); "L. speciosa Uhler, ist obwohl der Zettel / an dem ♀ von L. japonica steckte, / sicher nach der Beschreibung L. obnixa / u. wohl auch L. albicauda Brauer / Die Querleiste auf Segm. 2 ist bei / dieser Art in der Mitte unterbrochen [Fig. 2]"[both handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12495.

Original description based on at least 2 ♀♀ from "Takanosima and Simoda, Japan." According to Hagen (1867c: 88) one of the two type specimens sent to him, both teneral and originally preserved in alcohol, was actually a male with only the two basal abdominal segments present. There is a third specimen which is not a type: ♀: "Lib / speciosa / Uhler / Hakodadi [handwritten]"; "Obwohl dies Stueck von Uhler als L. spe- / ciosa bezettelt ist, stimmt es nicht zur / Beschreibung meist das ihm unben. ♀ / von L. japonica. [handwritten by Hagen]"; "Hagen [printed]". Currently a junior synonym of *Orthetrum albistylum* (Selys, 1848).

**specularis** Hagen (**Erythemis**) 1867a: 293. (nomen nudum) = *Idiataphe cubensis* (Scudder, 1866). Holotype ♂. "Ephidiata / Kirby [handwritten]"; "E. specularis / Hagen [handwritten by Hagen]"; 53. / ♂ [handwritten]"; "Hagen [printed]"; "*Idiataphe cubensis* ♂ / J. RÁCENIS det. / 1965 No. 5137. [typed]". MCZ ENT 12470.

Rácenis (1969: 6) in his revision of the genus *Idiataphe* comment concerning *specularis*: "La localización del holotipo es desconocida. En el MCZ se encuentra un macho de esta especie sin procedencia, ni identificación, que lleva la siguiente rotulación en rojo: "Type 12470". Este ejemplar aparentemente representa el holotipo de *Ephidiata specularis* HAGEN 1867." Currently a junior synonym of *Idiataphe cubensis* (Scudder, 1866).

**spinifera** Calvert (**Micrathyria**) 1909: 234. Holotype ♂. "Thorey.;" "Surinam"; "apicalis [all handwritten]"; "TYPE ♂ [handwritten] / MICRATHYRIA [printed] / spinifera Calv. [written] / PP Calvert det. 1909 / AnCarMus. Vlp. [printed] 236 / ORIG. Pl. VII, f. 134 [printed, Fig. 3]". MCZ ENT 12493.

Described from "SURINAM, 1 ♂, Thorey. Museum of Comparative Zoology, Cambridge, Mass." Currently *Micrathyria spinifera* Calvert, 1909.

**stemmalis** Burmeister (**Libellula**) 1839: 857. Holotype ♂. "L. stemmalis / \* Burm. / Isle de France [handwritten]"; "Winthem.;" "Hagen [both printed]". MCZ ENT 12472.

Calvert (1898b: 84) provided the following concerning this name: "One male in the M. C. Z. with the pin-labels "Winthem" (printed), "L. stemmalis \* Burm. Isle de France" (written). A description follows: ♂ (type)...." A detailed description of the holotype is given by Calvert (1898b). Currently *Orthetrum stemmale* (Burmeister, 1839).

[*sterilis* Hagen (*Dythemis*) 1861: 317. Pseudotypes? 5 ♂♂, 2 ♀♀. ♀<sub>1</sub>: "Venezuela / Schneider [handwritten]"; "sterilis [handwritten]"; "Hagen [printed]"; small square silver label. ♂<sub>2</sub>: "Venezuela / Appun [handwritten]"; "sterilis [handwritten]"; "Hagen [printed]"; small square silver label. ♂<sub>3</sub>: "Venezuela / Appun [handwritten]"; "sterilis [handwritten]"; "Hagen [printed]". ♀<sub>4</sub>: "tomentosa / a tessellata Ramb. / Brasilia [handwritten on green label]"; "sterilis [handwritten]"; "Mus. Berol. [printed]". ♂<sub>5</sub>: " Brasilia [handwritten]"; "sterilis [handwritten]"; "Hagen [printed]". ♀<sub>6</sub>: "Rio de Janeiro / Beunhard[?]; "sterilis [handwritten]"; "Hagen [printed]". ♂<sub>7</sub>: "Lima [handwritten]"; "sterilis [handwritten]"; "Hagen [printed]". MCZ ENT 134.

Association of the name *sterilis* Hagen to type material is complicated. The seven specimens (5 ♂♂, 2 ♀♀) at MCZ marked as types represent two different species. The 3 ♂♂ and 1 ♀ with a brown postfrons from Venezuela and Lima represent what odonatologists currently associate with the name *Dythemis sterilis* Hagen, 1861; the 2 ♂♂ and 1 ♀ from Brazil and Rio de Janeiro represent a species with a dark metallic blue postfrons currently recognized as *Dythemis nigra* Martin, 1897. The confusing taxonomy involving these two names was detailed by Meurgey & Poiron (2011). Hagen applied the name *sterilis* as a replacement name for *Libellula tessellata* Rambur 1842 (nec Burmeister, 1839) which was based on at least a pair "Indiquée de Buénos-Ayres dans la collection de M. Serville." Rambur's (1842: 89) description of the ♂ with the "sommet du front assez fortement échancré, tantôt roux, tantôt d'un vert métallique; vertex épais, assez élevé, échancré, bimucroné, de la même couleur..." tallies by known distribution and metallic vertex with the taxon currently named *Dythemis nigra*. Calvert (1898a: 309) considered both taxa as variants of the more northerly (USA, northern Mexico) *Dythemis velox* Hagen stating: "In the synopsis of species quoted above (Calvert, 1895) the frons and vertex of *velox* are stated to be "yellowish-green to brown." An examination of Hagen's types shows variation, possibly due to age-differences, from pale green and luteous through brown to metallic blue. This diminishes still more the differences supposed to separate *velox* from *sterilis*." Ris (1913a: 841), like Calvert before him, considered *sterilis* a synonym of *velox* but enlarged the concept of the former name in his synonymy as follows: "*Dythemis sterilis* HAGEN, Syn. Neur. N., Amer., p. 317 (1861) (nov. nomen für *tessellata* RAMB. nec. BURM., Venezuela, Surinam, Brazil, Lima, Buenos Aires)." but later (1919: 1205) resurrected *sterilis* from synonymy and listed the following at RBINS: "COLL. SELYS: 1 ♂ [FEISTHAMEL. | gold | *Lib. gracilis*]; 1 ♂ [FEISTHAMEL. | Cayenne | gold | *Lib. gracilis*] diese 2 Exemplare sehr wahrscheinlich die Originale zu dem grösseren Anteil der Beschreibung von *Libellula tessellata* RAMBUR..." It is unclear to us whether the Cayenne specimen in RBINS mentioned by Ris really was one of the originals of Rambur's description since Cayenne is not mentioned in his description. Assuming that Ris is correct, we suggest that the ♂ from Cayenne at RBINS be selected as lectotype in order to preserve the current concept of the name *sterilis* sensu Hagen 1861; the other specimen originally mentioned from "Buénos-Ayres" is from outside the currently distribution known range of *Dythemis sterilis* and more likely represents *Dythemis nigra*. Further complicating nomenclature is the presence of a ♂ with MCZ ENT Type 1 135 listed under *tabida* below with the following data: "Sterilis n. sp. / Hagen / *tessellata* Ramb. non / Burm. Brazil. [handwritten on black-bordered blue label]" "Charpent. [handwritten on black bordered label]"; "tabida"; "Dyth. *velox* ♂ / var. *tabida* / Type of Calvert / Proc. B. S. N. H. 28 / p. 310. Author's label. [handwritten]". Perhaps this ♂, instead of the ♂ at RBINS, represents Hagen's intended application of the name *sterilis*. See remarks under *tabida* below.]

***striolata*** Charpentier (***Libellula***) 1840: 78. Syntypes 5 ♂♂, 2 ♀♀. ♂: "L. Striolata / a Collect. Charp. [handwritten]"; "L. striolata / a Collect. Charp. [handwritten by Hagen]"; "coll. / Charp. [handprinted on small round label with abdominal segments 7-10 glued to it]"; "Hagen [printed]". 3 ♂♂, ♀: "coll. / Charp. [handprinted on small round label]"; "Hagen [printed]". ♀: "Striolata, / Charp. [handwritten on black-bordered label]"; "Charpent [handprinted on intricate black-bordered label]". ♂: Charpent [handprinted on intricate black-bordered label]"; "Hagen [printed]". MCZ ENT 12452.

Original description based on an unspecified number of specimens from "Silesia." Currently *Sympetrum striolatum* (Charpentier, 1840).

**subornata** Hagen (*Plathemis*) 1861: 149. Syntypes 1 ♂, 1 ♀. ♀: "L. subornata / \* Hag"; "Pecos River"; "July / 7 [all handwritten by Hagen]". ♂: "Pecos River"; "July / 19 [all handwritten by Hagen]"; "Hagen [printed]". MCZ ENT 12476.

Original description based on a pair from "Pecos River, Western Texas (Capt. Pope)." The head of the ♂ is missing. Currently *Libellula subornata* (Hagen, 1861).

**superba** Hagen (*Celithemis*) 1861: 148. Syntype ♀. "[illegible] / Oaxaca"; "L. superb / Hagen / Mexico [both handwritten on pale purple labels]"; "Hagen [printed]". MCZ ENT 8838.

Original description based on at least a pair from "Oaxaca, Mexico (Collection of Sommer); a male from Tampico (Saussure)." Currently *Pseudoleon superbus* (Hagen, 1861).

**tabida** Hagen (*Dythemis*) 1861: 317. Syntypes 1 ♂, 3 ♀♀. ♂: "Sterilis n. sp. / Hagen / tessellata Ramb. non / Burm. Brazil. [handwritten on black-bordered blue label]"; "Charpent. [handwritten on black bordered label]"; "tabida". ♀: "D. tabida / \* Hag. [handwritten by Hagen]"; "Brazil"; "tabida" [both handwritten]". ♀: "tabida"; "Para [handwritten on green label]"; "Mus. Berol."; "Hagen [both printed]". ♀: "L. tabida nob. / Brazil. [illegible]"; "Bahia / Pello [?]" "Mus. Berol."; "Hagen [both printed]". All specimens: "Dyth. velox ♂ [or ♀] / var. tabida / Type of Calvert / Proc. B. S. N. H. 28 / p. 310. Author's label. [handwritten]". MCZ ENT 135.

*Dythemis tabida* is a *nomen nudum* proposed by Hagen (1861: 317) in his list of South American Odonata; the name was never accompanied by a description and is currently an unavailable name. Calvert (1898a: 31) stated the following: "Tabida. Hagen, Syn. Neur. N. Amer., p. 317, 1861 (no description). Of this I have seen the types at Cambridge - a male from Brazil, three females marked Bahia, Para, Brazil respectively." All of these specimens at MCZ are conspecific with *Dythemis nigra* Martin, 1897. See remarks above under *sterilis* Hagen.

**taeniolata** Schneider (*Libellula*) 1845: 111. Holotype 1 ♂. "Rhodus [handwritten]"; "Loew. [handwritten on green label]"; "taeniolata / Schneider. / Kleinasien. Loew [handwritten on black-bordered label]"; "Hagen [printed]". MCZ ENT 12496.

Original description cited "1 ♂ von Rhodus." Currently *Orthetrum taeniولاتum* (Schneider, 1845).

**ternaria** Say (*Libellula*) 1840: 21. Syntype 1 ♂. "Libellula quadrimaculata. L. / Hag. Syn. 151.1. / Harr. Cat. 81 ♀ / L. ternaria Say (partim)\* [handwritten header label by Hagen]"; "Randal[!]" / Stow. [handwritten]"; "81 / u [handwritten]". MCZ ENT 26473.

See remarks under *ternaria* MCZ ENT 26473 below. The syntype has the last three abdominal segments glued to a card; the head, abdominal segments 4-7 and right fore wing are missing. Currently a junior synonym of *Libellula quadrimaculata* Linnaeus, 1758 (in part).

**ternaria** Say (*Libellula*) 1840: 21. Syntype 1 ♀. "Libellula ternaria Say. / L. semifasciata Burm. Hag. Syn. 151.2 / Harr. Cat. 80 ♀ [handwritten header label by Hagen]"; "Randal[!]" / Stow. [handwritten]". MCZ ENT 26473.

Original description based on at least a pair that "Inhabits Massachusetts." and "I have not seen any other specimens than the sexes sent me by Dr. Harris for examination." Hagen (1873a: 266) stated the following concerning this name: No. 80. ♀, u., Stow, Mass., Randal. ♀♀ Cambridge, 1851; New York, Mr. Calverley. In the [Harris] catalogue the numbers 80 and 81 are united by Say by a brace, with the determination, "Lib. ternaria MSS., 24)." The two specimens (both with u)



are very important, because they are certainly the types described by Th. Say. He gives the locality Massachusetts, and adds, p. 22, "I have not seen any other specimen than the sexes sent me by Dr. Harris for examination. Farther my statement, Syn., p. 151, that Say confounded two species in his *L. ternaria*, is found correct, the male belonging to *L. quadrimaculata*, the female to *L. semifasciata* Burm. Besides it is curious, but true, as no other specimens exist in the collection, that the specimen described as a male by Say is in reality a female. This fact is proved moreover by Say's description,—"inferior process hardly one-third as long as the others," which agrees very well with the female, if the anal valves are taken for the inferior process. In the male it is half, or more than half, as long as the superior." And "As Say's *Lib. ternaria* confounds two species, and as the male described by him is a female, I believe Burmeister's name preferable, indeed it is very likely that his description was published before Say's; at least it was published at the same time." As noted by Calvert (1905b: 29) the name "Randal" "given by Selys....is an error for "Randal[[]], Stow, Mass.," Randall being the collector's name." Currently a junior synonym of *Libellula semifasciata* Burmeister, 1839 (in part).

**tenera** Say (*Libellula*) 1840: 31. Syntype 1 ♀. "Perithemis tenera. Say \* / P. Domitia Hag. Syn. 185.1. / Harr. Cat. 49 ♀ [handwritten header label by Hagen]"; "July 10 1831 [handwritten by Hagen]"; "49 / u [handwritten]". MCZ ENT 26464.

The original description was based on an unspecified number of ♀♀ that "inhabits Indiana, Pennsylvania, and Massachusetts." Hagen (1873a: 266) stated the following concerning this name: "No. 49. *Lib. tenera* Say MSS.42 (Say's determ.). Milton, July 10, 1831. As the fragment of the specimen is labelled u, and as Mr. Say ascribes his species to Massachusetts, we believe it represent a type. It is the female of the well known race (?) of *P. domitia*. The male is *L. tenuicincta* Say." A red inked label " M C. Z. / cotype 26464" accompanies this specimen. The ♀ lacks most of the left fore wing, all of the left hind wing, and the tip of the abdomen. Currently *Perithemis tenera tenera* (Say, 1840).

**tenera seminole** Calvert (*Perithemis*) 1907: 316. Paralectotype 1 ♀. "Enterprise / May [printed] 26 [handwritten] Fla [printed]"; PERITH. DOMITIA / Seminole Calv. [handwritten] / P. P. Calvert det. [printed] 1907 [handwritten] / B. C. A. Neur., p. [printed] 317 [handwritten]". MCZ ENT 14431.

Calvert's original description stated: "Seven females; the type from Volusia, May 12 (coll. P. P. C.: 1 ♀..." The holotype (Type # 9266) is at ANSP. Currently *Perithemis tenera seminole* Calvert, 1907.

**tenuis** Hagen (*Macrothemis*) 1868: 286. Syntypes 4 ♂♂. ♂: "M. tenuis / \* Hag [handwritten]". All specimens: "Beschke"; "tenuis Hagen [both handwritten]"; "Hagen [printed]". MCZ ENT 143.

Described by Hagen from "Neu-Freiburg bei Rio von Beschke; ich habe eine Anzahl Männchen gesehen." Two additional syntype ♂♂ ("N. Freiburg") are present at Selys collection in RBINS according to Ris (1913a: 871). Currently *Macrothemis tenuis* Hagen, 1868.

**testacea** Burmeister (*Libellula*) 1839: 859. Holotype ♂. "L. testacea \* / Burm. / Java." [handwritten]"; "Winthem."; "Hagen [both printed]". MCZ ENT 12508.

Calvert (1898b: 89) provided the following concerning this name: "One male in the M. C. Z. with the pin-labels "Winthem" (printed), "L. testacea \* Burm. Java" (written, but without border)." Currently *Orthetrum testaceum* (Burmeister, 1839).

**tripartita** Burmeister (*Libellula*) 1839: 856. Holotype ♂. "3 partita / Br. / Cuba \* [handwritten]"; "Winthem."; "Hagen [both printed]". MCZ ENT 12466.

Calvert (1898b: 78) provided the following concerning this name: "One male in the M. C. Z., with the printed pin label "Winthem", and the written pin label "3 partita Br. Cuba \*". The holotype is missing the head. Currently a junior synonym of *Erythrodiplax umbrata* (Linnaeus, 1758).

**umbricola** Borror (*Oligoclada*) 1931: 38. Paratype ♂. "Cristalina / Colombia / J. H. & E. B. Williamson / Feb. 14, 1917 / 37"; "Oligoclada / umbricola Wm [both handwritten by Williamson]". MCZ ENT 16564.

The holotype ♂ is at UMMZ (Garrison et al. 2003: 63). Currently *Oligoclada umbricola* Borror, 1931.

**velox** Hagen (*Dythemis*) 1861: 163. Syntypes 3 ♂♂, 2 ♀♀. ♂: "L. velox Hagen [handwritten]"; all other specimens"; "Pecos River / Texas"; "Hagen [printed]"; "July. / 9 [♀]"; "July / 11 [♂]" "Aug. / 9 [♂]"; "Aug / 5 [♂]"; another ♀ not dated and with "D. velox / \* Hag. [handwritten by Hagen]". MCZ ENT 133.

An additional syntype ♂ and ♀ ("Pecos River Texas") are present at Selys collection in RBINS according to Ris (1913a: 841, 1919: 1204). Currently *Dythemis velox* Hagen, 1861.

**venosa** Burmeister (*Libellula*) 1839: 848. Holotype ♀. "L. venosa / Burm.\* Bahia [handwritten, Fig. 3]", "Winthem [printed]"; "Dasythemis / venosa ♀/ Burm. [handwritten probably Calvert]"; "Winthem."; "Hagen [both printed]". MCZ ENT 1754.

The holotype ("One female in the M. C. Z. with the written pin-label "L. venosa Burm. \* Bahia", and the printed pin-label "Winthem") was described in detail by Calvert (1898b: 59). Currently *Dasythemis venosa* (Burmeister, 1839).

**verbenata** Hagen (*Lepthemis*) 1861: 162. Syntypes 3 ♂♂, 2 ♀♀. ♂, ♀: "L. verbenata [handwritten]"; "Venezuela / Appun [handwritten by Hagen]"; "Hagen [printed]". ♂: "L. verbenata / \* Hag [handwritten by Hagen]"; Surinam / Thorey [handwritten by Hagen]" "verbenata [handwritten]"; "Hagen [printed]". ♂: "Cuba / Poey. 1858 [handwritten by Hagen]"; "23 / ♂ [handwritten]"; "verbenata [handwritten]"; "Hagen [printed]". ♀[?]: "Cuba / Poey. 1858 [handwritten by Hagen]"; "verbenata [handwritten]"; "Hagen [printed]"; "♀ [printed]"; "N. B. The abdomen / of this ♂ is of Lep. Vesiculosa. [handwritten]." MCZ ENT 12499.

Original description based on an unspecified number of specimens from "Cuba (Poey); Porto Cabello, Venezuela; Surinam; Brazil." The last specimen mentioned above with the printed ♀ label has the abdomen of *Erythemis vesiculosa* Fabricius glued to a card pinned with the specimen. We cannot determine whether this specimen was originally a ♀ as originally labeled or a ♂. Currently a junior synonym of *Erythemis plebeja* (Burmeister, 1839).

**veronensis** Charpentier (*Libellula*) 1825: 48. Holotype 1 ♀. "veronensis ♀ / Charpentier / prope Veronam 1818. [handwritten on black-bordered label]"; "Charp. [handwritten on intricate black-bordered label]"; "Hagen [printed]". MCZ ENT 12463.

Described from "Prope Veronam anno 1818 a me capta est foemina hujus Libellulae, cujus haec est descriptio." Currently a junior synonym of *Sympetrum danae* (Sulzer, 1776).

**vicina** Hagen (*Diplax*) 1861: 175. Syntypes 1 ♂, 3 ♀♀. ♂: "L. vicina Hagen"; "Washington / O. Sacken 1858 [both handwritten by Hagen]"; "Hagen [printed]". ♀: "Washington /

O. Sacken 1858 [both handwritten by Hagen]; "Hagen [printed]". ♀: "Amer. [??] / Guex [handwritten]"; "Hagen [printed]". ♀: "Pensyl. / Guex / vicina [handwritten on green label]"; "Mus Berol."; "Hagen [both printed]". MCZ ENT 12449.

Original description based on an unspecified number of specimens from: "Bergen Hill, New Jersey; Pennsylvania; Washington (Osten Sacken)." Currently *Sympetrum vicinum* (Hagen, 1861).

**vulgipes** Calvert (**Macrothemis**) 1898a: 320. Syntypes 2 ♀♀. "Chiriqui [handwritten] / Staudinger. [printed]"; "c [handwritten]"; "Calvert, Proc. B. N. H. S. / 1898, v. 28, p. 320 [handwritten]". ♀: "Panama. [printed]"; "c [handwritten]". Both specimens: "Macr. vulgipes ♀ / Type of Calvert / Proc. B. S. N. H. 28, / p. 320. Author's / label. [handwritten]". MCZ ENT 142.

Original description based on "One female, Chiriqui, Staudinger, one female, Panama, both in Mus. Comp. Zool." May (1998: 146) was unable to find any differences between *Macrothemis tessellata* (Burmeister, 1839) and *M. inequiunguis* Calvert, 1895 nor can we based on examination of specimens from Mexico south through southeastern Brazil. We consider both names as synonymous. Currently considered a junior synonym of *Macrothemis tessellata* (Burmeister, 1839).

#### MACROMIIDAE

**annulata** Hagen (**Macromia**) 1861: 133. Syntypes 3 ♂♂, 3 ♀♀. ♂<sub>1</sub>: "M. annulata / \* Hag. [handwritten by Hagen]"; "Macromia / annulata / Hagen. / Pecos Rv. Tex. [handwritten]"; "July / 15 [handwritten]"; "Hagen. [printed]." ♂<sub>2</sub>: "Pecos River [handwritten]"; "July / 14 [handwritten]"; "Hagen. [printed]." ♂<sub>3</sub>: "Macr. annulata / ♂ Hag. [handwritten]"; "Pecos River [handwritten]"; "July / 13 [handwritten]"; "1. [handwritten]"; "Hagen. [printed]." ♀<sub>4</sub>: "Macr. annulata / ♀ Hag. [handwritten]"; "Pecos River [handwritten]"; "July / 15 [handwritten]"; "2. [handwritten]"; "Hagen. [printed]." ♀<sub>5</sub>: "Pecos / region / Capt. Pope [handwritten]"; "June / 26 [handwritten]"; "Hagen. [printed]." ♀<sub>6</sub>: "Pecos River [handwritten]"; "June / 26 [handwritten]"; "Hagen. [printed]." MCZ ENT 1982.

Description based on an unspecified number of ♂♂ and ♀♀ from "Pecos Hiver, Western Texas (Capt. Pope)." Selys (1871: 545 [108 reprint] remarked "Patrie: Pecos-River (Texas occidental). (Coll. Hagen, Selys.)" and Martin (1907: 66) implied that one of Hagen's syntypes is at RBINS ("Type coll. Hagen, Un ♂ coll. Selys..."). Currently *Macromia annulata* Hagen, 1861.

**australensis** Williamson (**Macromia**) 1909b: 381. Paratypes 1 ♂, 1 ♀. "australensis / EBW. 1909. [handwritten]"; "Dallas / Tex. Boll [printed]". MCZ ENT 12398.

Description based on 8 ♂♂ and 3 ♀♀ from Oklahoma: Poteau River, Wister, and 1 ♂ and 1 ♀ from Texas, Dallas, Ball (M.C.Z.). Holotype deposited at UMMZ (Garrison et al. 2003). Currently a junior synonym of *Macromia illinoensis* Walsh, 1862.

**australis** Hagen (**Epophthalmia**) 1867b: 61. Holotype? ♂. "Celebes / Mus. Leyd. / 1865. [handwritten by Hagen]"; "Epophth. australis, / Hag. [handwritten on yellow label]"; "Epophthal- / mia / Burm. [handwritten by Hagen]"; "E. australis / \* Hag. [handwritten by Hagen]"; "10. [handwritten]". MCZ ENT 12422.

Description based on "Ein Männchen stark ausgefärbt aus Celebes." As with *Hemicodulia? assimilis* Hagen in Selys, noted above, Lieftinck (1971: 77) claims the holotype to be at RMNH: "**australis**

Hagen (**Epophthalmia**), 1867: 61–62. Holotype ♂. "Celebes: [N. Celebes, Miahasa], Limbotto Rosenberg' (print), and "7" Hag. 65 (written, orange label). Designated by Lieffinck, 1931: 64. – Corduliidae." No mention was made by Lieffinck of the ♂ at MCZ. There is nothing in Hagen's original description to confirm that the MCZ ♂ was before him when the species was originally described. A comparison of both the MCZ and RMNH specimens will be necessary in order to solve the problem. Currently *Epophthalmia australis* Hagen, 1867.

**cyaenocephala** Hagen (**Epophthalmia**) 1867b: 60. Holotype ♂. "Ceylon. Dohrn. [written in a darker ink than remainder of label suggesting this annotation might have been added later] / Lib. cyaenocephala [handwritten]"; "Epophth. Cyaenocephala / ♂ Hag. [handwritten on yellow label]"; "9. [handwritten]"; "Hagen. [printed]". MCZ ENT 12423.

Description based on "Ein Männchen meiner Sammlung aus Ceylon von Nietner." Hagen (1867b: 61) stated that he had introduced this species as *E. vittata* in his earlier Ceylon-synopsis (Hagen 1858: 479), and that he had given Rambodde as locality; perhaps mistakenly, since he received the present male from Dohrn before getting personally in contact with Nietner. A good portion of the Neuroptera sent by Nietner from that time originated from the deeper areas of the island, namely from Colombo. Currently a junior synonym of *Epophthalmia vittata* Burmeister, 1839.

**pacifica** Hagen (**Macromia**) 1861: 134. Holotype ♂. "M. pacifica / \* Hag. [handwritten]"; "Macr. pacifica / ♂ Hag. [handwritten]"; "5. [handwritten]"; "North America / Pacific R. R Survey / Lat. 38°. [handwritten]"; "Hagen. [printed]". MCZ ENT 1981.

Description based on a single ♂ from "North America, Pacific R. R. Survey, Lat. 38°. The specimen is very much mutilated; I saw nothing but fragments, excepting the wings, feet, thorax, and abdomen". Currently *Macromia pacifica* Hagen, 1861.

**picta** Hagen in Selys (**Macromia**) 1871: 552 (115 reprint). Syntypes 1 ♂, 1 ♀. ♂: "Macr. picta / ♂ Hag. [handwritten on blue label]"; "Cap Dr. [handwritten]"; "1532 [penciled]"; "7. [handwritten]"; "Hagen. [printed]". ♀: "Macr. picta / ♀ Hag. [handwritten on blue label]"; "M. picta / \* Hag. [handwritten by Hagen]"; "Cap Dr. [handwritten]"; "8. [handwritten]"; "Hagen. [printed]". MCZ ENT 12424.

Description based on an unspecified number of ♂♂ and ♀♀ from "Cap de Bonne- Espérance, par Drégé (Coll. Hagen).- Intérieur de l'Afrique austral, Cafrerie. (Mus. De Stockholm.)" Currently *Phyllomacromia picta* (Hagen in Selys, 1871).

**transversa** Say (**Libellula**) 1840: 19. Holotype ♂. "Macromia transversa Say. \* / Hag. Syn. 135.1. / Harris Cat. no: 72. ♂♀ [handwritten header label by Hagen]"; "72 ♂ [handwritten]"; "Randal / Stow. [handwritten]"; "Type [handwritten]"; "HOLOTYPE. [printed] / Libellula transversa / Say 1839 ♂ [handprinted by Garrison]". MCZ ENT 26465.

Description based on a single ♂ "Inhabits Massachusetts...Dr. Harris sent me a male specimen, I have not seen the female." Hagen (1873a: 268) commented as follows: "As Say described this species after a male specimen sent by Dr. Harris, the specimens in the collection have a typical value." Currently *Didymops transversa* (Say, 1840).

**wabashensis** Williamson (**Macromia**) 1909b: 374. Paratype ♂. "wabashensis / Macromia / wabashensis / (small triangles / open) / Buffton Ind / E. B. Williamson / Aug 8, 1905. [handwritten]". MCZ ENT 12399.

Description based on 11 ♂♂ from Buffton, Indiana, collected by E. B. Williamson. Holotype deposited at UMMZ (Garrison et al. 2003). Currently a junior synonym of *Macromia taeniolata* Rambur, 1842.

#### NEOPETALIIDAE

**punctata** Hagen in Selys (**Petalia**) 1854a: 109 (90 reprint). Holotype ♂. "Petalia"; "P. punctata / \* Hag"; "P. punctata. / Hagen / à renvoyer [all handwritten by Hagen]"; "Chili / Ouchacay. [penciled]"; "Hagen [printed]". MCZ ENT 12395.

Original description based on one ♂ from "Chile. (Collect. Hagen.)." Selys (1858: 616 [336 reprint]) provided the following remarks: "**Patrie.** Chili, d'après le mâle type communiqué par M. Hagen, indiqué d'Ouchacay." Currently *Neopetalia punctata* (Hagen in Selys, 1854).

#### PETALURIDAE

[*hageni* Selys (*Tachopteryx*) 1879b:68 (7 reprint) Pseudotype ♂. "T. Hageni / \* Sel. [handwritten by Hagen]"; "Reno Nevada". MCZ ENT 31170. Not at MCZ.

Described from "Le territoire de Nevada (États-Unis) d'après un exemplaire unique envoyé par M. Morrison. Coll. Selys." The holotype ♂ is at RBINS. The MCZ specimen has been on loan since 1981 and has not been returned. Currently *Tanypteryx hageni* (Selys, 1879)].

[*hesperia* Watson (*Petalura*) 1958: 116. Paratype larval exuviae. "BULL CREEK, / RIVERTON, WEST. / AUSTRALIA / IN SWAMP / 4. XII . 1957 / leg. L. M. SAUNDERS. / J. A. L. WATSON."; PETALURA / HESPERIA WATSON / ♂ EXUVIAE / PARATYPE [both handwritten by Watson]". MCZ ENT 29888.

According to the original description the holotype ♂ is from "WESTERN AUSTRALIA: 1 ¼ m. south-west of Karragullen and 13 ½ m. south-east of Perth (Grid reference 102294, Kelmscott 1 mile per inch map), l.xii.1957 (J. A. L. Watson). No. 1958-3 in the Collection of the Western Australian Museum." Currently *Petalura hesperia* Watson, 1958.]

[*thoreyi* Hagen in Selys (*Uropetala*) 1858: 633 (373 reprint) Holotype ♂: "Tachopteryx / Uhl."; "T. Thoreyi / Hag [both header labels written by Hagen]". Not at MCZ.

Described from "L'Amérique septentrionale? d'après un mâle unique de la collection de M. Hagen, reçu du M. Thorey, de Hambourg, auquel il l'a dédié." The holotype was listed by Mutfkowski (1910: 75) as present at MCZ but Garrison was unable to locate the specimen during his visit in 1980. As no MCZ ENT number was ever recorded by Banks, it is probable that the holotype was missing for many years prior to 1980. Currently *Tachopteryx thoreyi* Hagen in Selys, 1858].

#### SYNTHEMISTIDAE

**eustalacta** Burmeister (**Epophthalmia**) 1839: 845. Holotype 1 ♂. "C. Braueri / Sel. [handwritten header label by Hagen]"; "21. [handwritten on orange label]"; "Synth. Eustalacta / ♂ B. [handwritten by Selys on pink label]"; "Collect. Germar / eustalacta B. / Typus Burm II 845.3 / Nov. Holl. [handwritten on dark lavender label by Hagen]"; "Hagen [printed]". MCZ ENT 12420.

Calvert (1898b: 57) provided the following concerning this name: "In the M. C. Z., one male with a dark lavender pin-label" Collect. Germar eustalacta B. Typus Burm II 845.3 Nov. Holl.", the words

'Collect. Germar' 'Typus Burm II 845.3' in Hagen's hand, and a pink pin-label "Synth. eustalacta B. ♂" in de Selys' hand." Currently *Synthemis eustalacta* (Burmeister, 1839).

**gracilis** Burmeister (*Libellula*) 1839: 847. Holotype ♂. "Chlorosoma / gracilis / Burm. [handwritten]"; "38 [handwritten on small yellow label]"; "Oxygastra gracilis / ♂ B. [handwritten by Selys on dark manila-paper]"; "Winthem."; "Hagen [both printed]"; "Syncordulia / gracilis (Burm.) / (=Presba / piscator Barn.) / rev. M. A. Lieftinck '60 [handwritten]". MCZ ENT 12419.

Calvert (1898b: 58) provided the following concerning this name: "In the M. C. Z., one male with the written pin-label "Chlorosoma gracilis Burm.", the printed label "Winthem", and a dark manila-paper pin-label "Oxygastra gracilis B. ♂" in de Selys' hand. In his description of *O. gracilis* Burm., de Selys says (Bull. Acad. Belg.-2-xxx, p. 308) "Décrite d' après le mâle type de la collection Winthem (coll. Hagen)." A thorough description accompanied by illustrations of the holotype was provided by Lieftinck (1961: 414). Currently *Syncordulia gracilis* (Burmeister, 1839).

**macrostigma** Hagen in Selys (*Synthemis*) 1871: 559 (122 reprint). Syntype 1 ♀. "S. macrostigma / ma / \* Hag [handwritten header label by Hagen]"; "22. [handwritten on small yellow label]"; "Synth. macrostigma / ♀ Hag. [handwritten on pink label by Selys]". MCZ ENT 12421.

Described from "Océanie (sans autre désignation) (le mâle, coll. Selys), - Iles Fidji (la femelle, coll. Hagen)." Later publications attribute authorship of this name to Selys but the heading of the original description states "SYNTHEMIS MACROSTIGMA, Hag." and this is again repeated in the Additions (Selys 1874: 29 [18 reprint]) although in the list (index) of species in the Secondes Additions (Selys 1878a: 222 [44 reprint]), authorship is attributed to Selys. We have chosen to follow the earlier usage here and attribute authorship to Hagen in Selys. Currently *Synthemis macrostigma* Hagen in Selys, 1871.

## Acknowledgements

We extend our gratitude to David Furth, MCZ past curator for his support to the senior author during his previous 1991 visit to draft the Zygoptera portion of this catalog, and to the current MCZ curatorial staff, Dr. Crystal A. Maier and Charles Farnum for their kind assistance during our second visit in 2019 to complete the work. This visit has been possible thanks to a grant provided by the International Dragonfly Fund, and we thank Martin Schorr for his support towards our research. We thank Drs. Heinrich Fliedner (Bremen, Germany), Crystal A. Maier (MCZ), and Malte Seehausen (Wiesbaden, Germany) for their critical reading of the manuscript, Dr. Matti Hämäläinen (Helsinki, Finland) for his review of the Calopterygidae, Chlorocyphidae and Euphaeidae portions of this catalog and Drs. Haomiao Zhang, Kunming Institute of Zoology, Chinese Academy of Sciences and Shigeki Wada, Nishikida, Japan for translations of the Chao and Katatani papers respectively, and Ken Tennessen for use of the cover photograph.

## References

- Asahina, S., 1975. A revisional study of the genus *Mnais* (Odonata, Calopterygidae) VI. The type-specimens of Japanese *Mnais* species. *Kontyu* 43(4): 401-411.
- Asahina, S., 1988. Notes on some Asiatic dragonflies in the collection of MCZ, Harvard University. *Tombo* 31(1/4): 2-8.

- Asahina, S., 1991. Corrigendum. Tombo 34: 54.
- Belle, J., 1970. Studies on South American Gomphidae (Odonata) with special reference to the species from Surinam. Studies on the Fauna of Suriname and other Guyanas 11(43): 1-158.
- Belle, J., 1972. Further studies on South American Gomphidae (Odonata). Tijdschrift voor Entomologie 115: 217-240. <https://biodiversitylibrary.org/page/29947089>.
- Belle, J., 1973. A revision of the New World genus *Progomphus* Selys, 1854 (Anisoptera: Gomphidae). Odonatologica 2(4): 191-308. <http://natuurtijdschriften.nl/search?identifier=591278;keyword=Odonatologica>.
- Belle, J., 1975. On the holotype of *Cyclophylla argentina* Hagen in Selys, 1878 (Anisoptera: Gomphidae). Odonatologica 4(1): 27-28. <http://natuurtijdschriften.nl/search?identifier=591318;keyword=Odonatologica>.
- Belle, J., 1977. Revisional notes on *Diaphlebia* Selys, 1854 (Anisoptera: Gomphidae). Odonatologica 6(2): 111-117. <http://natuurtijdschriften.nl/search?identifier=591407;-keyword=Odonatologica>.
- Belle, J., 1984. A synopsis of the South American species of *Phyllogomphoides*, with a key and descriptions of three new taxa (Odonata, Gomphidae). Tijdschrift voor Entomologie 127(4): 79-100. <https://biodiversitylibrary.org/page/43079225>.
- Belle, J., 1988a. A synopsis of the species of *Phyllocycla* Calvert, with descriptions of four new taxa and a key to the genera of neotropical Gomphidae (Odonata, Gomphidae). Tijdschrift voor Entomologie 131: 73-102. <https://biodiversitylibrary.org/page/28239597>.
- Belle, J., 1988b. *Epigomphus gibberosus*, a new species from Peru, with lectotype designations for the eligible species of the genus *Epigomphus* (Odonata: Gomphidae). Tijdschrift voor Entomologie 131: 135-140. <https://biodiversitylibrary.org/page/28239665>.
- Belle, J., 1992. A revision of the South American species of *Aphylla* Selys, 1854 (Odonata: Gomphidae). Zoologische Mededelingen, Leiden 66(12): 239-264. <http://www.repository.naturalis.nl/document/149507>.
- Bennefield, B. L., 1965. A taxonomic study of the subgenus *Ladona* (Odonata: Libellidae). The University of Kansas Science Bulletin 45(4): 361-396. <https://biodiversitylibrary.org/page/2986445>.
- Borror, D. J., 1931. The Genus *Oligoclada* (Odonata). Miscellaneous Publications of the Museum of Zoology, University of Michigan 22: 1-42. <http://hdl.handle.net/2027.42/56267>.
- Borror, D. J., 1942. A revision of the libelluline genus *Erythrodiplax* (Odonata). Ohio State University, Columbus. xv + 286 pp. <https://babel.hathitrust.org/cgi/pt?id=mdp.39015069710781&view=1up&seq=17>.
- Borror, D. J., 1944. Additional notes on *Erythrodiplax maculosa* (Hagen). Annals of the Entomological Society of America 37: 393-395. <https://doi.org/10.1093/aesa/37.4.393>.
- Burmeister, H., 1839. Handbuch der Entomologie. Zweiter Band. Besondere Entomologie. Zweite Abtheilung. 2. Kaukerfe. Gymnognatha (Zweite Hälfte; vulgo Neuroptera). Theodor Christoph Friedrich Enslin, Berlin. xii + 757-1050. <https://biodiversitylibrary.org/page/8223117>.

- Calhoun, J. C. & R. L. Hawkins, 2016. Notes about early entomological type labels in the Museum of Comparative Zoology, Harvard University. *News of the Lepidopterists' Society* 58(3): 114-118. [https://www.researchgate.net/publication/308173324\\_Notes\\_about\\_early\\_entomological\\_type\\_labels\\_in\\_the\\_Museum\\_of\\_Comparative\\_Zoology\\_Harvard\\_University](https://www.researchgate.net/publication/308173324_Notes_about_early_entomological_type_labels_in_the_Museum_of_Comparative_Zoology_Harvard_University).
- Calvert, P. P., 1890. Notes on some North American Odonata with descriptions of three new species. *Transactions of the American Entomological Society*. 17: 33-40. <https://biodiversitylibrary.org/page/7490863>.
- Calvert, P. P., 1893. Catalogue of the Odonata (dragonflies) of the vicinity of Philadelphia, with an introduction to the study of this group. *Transactions of the American Entomological Society*. 20: 152a-d, 153-272. <https://biodiversitylibrary.org/page/7507876>.
- Calvert, P. P., 1895. The Odonata of Baja California, Mexico. *Proceedings of the California Academy Sciences Series 2*. 4: 463-558. <https://biodiversitylibrary.org/page/16063936>.
- Calvert, P. P., 1898a. The odonate genus *Macrothemis* and its allies. *Proceedings of the Boston Society of Natural History* 28(12): 301-332. <https://biodiversitylibrary.org/page/56756176>.
- Calvert, P. P., 1898b. Burmeister's types of Odonata. *Transactions of the American Entomological Society* 25: 27-104. <https://biodiversitylibrary.org/page/7521923>.
- Calvert, P. P., 1899a. Odonata from Tepic, Mexico, with supplementary notes on those of Baja California. *Proceedings of the California Academy Sciences. Third Series*. 1(12): 371-418. <https://biodiversitylibrary.org/page/38968001>.
- Calvert, P. P., 1899b. A contribution to knowledge of the Odonata of Paraguay. *Anales Museo Nacional, Buenos Aires* 7: 25-35. <https://biodiversitylibrary.org/page/14592458>.
- Calvert, P. P., 1901. Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. 17-72. <https://biodiversitylibrary.org/page/595770>.
- Calvert, P. P., 1902a. Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. 73-128. <https://biodiversitylibrary.org/page/595826>.
- Calvert, P. P., 1902b. Illustrations of Odonata: *Argia*. By Hermann A. Hagen. With a list and bibliography of the species. *Bulletin of the Museum of Comparative Zoology* 39(4): 103-120. <https://biodiversitylibrary.org/page/4199014>.
- Calvert, P. P., 1903a. Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. 129-144. <https://biodiversitylibrary.org/page/595882>.
- Calvert, P. P., 1903b. Additions to the Odonata of New Jersey, with descriptions of two new species. *Entomological News* 14(2): 33-40. <https://biodiversitylibrary.org/page/4614747>.
- Calvert, P. P., 1903c. On some American Gomphinae (Odonata.) *Entomological News* 14: 183-192. <https://biodiversitylibrary.org/page/4614808>.
- Calvert, P. P., 1905a. Odonata. In: *Biologia Centrali-Americana: Insecta Neuroptera*. R.H. Porter & Dulau Co., London. pp. 145-212. <https://biodiversitylibrary.org/page/595898>.
- Calvert, P. P., 1905b. Fauna of New England. 6. List of the Odonata. *Occasional Papers of the Boston Society of Natural History* 7: 1-43. <https://biodiversitylibrary.org/page/34734901>.



- Calvert, P. P., 1906. Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. 213-308. <https://biodiversitylibrary.org/page/595966>.
- Calvert, P. P., 1907. Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. 309-404. <https://biodiversitylibrary.org/page/596062>.
- Calvert, P. P., 1908. Introduction to the Odonata. In: *Biologia Centrali-Americana*, R. H. Porter & Dulau & Co. London, pp. v-xxx. <https://biodiversitylibrary.org/page/595726>.
- Calvert, P. P., 1909. Contributions to a knowledge of the Odonata of the Neotropical region, exclusive of Mexico and Central America. *Annals of the Carnegie Museum* 6(3): 73-280. <https://biodiversitylibrary.org/page/39791419>.
- Calvert, P. P., 1913. The species of *Nehalennia* (Odonata) including one from the eastern United States hitherto undescribed. *Entomological News* 24(7): 310-316. <https://biodiversitylibrary.org/page/26396423>.
- Calvert, P. P., 1921. *Gomphus dilatatus*, *vastus* and a new species, *lineatifrons* (Odonata). *Transactions American Entomological Society* 47(813): 221-232. <https://biodiversitylibrary.org/page/4822694>.
- Calvert, P. P., 1924. The generic characters and the species of *Philogenia* Selys (Odonata: Agrionidae). *Transactions American Entomological Society* 50(849): 1-56.
- Calvert, P. P., 1931. The generic characters and the species of *Palaemnema* (Odonata: Agrionidae). *Transactions American Entomological Society* 57(1): 1-111.
- Calvert, P. P. 1941. *Aeshna* (*Coryphaeschna*) *luteipennis* and its subspecies (Odonata: Aeshnidae). *Annals of the American Entomological Society* 34(2): 389-396. <https://doi.org/10.1093/aesa/34.2.389>.
- Calvert, P. P., 1947. The odonate collections of the California Academy of Sciences from Baja California and Tepic, Mexico, of 1889-1894. *Proceedings California Academy Sciences Series* (4)23: 603-609. <https://biodiversitylibrary.org/page/3187869>.
- Carle, F. L., 1982. *Ophiogomphus incurvatus*: a new name for *Ophiogomphus carolinus* Hagen (Odonata: Gomphidae). *Annals of the Entomological Society of America* 75(3): 335-339. <https://doi.org/10.1093/aesa/75.3.335>.
- Chao, H.-f., 1954. Classification of Chinese Dragonflies of the family Gomphidae (Odonata). IV. *Acta Entomologica Sinica* 4: 399-426. [in Chinese]
- Charpentier, T., 1825. *Horae entomologicae, adjectis tabulis novem coloratis*. Wratislaviae, A. Gosohorsky (= Breslau). xvi +255 pp.
- Charpentier, T., 1840. *Libellulinae Europaeae descriptae ac depictae*. Lisiaeae, Leopold Voss. 180 pp. [https://books.google.com/books?id=g\\_QfQQAACAAJ&printsec=frontcover#v=onepage&q&f=false](https://books.google.com/books?id=g_QfQQAACAAJ&printsec=frontcover#v=onepage&q&f=false).
- Christiansen, K. A., 1947. A new genus and species of damselfly from southern Haiti (Odonata). *Psyche* 54(4): 256-262. <https://biodiversitylibrary.org/page/50895662>.
- De Marmels, J., 2001. Revision of *Megapodagrion* Selys, 1886 (Insecta, Odonata: Megapodagrionidae). Dissertation zur Erlangung der naturwissenschaftlichen Doktorwürde (Dr. sc. nat.) vorgelegt der Mathematisch-naturwissenschaftlichen Fakultät der Universität Zürich. 220 pp.

- De Marmels, J., 2004. *Heteragrion makiritare* sp. nov., with descriptions of hitherto unknown females and larvae of other species from Venezuela (Odonata: Megapodagrionidae, Lestidae). *International Journal of Odonatology* 7(3): 439-458. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2004.9748230>
- Desjardins, J. F., 1835. Extraits du troisième rapport lu à la première séance annuelle de la Société d'Histoire Naturelle de l'île Maurice. *Annales de la Société Entomologique de France* (4) II-IV. <https://biodiversitylibrary.org/page/8312527>.
- Dijkstra, K.-D. & N. Matushkina, 2009. Kindred spirits: "*Brachythemis leucosticta*", Africa's most familiar dragonfly, consists of two species (Odonata: Libellulidae). *International Journal of Odonatology* 12(2): 237-256. [https://www.researchgate.net/publication/233110286\\_Kindred\\_spirits\\_Brachythemis\\_leucosticta\\_Africa's\\_most\\_familiar\\_dragonfly\\_consists\\_of\\_two\\_species\\_Odonata\\_Libellulidae](https://www.researchgate.net/publication/233110286_Kindred_spirits_Brachythemis_leucosticta_Africa's_most_familiar_dragonfly_consists_of_two_species_Odonata_Libellulidae).
- Dijkstra, K.-D. B, G. Bechly, S. Bybee, R. Dow, H. Dumont, G. Fleck, R. W. Garrison, N. von Ellenrieder & J. Ware, 2013. The classification and diversity of dragonflies and damselflies (Odonata), pp. 36-45. In: Zhang, Z.-Q. (Ed.) *Animal Biodiversity: An Outline of Higher-level Classification and Survey of Taxonomic Richness* (Addenda 2013). *Zootaxa* 3703(1): 1-82. <https://biotaxa.org/Zootaxa/article/view/zootaxa.3703.1.9>
- Donnelly, T. W., 1979. The genus *Phyllogomphoides* in Middle America (Anisoptera: Gomphidae). *Odonatologica* 8(4): 245-265. <http://natuurtijdschriften.nl/search?identifier=591487;keyword=Odonatologica>.
- Donnelly, T. W., 1987. Structural variation of *Ophiogomphus mainensis*: description of a new subspecies and relationship to sibling species (Odonata: Gomphidae). *Proceedings of the Entomological Society of Washington* 89(2): 205-214. <https://biodiversitylibrary.org/page/16262628>
- Erichson, W. F., 1848. Insekten. pp. 583–586. In R. Schomburgk (Ed.), *Reisen in Britisch-Guiana in den Jahren 1840-1844, im Auftrag SR. Majestät des Königs von Preussen. Nebst einer Fauna und Flora Guiana's nach Vorlagen. Dritter Theil.* 535-1260 pp. J. J. Weber, Leipzig. <https://biodiversitylibrary.org/page/35303555>.
- Eversmann, E., 1836. Libellulinae, Wolgam fluvium inter et montes Uralenses observatae. *Bulletin de la Société Impériale des Naturalistes de Moscou* 9: 235-248. <https://babel.hathitrust.org/cgi/pt?id=hvd.32044107310724&view=1up&seq=7>.
- Eversmann, E., 1841. Quaedam insectorum species novae, in Rossia Orientali observatae, nunc descriptae et depictae. *Bulletin de la Société Impériale des Naturalistes de Moscou* 14: 351-360. <https://biodiversitylibrary.org/page/44036076>. (1-10 reprint).
- Fabricius, I. C., 1798. *Supplementum Entomologiae Systematicae*. Proft et Storch, Copenhagen, iv+ 572 pp. <https://biodiversitylibrary.org/page/52748767>
- Fliedner, H., 1998. Johann Franz Christian Heyer (1777-1864) und sein Beitrag zur Kenntnis der Libellen. 1. Teil. *Libellula* 17(2): 71-80. <http://www.libellula.org/wp-content/uploads/2015/12/Libellula-17-12-Fliedner.pdf>
- Fraser, F. C., 1933. *Odonata, Vol. I. The fauna of British India, including Ceylon and Burma*. Taylor & Francis, London. xiv+423 pp. <https://www.lsuinsects.org/resources/PDFs/fraser1933.pdf>.

- Fraser, F. C., 1934. Odonata, Vol. II. The fauna of British India, including Ceylon and Burma. Taylor & Francis, London. xxiii+398 pp. <https://www.lsuinsects.org/resources-PDFs/fraser1934.pdf>.
- Garrison, R. W., 1976. Multivariate analysis of geographic variation in *Libellula luctuosa* Burmeister (Odonata Libellulidae). Pan-Pacific Entomologist 52(3): 181-203. <https://biodiversitylibrary.org/page/56098004>.
- Garrison, R. W., 1984. Revision of the genus *Enallagma* of the United States west of the Rocky Mountains and identification of certain larvae by discriminant analysis (Odonata: Coenagrionidae). University of California Publications in Entomology 105: 1-129. [https://www.researchgate.net/publication/261993701\\_Revision\\_of\\_the\\_genus\\_Enallagma\\_of\\_the\\_United\\_States\\_west\\_of\\_the\\_Rocky\\_Mountains\\_and\\_identification\\_of\\_certain\\_larvae\\_by\\_discriminant\\_analysis\\_Odonata\\_Coenagrionidae](https://www.researchgate.net/publication/261993701_Revision_of_the_genus_Enallagma_of_the_United_States_west_of_the_Rocky_Mountains_and_identification_of_certain_larvae_by_discriminant_analysis_Odonata_Coenagrionidae).
- Garrison, R. W. 1986. The genus *Aphylla* in Mexico and Central America, with a description of a new species, *Aphylla angustifolia* (Odonata: Gomphidae). Annals of the Entomological Society of America 79(6): 938-944. [https://www.researchgate.net/publication/233524324\\_The\\_Genus\\_Aphylla\\_in\\_Mexico\\_and\\_Central\\_America\\_with\\_a\\_Description\\_of\\_a\\_New\\_Species\\_Aphylla\\_angustifolia\\_Odonata\\_Gomphidae](https://www.researchgate.net/publication/233524324_The_Genus_Aphylla_in_Mexico_and_Central_America_with_a_Description_of_a_New_Species_Aphylla_angustifolia_Odonata_Gomphidae).
- Garrison, R. W., 1990. A synopsis of the genus *Hetaerina* with descriptions of four new species (Odonata: Calopterygidae). Transactions American Entomological Society 116(1): 175-259. [https://www.researchgate.net/publication/261994731\\_A\\_synopsis\\_of\\_the\\_genus\\_Hetaerina\\_with\\_descriptions\\_of\\_four\\_new\\_species\\_Odonata\\_Calopterygidae](https://www.researchgate.net/publication/261994731_A_synopsis_of_the_genus_Hetaerina_with_descriptions_of_four_new_species_Odonata_Calopterygidae).
- Garrison, R. W., 1994a. A synopsis of the genus *Argia* of the United States with keys and descriptions of new species, *Argia sabino*, *A. leonorae*, and *A. pima* (Odonata: Coenagrionidae). Transactions American Entomological Society 120(4): 287-368. [https://www.researchgate.net/publication/261994763\\_A\\_synopsis\\_of\\_the\\_genus\\_Argia\\_of\\_the\\_United\\_States\\_with\\_keys\\_and\\_descriptions\\_of\\_new\\_species\\_Argia\\_sabino\\_A\\_leonorae\\_and\\_A\\_pima\\_Odonata\\_Coenagrionidae](https://www.researchgate.net/publication/261994763_A_synopsis_of_the_genus_Argia_of_the_United_States_with_keys_and_descriptions_of_new_species_Argia_sabino_A_leonorae_and_A_pima_Odonata_Coenagrionidae).
- Garrison, R. W., 1994b. A revision of the New World genus *Erpetogomphus* Hagen in Selys (Odonata: Gomphidae) Tijdschrift voor Entomologie 137(2): 173-269. <https://biodiversitylibrary.org/page/38712054>.
- Garrison, R. W., 2006. A synopsis of the genera *Mnesarete* Cowley, *Bryoplatanion* gen. nov., and *Ormenophlebia* gen. nov. (Odonata: Calopterygidae). Contributions to Science Series 506: 1-84. <http://bionames.org/references/f064607f304f34e95-8a2433318bd1564>.
- Garrison, R. W., 2009. A synopsis of the genus *Telebasis* (Odonata: Coenagrionidae). International Journal of Odonatology 12(1): 1-121. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2009.9748331>
- Garrison, R. W. & N. von Ellenrieder, 2015. Damselflies of the genus *Argia* of the Guiana Shield (Odonata: Coenagrionidae). Zootaxa 4042(1): 1-134. <https://doi.org/10.11646/zootaxa.4042.1.1>.
- Garrison, R.W. & N. von Ellenrieder, 2017. New species of the damselfly genus *Argia* from Mexico, Central America and Ecuador with an emphasis on Costa Rica (In-

- secta: Odonata: Coenagrionidae). *Zootaxa* 4235(1): 1-93. <https://doi.org/10.11646/zootaxa.4235.1.1>.
- Garrison, R.W. & N. von Ellenrieder, 2018. Damselflies of the genus *Argia* (Odonata: Coenagrionidae) from Ecuador with descriptions of five new species. *Zootaxa* 4470(1): 1-69. <https://www.mapress.com/j/zt/article/view/zootaxa.4470.1.1>
- Garrison R. W., N. von Ellenrieder & J. A. Louton, 2010. Damselfly genera of the New World: an illustrated and annotated key to the Zygoptera. The Johns Hopkins University Press, Baltimore, Maryland, USA. xi + 490 pp.
- Garrison, R. W., N. von Ellenrieder & M. F. O'Brien, 2003. An annotated list of the name-bearing types of species-group names in Odonata preserved in the University of Michigan Museum of Zoology. *Occasional Papers of The Museum of Zoology University of Michigan* 736: 1-73. <http://hdl.handle.net/2027.42/57172>.
- Geijskes, D. C. & J. van Tol, 1983. *De libellen van Nederland* (Odonata). Bibliotheek van de Koninklijke Nederlandse Natuurhistorische Vereniging nr. 31. Hogwoud 368 pp.
- Gloyd, L. K., 1936. Three new North American species of Gomphinae (Odonata). *Occasional Papers of The Museum of Zoology University of Michigan* 326: 1-18. <http://hdl.handle.net/2027.42/56765>
- Gloyd, L. K., 1939. Two new species of *Protoneura* from South America (Odonata). *Occasional Papers of The Museum of Zoology University of Michigan* 408: 1-17. <http://hdl.handle.net/2027.42/56847>.
- Gloyd, L. K., 1941. The identity of three geographically misplaced species of Odonata. *Bulletin of the Chicago Academy of Sciences* 6(5-6): 130-132. <https://archive.org/details/BulletinV6N56>.
- Hagen, H. A., 1840. *Synonymia Libellularum Europaeorum: dissertatio inauguralis quam consensu et auctoritate gratiosi medicorum ordinis in Academia Albertina ad summos in medicina et chirurgia honores rite capessendos die XVII. m. Octobris MDCCCXL H.L.Q.C. publice defendet. Impressit Ernestus Julius Dalkowski, Regimontii Prussorum* 1-84. <https://biodiversitylibrary.org/page/34784704>.
- Hagen, H. A., 1855. Beretning om Galatea-Expeditionens Udbytte af Odonater. (Neuroptera auf der Reise um die Welt mit der Galathea gesammelt.). *Oversigt over det Kongelige danske Videnskabernes Selskabs Forhandlinger og dets Medlemmers Arbejder* 3: 108-125. <https://biodiversitylibrary.org/page/15958370>.
- Hagen, H. A., 1856. Die Odonaten-Fauna des russischen Reichs. *Entomologische Zeitung* 17(11-12): 363-381. <https://biodiversitylibrary.org/page/8984264>.
- Hagen, H.A. 1858. Synopsis der Neuroptera Ceylons. Pars I. *Verhandlungen der Zoologisch-botanischen Gesellschaft in Wien* 8: 471-88. <https://biodiversitylibrary.org/page/12054352>.
- Hagen, H. A., 1861. A synopsis of the Neuroptera of North America with a list of the South American species. *Smithsonian Institution Miscellaneous Collections*, xx + 347 pp. <https://biodiversitylibrary.org/page/18918125>.
- Hagen, H. A., 1867a. The Odonat-Fauna of the Island of Cuba. *Proceedings of the Boston Society of Natural History* 11: 289-294. <https://biodiversitylibrary.org/page/8059624>.

- Hagen, H. A., 1867b. Notizen beim Studium von Brauer's Novara-Neuropteren. Verhandlungen der Zoologisch-botanischen Gesellschaft in Wien 17: 31-62. <https://biodiversitylibrary.org/page/26724512>.
- Hagen, H. A., 1867c. Revision der von Herrn Uhler beschriebenen Odonaten. Entomologische Zeitung 28(1-3): 87-95. <https://biodiversitylibrary.org/page/33831154>.
- Hagen, H. A., 1867d. Die Neuroptera der Insel Cuba. Entomologische Zeitung 28(4-6): 215-232. <https://biodiversitylibrary.org/page/33831282>.
- Hagen, H. A., 1868. Odonaten Cubas (Fortsetzung). Entomologische Zeitung 29(7-9): 274-287. <https://biodiversitylibrary.org/page/33757428>.
- Hagen, H. A., 1869. Zur Odonaten-Fauna von Neu-Granada nach Lindig's Sammlungen. Entomologische Zeitung 30(1-3): 256-263. <https://biodiversitylibrary.org/page/9235078>.
- Hagen, H. A., 1873a. Report on the Pseudoneuroptera and Neuroptera of North America in the collection of the late Th. W. Harris. Proceedings of the Boston Society of Natural History 15: 263-301. <https://biodiversitylibrary.org/page/41794824>.
- Hagen, H. A., 1873b. Odonata from the Yellowstone. In: F. V. Hayden. Sixth annual report of the United States Geological Survey of the Territories, embracing portions of Montana, Idaho, Wyoming, and Utah; being a report of progress of the explorations for the year 1872. Report of the United States Geological Survey of the Territories 6: 727-729. <https://biodiversitylibrary.org/page/39939680>.
- Hagen, H. A., 1874a. The odonate fauna of Georgia, from original drawings now in possession of Dr. J. LeConte, and in the British Museum. Proceedings of the Boston Society of Natural History 16: 349-365. <https://biodiversitylibrary.org/page/41807629>.
- Hagen, H. A., 1874b. Report on the Pseudo-neuroptera collected by Lieut. W. L. Carpenter in 1873 in Colorado. In: F. V. Hayden. Annual report of the United States Geological and Geographical Survey of the Territories, embracing Colorado, being a report of progress of the exploration for the year 1873. Report of the United States Geological Survey of the Territories 7: 571-606. <https://biodiversitylibrary.org/page/33306886>.
- Hagen, H. A., 1875. Chapter 14. Report upon the collections of Neuroptera and Pseudo-neuroptera, made in portions of Colorado, New Mexico, and Arizona during the years 1872, 1873, and 1874. In: Volume 5. Zoology. Report upon geographical and geological explorations and surveys west of the one hundredth meridian, in charge of First Lieut. Geo. M. Wheeler, corps of engineers, U.S. Army, under the direction of Brig. Gen. A. A. Humphreys, chief of engineers, U.S. Army, pp. 909-922. <https://biodiversitylibrary.org/page/2555740>.
- Hagen, H. A., "1875" [1877]. Synopsis of the Odonata of America. Proceedings of the Boston Society of Natural History. 18(1): 20-96. <https://biodiversitylibrary.org/page/41786075>.
- Hagen, H. A., 1880. Quelques Additions aux Caloptérygines. Comptes rendus Societe Entomologique Belgique 23: lxii lxx (62-65 reprint).
- Hagen, H. A., 1885. Monograph of the earlier stages of the Odonata. Sub-families Gomphina and Cordulegastrina. Transactions of the American Entomological Society 12: 249-291. <https://biodiversitylibrary.org/page/7481760>.

- Hagen, H. A., 1887. Über *Neurobasis* und *Vestalis*. Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien 37: 647-648. <https://biodiversitylibrary.org/page/13988496>.
- Hagen, H. A., 1889. Synopsis of the Odonata of North America. No. 1 Psyche 5(160-164): 241-250. <https://biodiversitylibrary.org/page/13762245>.
- Hagen, H. A., 1890a. A synopsis of the Odonata genus *Leucorrhinia* Britt. Transactions of the American Entomological Society 17(3): 229-236. <https://biodiversitylibrary.org/page/7491071>.
- Hagen, H. A., 1890b. Notes and descriptions of some north American Libellulina. Synopsis of Neuroptera, second edition. Psyche 5(172-174): 383-387. <https://biodiversitylibrary.org/page/13762391>.
- Hämäläinen, M., 1989. Revision of the Philippine genus *Cyrano* Needham & Gyger (Odonata, Chlorocyphidae). Annales Entomologici Fennici 55: 121-127. <http://www.caloptera.com/pdf/Hamalainen%201989%20Revision%20of%20genus%20Cyrano.pdf>.
- Hämäläinen, M., 1991. The Philippine genus *Risicnemis* Cowley (Zygoptera: Platycnemididae). 1. Subgenus *Risicnemis*. Odonatologica 20(2): 151-194. <http://nauurtijdschriften.nl/search?identifier=591942;keyword=Odonatologica>.
- Hämäläinen, M., 2002. Notes on the Libellago damselflies of the Andaman and Nicobar Islands, with description of a new species (Zygoptera: Chlorocyphidae). Odonatologica 31(4): 345-358. <http://nauurtijdschriften.nl/search?identifier=592410;keyword=Odonatologica>.
- Hämäläinen, M., R. Dow & F. Stokvis, 2015. Revision of the Sundaland species of the genus *Dysphaea* Selys, 1853 using molecular and morphological methods, with notes on allied species (Odonata: Euphaeidae). Zootaxa 3949(4): 451-490. <http://dx.doi.org/10.11646/zootaxa.3949.4.1>.
- Higgins, H. T., 1901. The development and comparative structure of the gizzard in the odonate Zygoptera. Proceedings of the Academy of Natural Sciences of Philadelphia 53: 126-141. <https://biodiversitylibrary.org/page/10089135>.
- Hine, J. S., 1901. A new species of *Gomphus* and its near relatives. Ohio Naturalist 1(4): 60-61. <https://biodiversitylibrary.org/page/50397509>.
- Houston, W. W. K. & J. A. L. Watson, 1988. Odonata. In: Houston, W. W. K. [ed.] Zoological Catalogue of Australia. Canberra: Australian Government Publishing Service Vol. 6 xi 316 pp. 33-132.
- Howe, R. H., Jr., 1922. A new dragonfly from New England. Occasional Papers of the Boston Society of Natural History 5: 19-20. <https://biodiversitylibrary.org/page/34576336>.
- Jurzitza, G., 1982. Morphologische-taxonomische Untersuchungen an *Hetaerina carnifex* Hagen, 1854 und *H. proxima* Selys, 1854 (Zygoptera: Calopterygidae). Odonatologica 11(3): 231-238. <http://nauurtijdschriften.nl/search?identifier=591586;keyword=Odonatologica>.
- Kalkman, V. J. & G. Theischinger, 2013. Generic revision of Argiolestidae (Odonata), with four new genera. International Journal of Odonatology 16(1): 1-52. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2012.749450>.

- Karsch, F., 1890. Beiträge zur Kenntniss der Arten und Gattungen der Libellulinen. Berliner Entomologische Zeitschrift 33(2): 347-392. <https://biodiversitylibrary.org/page/8346725>.
- Katatani, N., 2017. Comparison of form of *Ictinogomphus rapax* (Rambur, 1842) and *Ictinogomphus pertinax* (Selys, 1854) and distribution of these species. Aeschna 53: 1-10 [in Japanese].
- Kennedy, C. H., 1917. A new species of *Somatochlora* (Odonata) with notes on the *cingulata* group. Canadian Entomologist 49: 229-236. <https://biodiversitylibrary.org/page/3088435>.
- Kennedy, C. H., 1918a. New species of Odonata from the southwestern United States. Part I. Three new argias. Canadian Entomologist 50: 256-261. <https://biodiversitylibrary.org/page/3055787>.
- Kennedy, C. H., 1918b. New species of Odonata from the southwestern United States. Part II. Canadian Entomologist 50: 297-300. <https://biodiversitylibrary.org/page/3055832>.
- Kennedy, C. H., 1919. The phylogeny of the Zygoptera. Unpublished PhD. Thesis, Cornell University. 295 pp.
- Kennedy, C. H., 1925. New genera of Megapodagrioninae, with notes on the subfamily. Bulletin of the Museum of Comparative Zoology 67(7): 291-312. <https://biodiversitylibrary.org/page/2798407>.
- Kimmins, D. E., 1966. A list of the Odonata types described by F.C. Fraser, now in the British Museum (Natural History). Bulletin of the British Museum (Natural History), Entomology 18(6): 173-227. <https://biodiversitylibrary.org/page/2304021>.
- Kimmins, D. E., 1968. A list of the type-specimens of Libellulidae and Corduliidae (Odonata) in the British Museum (Natural History). Bulletin of the British Museum (Natural History), Entomology 22(6): 277-305. <https://biodiversitylibrary.org/page/2253937>.
- Kimmins, D. E., 1969. A list of the type-specimens of Odonata in the British Museum (Natural History), Part II. Bulletin of the British Museum (Natural History), Entomology 23(7): 289-314. <https://biodiversitylibrary.org/page/2313981>.
- Kimmins, D. E., 1970. A list of the type-specimens of Odonata in the British Museum (Natural History), Part III. Bulletin of the British Museum (Natural History), Entomology 24(6): 171-205. <https://biodiversitylibrary.org/page/2314213>.
- Lencioni, F. A. A., 2013. Diagnoses and discussion of the group 1 and 2 Brazilian species of *Heteragrion*, with descriptions of four new species (Odonata: Megapodagrionidae). Zootaxa 685(1): 1-80. <https://biotaxa.org/Zootaxa/article/view/zootaxa.3685.1.1>.
- Lieftinck, M.A. 1931. A revision of the genus *Epophthalmia* Burm. (Odon., Corduliinae), with notes on habits and larvae. Treubia 13(1): 21-80.
- Lieftinck, M. A., 1940. Revisional notes on some species of *Copera* Kirby, with notes on habits and larvae (Odon., Platycnemididae). Treubia 17(4): 281-306.
- Lieftinck, M. A., 1942. The dragonflies (Odonata) of New Guinea and neighbouring islands. VI. Results of the Third Archbold Expedition 1938-'39 and of the Le Roux Expedition 1939 to Netherlands New Guinea. (I. Anisoptera). Treubia 18(3): 441-608.



- Lieftinck, M. A., 1961. Notes on the affinity and nomenclature of some Old World Corduliidae (Odonata). *Verhandelingen der Koninklijke Nederlandse Akademie van Wetenschappen. Series C.* 64(3): 410-423.
- Lieftinck, M. A., 1965. The species-group of *Vestalis amoena* Selys, 1853, in Sunda-land (Odonata, Calopterygidae). *Tijdschrift voor Entomologie* 108(11): 325-364. <https://biodiversitylibrary.org/page/28271816>.
- Lieftinck, M. A., 1971. A catalogue of the type-specimens of Odonata preserved in the Netherlands, with a supplementary list of the Odonata types described by Dutch scientists deposited in foreign institutional collections. *Tijdschrift voor Entomologie* 114(2): 65-139. <https://biodiversitylibrary.org/page/28200987>.
- Lohmann H., 1993. *Lestes sellatus* Hagen, 1862, a synonym of *Xerolestes pallidus* (Rambur, 1842), with a note on the genus *Xerolestes* Fraser, 1951 (Zygoptera: Lestidae). *Notulae Odonatologicae* 4(2): 32-34. <http://natuurtijdschriften.nl/search?identificer=593522;keyword=notulae>.
- Machado, A. B. M., 1999. Studies on neotropical Protoneuridae. 9. *Phasmoneura ciganae* Santos, conspecific with *Phasmoneura sancta* (Hagen) comb. n. (Zygoptera). *Notulae Odonatologicae* 5(3): 37-38. <http://natuurtijdschriften.nl/search?identificer=593639;keyword=notulae>.
- Machado, A. B. M. & D. S. Soldati Lacerda, 2017. Revalidation of *Platystigma* Kennedy, 1920, with a synopsis of the *quadratum* species group and the description of three new species (Odonata: Pseudostigmatidae). *Zootaxa* 4242(3): 493-516. <https://biotaxa.org/Zootaxa/article/view/zootaxa.4242.3.4>.
- Maibach, A., 1987. Révision systématique du genre *Calopteryx* Leach pour l'Europe occidentale (Zygoptera: Calopterygidae). 3. Révision systématique, étude bibliographique, désignation des types et clé de détermination. *Odonatologica* 16(2): 145-174. <http://natuurtijdschriften.nl/search?identificer=591780;keyword=Odonatologica>.
- Martin, R. 1907. Cordulines. Fasc. XVII. in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 17: 1-94. <https://biodiversitylibrary.org/page/9743065>.
- May, M. L., 1998. *Macrothemis fallax*, a new species of dragonfly from Central America (Anisoptera: Libellulidae), with a key to male *Macrothemis*. *International Journal Odonatology* 1(2): 137-153. <https://doi.org/10.1080/13887890.1998.9748101>.
- McLachlan, R. 1869. Diagnoses of three new species of Calopterygina. *Entomologists Monthly Magazine* 6: 27-28. <https://biodiversitylibrary.org/page/48394069>.
- McLachlan, R. 1878. VI. Calopterygina collected by Mr. Buckley in Ecuador and Bolivia. *Transactions of the Entomological Society* 1: 85-94. <https://biodiversitylibrary.org/page/12552280>.
- Meurgey, F. & C. Poiron, 2011. The true *Dythemis multipunctata* Kirby, 1894, from the West Indies and proposed new taxonomic status (Odonata: Anisoptera: Libellulidae). *Zootaxa* 3019: 51-62. <http://dx.doi.org/10.11646/zootaxa.3019.1.3>.
- Montgomery, B. E., 1943. *Sympetrum internum*, new name for *Sympetrum decisum* auct., nec Hagen (Odonata, Libellulidae). *Canadian Entomologist* 75: 57-58.

- Montgomery, B. E., 1967. Studies in the Polythoridae. *Acta Biologica Venezuelica* 5(9): 123-158.
- Morse, A. P., 1895a. New North American Odonata. *Psyche* 7(227): 207-211. <https://biodiversitylibrary.org/page/11640043>.
- Morse, A. P., 1895b. New North American Odonata—II. *Psyche* 7(232): 274-275. <https://biodiversitylibrary.org/page/11640114>
- Müller, O. F., 1767. Enumeratio ac descriptio Libellularum agri Fridrichsdalensis. *Nova Acta Physico-Medica Academiae Caesareae Leopoldino-Carolinae Naturae Curiosorum* 3: 122-131. <https://gdz.sub.uni-goettingen.de/id/PPN48126874X>.
- Muttkowski, R. A., 1910. Catalogue of the Odonata of North America. *Bulletin of the Public Museum of the City of Milwaukee* 1(1): 1-207. <https://babel.hathitrust.org/cgi/pt?id=mdp.39015037951582&view=1up&seq=5>.
- Muzón, J. & N. von Ellenrieder, 2001. Revision of the subgenus *Marmaraeschna* (Odonata: Aeshnidae). *International Journal of Odonatology* 4(2): 135-166. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2001.9748167>.
- Needham, J. G., 1897. Preliminary studies of N. American Gomphinae. *Canadian Entomologist* 29: 164-186. <https://biodiversitylibrary.org/page/27875765>.
- Needham, J. G., 1899. *Ophiogomphus*. *Canadian Entomologist* 31(9): 233-238. <https://biodiversitylibrary.org/page/2158889>.
- Needham, J. G., 1907. Supplemental descriptions of two new genera of Aeschninae. *Bulletin of the American Museum of Natural History* 23(6): 141-144. <http://digital-library.amnh.org/handle/2246/1713>.
- Needham, J. C., 1943. Notes on some Gomphine dragonflies from Venezuela and Guatemala. *Boletin de Entomologia Venezolana* 2(4): 197-206.
- Needham, J. G. & T. D. A. Cockerell, 1903. Some hitherto unknown nymphs of Odonata from New Mexico. *Psyche*, 10(324): 134-139. <https://biodiversitylibrary.org/page/13760822>.
- Needham, J. G. & M. K. Gyger, 1941. More Odonata from the Philippines. *Philippine Journal Science* 74(2): 141-151.
- Natural History Museum of Denmark- The digitized type collection of the Natural History Museum of Denmark. <http://www.daim.snm.ku.dk/The-digitized-type-collection> (accessed April 2019)
- Orr, A. G., 2002. Notes on the *Rhincocypha cucullata* Selys group from Borneo, with a description of *R. viola* spec. nov. (Zygoptera: Chlorocyphidae). *Odonatologica* 31(3): 287-295. <http://natuurtijdschriften.nl/search?identifier=592404;keyword=Odonatologica>.
- Orr, A. G. & M. Hämäläinen, 2007. The metalwing demoiselles of the eastern tropics. Their identification and biology. Natural History Publications (Borneo). Kota Kinabalu x + 115pp. [https://www.researchgate.net/profile/Albert\\_Orr/publication/262685849\\_The\\_Metalwing\\_Demoiselles\\_of\\_the\\_Eastern\\_Tropics\\_-\\_Their\\_Identification\\_and\\_Biology/links/0046353984adcd5964000000.pdf](https://www.researchgate.net/profile/Albert_Orr/publication/262685849_The_Metalwing_Demoiselles_of_the_Eastern_Tropics_-_Their_Identification_and_Biology/links/0046353984adcd5964000000.pdf).
- Paulson, D. R., 2003. Comments on the *Erythrodiplax connata* (Burmeister, 1839) group, with the elevation of *E. fusca* (Rambur, 1842), *E. minuscula* (Rambur, 1842), and

- E. basifusca* (Calvert, 1895) to full species (Anisoptera: Libellulidae). Bulletin of American Odonatology 6(4): 101-110. [https://www.academia.edu/11636524/Comments\\_on\\_the\\_Erythrodiplax\\_connata\\_Burmeister\\_1839\\_group\\_with\\_the\\_elevation\\_of\\_E\\_fusca\\_Rambur\\_1842\\_E\\_minuscula\\_Rambur\\_1842\\_and\\_E\\_basifusca\\_Calvert\\_1895\\_to\\_full\\_species\\_Anisoptera\\_Libellulidae\\_](https://www.academia.edu/11636524/Comments_on_the_Erythrodiplax_connata_Burmeister_1839_group_with_the_elevation_of_E_fusca_Rambur_1842_E_minuscula_Rambur_1842_and_E_basifusca_Calvert_1895_to_full_species_Anisoptera_Libellulidae_).
- Perkins, R. C. L., 1899. Neuroptera. In: Fauna Hawaiiensis or the Zoology of the Sandwich (Hawaiian) Isles. D Sharp ed. Cambridge University Press 2(2): 31-89. <https://biodiversitylibrary.org/page/4138845>.
- Pessacq, P., 2007 *Peristicta aeneoviridis* Calvert 1909 and *P. forceps* Hagen in Selys 1860, descriptions, redescriptions and a new synonymy (Zygoptera: Protoneuridae). Odonatologica 36(2): 207-218. <http://natuurtijdschriften.nl/search?identificer=592589;keyword=Odonatologica>.
- Pinhey, E. C. G., 1963. Some anomalous types of African Odonata and the description of a new species. Journal Entomological Society Southern Africa 26: 146-160.
- Pinhey, E. C. G., 1980. A review of the *Metacnemis* group (Odonata: Platycnemididae). Arnoldia 9(2): 1-13.
- Rácenis, J., 1969. Las especies del género *Idiataphe* (Odonata: Libellulidae). Publicaciones Ocasionales del Museo de Ciencias Naturales, Zoología, No. 14: 1-15.
- Rambur, P., 1842. Histoire Naturelle des Insectes: Névroptères. Librairie Encyclopédique de Roret. xvii + 534 pp. <https://archive.org/details/histoirenaturel53buffgoog/page/n11>.
- Ris, F., 1908. Beitrag zur Odonatenfauna von Argentina. Deutsche Entomologische Zeitschrift 4: 518-531. <https://biodiversitylibrary.org/page/33769983>.
- Ris, F., 1910. Libellulinen 3. Fasc. XI [Vol. 1] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 11: 245-384. <https://biodiversitylibrary.org/page/10810510>.
- Ris, F., 1911a. Libellulinen 4. Fasc. XII [Vol. 2] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 12: 385-528. <https://biodiversitylibrary.org/page/9675933>.
- Ris, F., 1911b. Libellulinen 5. Fasc. XIII [Vol. 2] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 13: 529-700. <https://biodiversitylibrary.org/page/9676059>.
- Ris, F., 1912. Libellulinen 6. Fasc. XIV [Vol. 2] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 14: 701-836. <https://biodiversitylibrary.org/page/9676237>.
- Ris, F., 1913a. Libellulinen 7. Fasc. XV [Vol. 3] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 15: 837-964. <https://biodiversitylibrary.org/page/9746729>.
- Ris, F., 1913b. Libellulinen 8. Fasc. XVI Première partie [Vol. 3] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 16: 965-1042. <https://biodiversitylibrary.org/page/9746865>.
- Ris, F., 1919. Libellulinen 9. Fasc. XVI Deuxième partie [Vol. 3] in: Collections Zoologiques du Baron Edm. de Selys Longchamps. Brussels. Institut royal des Sciences naturelles de Belgique 16: 1043-1278. <https://biodiversitylibrary.org/page/9746949>

- Say, T., "1839" [1840]. Description of new North American Neuropterous insects, and observations on some already described. *Journal Academy Natural Sciences Philadelphia* 8: 9-46. <https://biodiversitylibrary.org/page/24623007>.
- Schmidt, E., 1938. Odonaten aus Syrien und Palästina. *Sitzungsberichten der Akademie der Wissenschaften in Wien* 147(1): 135-150.
- Schneider, W., 1985. The types of *Orthetrum anceps* (Schneider 1845) and the taxonomic status of *Orthetrum ramburii* (Selys 1848). *Senckenbergiana Biologica*. 66(1/3): 97-104.
- Schneider, W. G., 1845. Verzeichnis der von Hrn. Prof. Dr. Loew im Sommer 1842 in der Türkei und Kleinasien gesammelten Neuroptera, nebst kurzer Beschreibung der neuen Arten. *Entomologische Zeitung* 6(4): 110-116. <https://biodiversitylibrary.org/page/36266569>.
- Scudder, S. H., 1866. Notes on some Odonata from the White Mountains of New Hampshire. *Proceedings of the Boston Society of Natural History*. 10: 211-222. <https://biodiversitylibrary.org/page/9492193>.
- Scudder, S. & T. Cockerell, 1902. A first list of the Orthoptera of New Mexico. *Proceedings of the Davenport Academy of Sciences* 9: 1-60. <https://biodiversitylibrary.org/page/27896590>.
- Seehausen, M., 2019. Zur Geschichte und Bedeutung der Libellensammlungen in Institutionen Deutschlands, Österreichs und der Schweiz (Odonata). *Libellula* 38(1/2): 29-70.
- Selys-Longchamps, E. de, 1840. Monographie des libellulidées d'Europe. *Librairie Encyclopédie de Roret, Bruxelles*. 1-220. <https://babel.hathitrust.org/cgi/pt?id=nyp-33433007358363&view=1up&seq=9>.
- Selys Longchamps, E. de, 1841. Nouvelles Libellulidées d'Europe. *Revue Zoologique par la Société Cuvierienne* 4: 243-246 (1-4 reprint). <https://biodiversitylibrary.org/page/2362192>.
- Selys Longchamps, E. de, 1843a. Note sur quelques Libellules d'Europe. *Annales de la Société Entomologique de France Série* 2(1): 107-109. <https://biodiversitylibrary.org/page/8258337>.
- Selys Longchamps, E. de, 1843b. Nouvelles additions aux Libellulidées de la Belgique de 1840 à 1843. *Bulletins de l'Académie Royale des Sciences et Belles-Lettres de Bruxelles, Serie 1* 10(8): 149-163. <https://biodiversitylibrary.org/page/2706243>.
- Selys Longchamps, E. de, 1850. *Revue des Odonates ou Libellules d'Europe. Mémoires de la Société Royale des Sciences de Liège* 6: xxii + 408 pp. <https://biodiversitylibrary.org/page/16236365>.
- Selys Longchamps, E. de, 1853. Synopsis des Caloptérygines. *Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique* 20(Annexe): 1-73. <https://biodiversitylibrary.org/page/2728662>.
- Selys Longchamps, E. de, 1854a. Synopsis des Gomphines. *Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique* 21(2): 23-112 (1-93 reprint). <https://biodiversitylibrary.org/page/36937548>.
- Selys Longchamps, E. de, 1854b. Monographie des Caloptérygines. *Mémoires de la Société Royale des Sciences de Liège* 9: xi + 291. <https://biodiversitylibrary.org/page/39812065>.

- Selys Longchamps, E. de, 1858. Monographie des Gomphines. Mémoires de la Société Royale des Sciences de Liège 11: 257-720 (1-460 reprint). <https://biodiversitylibrary.org/page/39824364>.
- Selys Longchamps, E. de, 1859a. Additions au synopsis des Caloptérygines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 7(7): 437-451 (1-16 reprint). <https://biodiversitylibrary.org/page/36942372>.
- Selys Longchamps, E. de, 1859b. Additions au synopsis des Gomphines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 7(8): 530-552 (1-26 reprint). <https://biodiversitylibrary.org/page/36942468>.
- Selys Longchamps, E. de, 1860a. Synopsis des Agrionines, Première légion: *Pseudostigma*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 10(6): 9-27 (1-20 reprint). <https://biodiversitylibrary.org/page/36902419>.
- Selys Longchamps, E. de, 1860b. Synopsis de Agrionines, Dernière Légion: *Protonevra*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 10(9 & 10): 431-462 (1-34 reprint). <https://biodiversitylibrary.org/page/36902815>.
- Selys Longchamps, E. de, 1862a. Synopsis des Agrionines, Seconde légion: *Lestes*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 13(4): 288-338. (1-54 reprint). <https://biodiversitylibrary.org/page/42186476>.
- Selys Longchamps, E. de, 1862b. Synopsis des Agrionines, Troisième légion: *Podagrion*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 14(6): 5-44 (1-42 reprint). <https://biodiversitylibrary.org/page/36014862>.
- Selys Longchamps, E. de, 1863. Synopsis des Agrionines, Quatrième légion: *Platycnemis*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 16(8): 147-176 (1-32 reprint). <https://biodiversitylibrary.org/page/37487189>.
- Selys Longchamps, E. de, 1865. Synopsis des Agrionines, 5me légion: *Agrion*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 20(8): 375-417 (1-45 reprint). <https://biodiversitylibrary.org/page/36020685>.
- Selys Longchamps, E. de, 1868. Note sur quelques Odonates nouveaux du Mexique. Comptes Rendus de la Société entomologique de Belgique 11: lxxi lxxi. (1-6 reprint). <https://babel.hathitrust.org/cgi/pt?id=hvd.32044107312308&view=1up&seq=5>.
- Selys Longchamps, E. de, 1869. Secondes additions au synopsis des Caloptérygines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 27(6): 645-680. <https://biodiversitylibrary.org/page/5699011>.
- Selys Longchamps, E. de, 1871. Synopsis des Cordulines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 31(5): 238-316 (1-128 reprint). <https://biodiversitylibrary.org/page/5497402>.
- Selys Longchamps, E. de, 1872. Matériaux pour une faune Nevropterologique de l'Asie septentrionale Annales Société Entomologique Belgique 15: 25-45 (1-23 reprint). <https://biodiversitylibrary.org/page/12280976>.
- Selys Longchamps, E. de, 1873. Troisième additions au synopsis des Caloptérygines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 35(5): 469-519 (1-55 reprint). <https://biodiversitylibrary.org/page/5493070>.

- Selys Longchamps, E. de, 1874. Additions au synopsis des Cordulines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 37(1): 16-34 (1-24 reprint). <https://biodiversitylibrary.org/page/34484591>.
- Selys Longchamps, E. de, 1876a. Synopsis des Agrionines, 5me légion: *Agrion* (suite). Le genre *Agrion*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 41(2): 247-322, (3): 496-539, (6): 1233-1309, (1-199 reprint). <https://biodiversitylibrary.org/page/5699375>, <https://biodiversitylibrary.org/page/5699628>, <https://biodiversitylibrary.org/page/5700381>.
- Selys Longchamps, E. de, 1876b. Synopsis des Agrionines, 5me légion: *Agrion* (suite). Le genre *Agrion*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 42(9 & 10): 490-531, (12): 952-991 (200-282 reprint). <https://biodiversitylibrary.org/page/34716922>, <https://biodiversitylibrary.org/page/34717382>.
- Selys Longchamps, E. de, 1877. Synopsis des Agrionines, 5me légion: *Agrion* (suite et fin). Les genres *Telebasis*, *Argiocnemis* et *Hemiphlebia*. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 43(2): 97-159 (1-65 reprint). <https://biodiversitylibrary.org/page/5707210>.
- Selys Longchamps, E. de, 1878a. Secondes additions au synopsis des Cordulines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 45(3): 183-222 (1-44 reprint). <https://biodiversitylibrary.org/page/5689300>.
- Selys Longchamps, E. de, 1878b. Quatrièmes additions au synopsis des Gomphines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 46(9 & 10): 408-471, (11): 658-698 (1-106 reprint). <https://biodiversitylibrary.org/page/5307709>, <https://biodiversitylibrary.org/page/5308041>.
- Selys Longchamps, E. de, 1879a. Quatrièmes additions au synopsis des Caloptérygines. Bulletin de l'Académie Royale des sciences, des lettres et des beaux-arts de Belgique Série 2 47(4): 349-409 (1-63 reprint). <https://biodiversitylibrary.org/page/36017193>.
- Selys Longchamps, E. de, 1879b. Revision des *Ophiogomphus* et descriptions de quatre nouvelles Gomphines Americaines. Comptes-rendus de la Société Entomologique de Belgique 22: 62-70 (1-8 reprint).
- Selys Longchamps, E. de, 1886. Revision du Synopsis des Agrionines. Première partie comprenant les légions *Pseudostigma-Podagrion-Platycnemis* et *Protonevra*. Mémoires couronnés et autres Mémoires, Académie royale de Belgique 38(4): iv + 233pp. <https://archive.org/details/in.ernet.dli.2015.534538/page/n3>.
- Skinner, H., 1902. Doing of Societies. Entomological News, 13(7): 231. <https://biodiversitylibrary.org/page/2568566>.
- St. Quentin, D., 1970. Katalog der Odonaten-Typen im Naturhistorischen Museum Wien. Annalen des naturhistorischen Museums Wien 74: 253-279.
- Tennessen, K. J., 2002. *Telebasis simulata* spec. nov. from South America, previously confused with *T. sanguinalis* Calvert (Zygoptera: Coenagrionidae). Odonatologica 31(2): 205-207. <http://natuurtijdschriften.nl/search?identificer=592399;keyword=Odonatologica>.
- Theischinger, G., 1998. Supra-specific diversity in Australian "*Argiolestes*" (Odonata: Zygoptera: Megapodagrionidae). Stapfia 55: 613-621. [https://www.zobodat.at/pdf/STAPFIA\\_0055\\_0613-0621.pdf](https://www.zobodat.at/pdf/STAPFIA_0055_0613-0621.pdf).

- Turiault, M., 2016. The type material of Calopterygidae in the Museum für Naturkunde in Berlin (Odonata). *Odonatologica* 45(1/2): 95-106. [https://www.researchgate.net/publication/303878828\\_The\\_type\\_material\\_of\\_Calopterygidae\\_in\\_the\\_Museum\\_fur\\_Naturkunde\\_in\\_Berlin\\_Odonata](https://www.researchgate.net/publication/303878828_The_type_material_of_Calopterygidae_in_the_Museum_fur_Naturkunde_in_Berlin_Odonata).
- Turiault, M., 2017. The type material of Isostictidae, Dicteriadidae, Argiolestidae and Megapodagrionidae in the Museum für Naturkunde in Berlin (Odonata). *Odonatologica* 46(3/4) 2017: 351-358. [https://www.researchgate.net/publication/324747213\\_The\\_type\\_material\\_of\\_Isostictidae\\_Dicteriadidae\\_Argiolestidae\\_and\\_Megapodagrionidae\\_in\\_the\\_Museum\\_fur\\_Naturkunde\\_in\\_Berlin\\_Odonata](https://www.researchgate.net/publication/324747213_The_type_material_of_Isostictidae_Dicteriadidae_Argiolestidae_and_Megapodagrionidae_in_the_Museum_fur_Naturkunde_in_Berlin_Odonata).
- Turiault, M., 2018. A catalogue of the types of Protoneurinae and Disparoneurinae deposited in the Museum für Naturkunde in Berlin (Odonata). *International Dragonfly Fund - Report*. 118: 1-10. <http://publikationen.ub.uni-frankfurt.de/frontdoor/index/index/docId/47100>
- Uhler, P. R., "1857" [1858a]. Contributions to the neuropterology of the United States. No. 1 Proceedings of the Academy of Natural Sciences of Philadelphia 9: 87-88. <https://biodiversitylibrary.org/page/6330351>.
- Uhler, P. R., 1858b. Descriptions of new species of neuropterous insects, collected by the North Pacific Exploring Expedition under Capt. John Rodgers. Proceedings of the Academy of Natural Sciences of Philadelphia 10: 29-31. <https://biodiversitylibrary.org/page/47535611>
- Vander Linden, P. L., 1820. *Agriones Bononienses descriptae*. Bononiae, Typographia Annesii de Nobilibus. 8 pp.
- van Tol, J. & N. Norma-Rashid, 1995. The genus *Euphaea* Rambur in Borneo (Odonata: Euphaeidae). Descriptions and records of Malesian Odonata, 3. *Tijdschrift voor Entomologie* 138: 131-141. <https://biodiversitylibrary.org/page/28197361>
- von Ellenrieder, N., 2003. A synopsis of the Neotropical species of '*Aeshna*' Fabricius: The genus *Rhionaeschna* Förster (Odonata: Aeshnidae). *Tijdschrift voor Entomologie* 146: 67-207. [https://pdfs.semanticscholar.org/659f/e4597bc61e455bf296c019c34a3ce57142c0.pdf?\\_ga=2.211790615.304210030.15632123982108584379.1563212398](https://pdfs.semanticscholar.org/659f/e4597bc61e455bf296c019c34a3ce57142c0.pdf?_ga=2.211790615.304210030.15632123982108584379.1563212398).
- von Ellenrieder, N., 2009. Five new species of *Orthemis* from South America (Odonata Libellulidae). *International Journal of Odonatology* 12(2): 347-381. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2009.9748351>.
- von Ellenrieder, N., 2014. A synopsis of the Neotropical genus *Nephepeltia* (Odonata Libellulidae). *Zootaxa* 3796(1): 121-146. <https://biotaxa.org/Zootaxa/article/view/zootaxa.3796.1.6>.
- von Ellenrieder, N. & R. W. Garrison, 2007. Untangling some taxonomic riddles on damselfly genera (Zygoptera) from the neotropical region. *International Dragonfly Fund-Report* 11: 1-34. <https://pdfs.semanticscholar.org/f603/79ac7b48f6991f8de30d6912f70c9317210d.pdf>.
- von Ellenrieder, N. & R. W. Garrison, 2017. A synopsis of the Neotropical genus *Protoneura* (Odonata: Coenagrionidae). *Zootaxa* 4361(1): 1-76. <https://doi.org/10.11646/zootaxa.4361.1.1>.
- von Ellenrieder, N. & J. Muzón, 2006. The genus *Andinagrion*, with description of *A. garrisoni* sp. nov. and its larva from Argentina (Zygoptera: Coenagrionidae). *International*



- Journal of Odonatology 9(2): 205-223. <https://www.tandfonline.com/doi/abs/10.1080/13887890.2006.9748279>.
- Walker, E. M., 1908. A key to the North American species of *Aeshna* found north of Mexico. Canadian Entomologist 40(11): 377-391, (12): 450-451. <https://biodiversitylibrary.org/page/27878300>, <https://biodiversitylibrary.org/page/27878375>.
- Walker, E. M., 1912. The North American dragonflies of the genus *Aeshna*. University of Toronto Studies, Biological Series 11: 1-213. <https://biodiversitylibrary.org/page/52047254>
- Walker, E. M., 1925. The North American species of the genus *Somatochlora*. University of Toronto Studies, Biological Series No. 26: 1-202.
- Walker, E.M., 1958. The Odonata of Canada and Alaska. Volume two. University of Toronto Press xi + 318 pp.
- Walsh, B., 1862. List of the pseudoneuroptera of Illinois contained in the cabinet of the writer, with descriptions of over forty new species, and notes on their structural affinities. Proceedings of the Academy of Natural Sciences of Philadelphia 14: 361-402. <https://biodiversitylibrary.org/page/26361333>.
- Walsh, B., "1863" [1864]. Notes [on Pseudoneuroptera], pp. 182-272. In: Observations on certain N. A. Neuroptera, by H. Hagen, M. D., of Koenigsberg, Prussia; translated from the original French MS., and published by permission of the author, with notes and descriptions of about twenty new N. A. species of Pseudoneuroptera. Proceedings of the Entomological Society of Philadelphia 20: 167-272. <https://biodiversitylibrary.org/page/57090464>.
- Watson, J. A. L., 1958. A new species of *Petalura* Leach (Odonata) from Western Australia. Proceedings of the Royal Entomological Society of London. Series B. Taxonomy 27(7-8): 116-120. <https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1365-3113-1958.tb00423.x>.
- Watson, J. A. L., 1977. The *Argiolestes pusillus* complex in Western Australia (Odonata: Megapodagrionidae). Journal of the Australian Entomological Society 16: 197-205. <https://doi.org/10.1111/j.1440-6055.1977.tb00086.x>
- Watson, J. A. L. & M. S. Moulds, 1979. New species of Australian Lestidae (Odonata). Journal of the Australian Entomological Society 18: 143-155. <https://doi.org/10.1111/j.1440-6055.1977.tb00086.x>.
- Watson, J. A. L. & G. Theischinger, 1984. The Australian Protoneurinae (Odonata). Australian Journal Zoology Supplement Series no. 98: 1-51. [https://www.researchgate.net/publication/248904301\\_The\\_Australian\\_Protoneurinae\\_Odonata](https://www.researchgate.net/publication/248904301_The_Australian_Protoneurinae_Odonata).
- Weaver, J. S. III, 1993. The Trichoptera of the Museum of Comparative Zoology, Harvard University. Braueria 20: 33-50. [https://www.zobodat.at/pdf/BRA\\_20\\_0033-0050.pdf](https://www.zobodat.at/pdf/BRA_20_0033-0050.pdf).
- White, H. B., III & J. V. Calhoun, 2009. Miss Mattie Wadsworth (1862-1943): early woman author in Entomological News. Transactions of the American Entomological Society 135(4): 413-429. [https://www.researchgate.net/publication/232694467\\_Miss\\_Mattie\\_Wadsworth\\_1862-1943\\_Early\\_Woman\\_Author\\_in\\_Entomological\\_News](https://www.researchgate.net/publication/232694467_Miss_Mattie_Wadsworth_1862-1943_Early_Woman_Author_in_Entomological_News)
- Westfall, M. J. 1943. The synonymy of *Libellula auripennis* Burmeister and *Libellula jesseana* Williamson, and a description of a new species, *Libellula needhami* (Odonata). Transactions of the American Entomological Society 69: 17-31.



- White, H. B., III & M. F. O'Brien, 2017. Naming an undescribed dragonfly: Williamson's *Williamsonia* and the travails of R. Heber Howe Jr. *Northern Naturalist* 24(Monograph 14): 1-43. [https://www.researchgate.net/publication/320623995\\_Naming\\_an\\_Undescribed\\_Dragonfly\\_Williamson's\\_Williamsonia\\_and\\_the\\_Travails\\_of\\_R\\_Heber\\_Howe\\_Jr](https://www.researchgate.net/publication/320623995_Naming_an_Undescribed_Dragonfly_Williamson's_Williamsonia_and_the_Travails_of_R_Heber_Howe_Jr).
- Williamson, E. B., 1898. A new species of *Ischnura* (Order Odonata) *Entomological News* 9(9): 209-211. <https://biodiversitylibrary.org/page/24655043>.
- Williamson, E. B., 1900a. Notes on a few Wyoming dragonflies (Order Odonata). *Entomological News* 11(5): 453-458. <https://biodiversitylibrary.org/page/2588748>.
- Williamson, E. B., 1900b. The Dragonflies of Indiana. 24th Annual Report of the Department of Geology and Natural Resources of Indiana 24: 229-333. <https://babel.hathitrust.org/cgi/pt?id=coo.31924018286439&view=1up&seq=1>.
- Williamson, E. B., 1902. New species of *Gomphus* (Odonata) related to *G. fraternus*. *Entomological News* 13(2): 47-49. <https://biodiversitylibrary.org/page/2568333>.
- Williamson, E. B., 1904a. A new species of *Psolodesmus* (order Odonata) from Formosa. *Entomological News* 15(7): 247-250. <https://biodiversitylibrary.org/page/2404155>.
- Williamson, E. B., 1904b. The dragonflies (Odonata) of Burma and Lower Siam.-I. Subfamily Calopteryginae. *Proceedings of the United States National Museum* 28(1389): 165-187. <https://biodiversitylibrary.org/page/15392777>.
- Williamson, E. B., 1907. Two new North American dragonflies (Odonata). *Entomological News* 18(1): 1-7. <https://biodiversitylibrary.org/page/26363477>.
- Williamson, E. B., 1908. Three related American species of *Aeshna* (Odonata). *Entomological News* 19(6): 264-271, 19(7): 301-308. <https://biodiversitylibrary.org/page/2592241>, <https://biodiversitylibrary.org/page/2592283>.
- Williamson, E. B., 1909a. Some corrections in *Somatochlora* (Odonata-Dragonflies). *Entomological News* 20(2): 77-79. <https://biodiversitylibrary.org/page/2591145>.
- Williamson, E. B., 1909b. The North American dragonflies of the genus *Macromia*. *Proceedings of the United States National Museum* 37: 369-398. <https://biodiversitylibrary.org/page/15556642>.
- Williamson, E. B. 1914. *Gomphus pallidus* and two new related species (Odonata). *Entomological News* 25(2): 49-58. <https://biodiversitylibrary.org/page/26383857>.
- Williamson, E. B., 1916. On certain *Acanthagrions*, including three new species (Odonata). *Entomological News* 27(7): 313-325, 27(8): 349-358. <https://biodiversitylibrary.org/page/26384373>, <https://biodiversitylibrary.org/page/2560934>.
- Williamson, E. B., 1917. Some species of *Leptagrion* with descriptions of a new genus and a new species (Odonata). *Entomological News* 28(6): 241-255. <https://biodiversitylibrary.org/page/26384041>.
- Williamson, E. B., 1918. Results of the University of Michigan-Williamson expedition to Colombia 1916-17. II. A new species of *Agriongomphus* (Odonata). *Occasional Papers of the Museum of Zoology, University of Michigan* 59: 1-18. <http://hdl.handle.net/2027.42/56498>.
- Williamson, E. B., 1919. Results of the University of Michigan-Williamson expedition to Colombia, 1916-17. IV. Notes on species of the genus *Heteragrion* Selys with de-

- scriptions of new species (Odonata). Occasional Papers Museum Zoology Michigan 68: 1-88. <http://hdl.handle.net/2027.42/56507>.
- Williamson, E. B., 1922. Libellulas collected in Florida by Jesse H. Williamson, with description of a new species (Odonata). Entomological News 33(1): 13-19. <https://biodiversitylibrary.org/page/2611077>.
- Williamson, E. B., 1923. A new species of *Williamsonia* (Odonata-Corduliinae). Canadian Entomologist 55(4): 96-98. <https://biodiversitylibrary.org/page/27828299>.
- Williamson, E. B., 1932. Two new species of *Stylurus* (Odonata-Gomphinae). Occasional Papers of the Museum of Zoology, University of Michigan 247: 1-18. <http://hdl.handle.net/2027.42/56686>.
- Williamson, E. B. & J. H. Williamson, 1930. Five new Mexican Dragonflies (Odonata). Occasional Papers Museum Zoology Michigan no. 216: 1-34. <http://hdl.handle.net/2027.42/56655>.
- Yu, X., J. Xue, M. Hämäläinen, Y. Liu & W. Bu, 2016. A revised classification of the genus *Matrona* Selys, 1853 using molecular and morphological methods (Odonata: Calopterygidae). Zoological Journal of the Linnean Society 174: 473-486. <https://academic.oup.com/zoolinnean/article/174/3/473/2453130>.
- Zhang, H., M. Hämäläinen & X. Tong, 2010. *Indocypha catopta* sp. nov. from Malaysia (Odonata: Coenagrionidae). International Journal of Odonatology 13(2): 231-240. <https://doi.org/10.1080/13887890.2010.9748376>.
- Zimsen, E., 1964. The type material of I.C. Fabricius. Munksgaard, Copenhagen. 656 pp.



## INSTRUCTION TO AUTHORS

International Dragonfly Report is a journal of the International Dragonfly Fund (IDF). It is referred to as the journal in the remainder of these instructions. Transfer of copyright to IDF is considered to have taken place implicitly once a paper has been published in the journal.

The journal publishes original papers only. By original is meant papers that: a) have not been published elsewhere before, and b) the scientific results of the paper have not been published in their entirety under a different title and/or with different wording elsewhere. The republishing of any part of a paper published in the journal must be negotiated with the Editorial Board and can only proceed after mutual agreement.

Papers reporting studies financially supported by the IDF will be reviewed with priority, however, authors working with Odonata from the focal area (as defined on the back page of the front cover) are encouraged to submit their manuscripts even if they have not received any funds from IDF.

Manuscripts submitted to the journal should preferably be in English; alternatively German or French will also be accepted. Every manuscript should be checked by a native speaker of the language in which it is written; if it is not possible for the authors to arrange this, they must inform the Editorial Board on submission of the paper. Authors are encouraged, if possible, to include a version of the abstract in the primary language of the country in which their study was made.

Authors can choose the best way for them to submit their manuscripts between these options: a) via e-mail to the publisher, or b) on a CD, DVD or any other IBM-compatible device. Manuscripts should be prepared in Microsoft Word for Windows.

While preparing the manuscript authors should consider that, although the journal gives some freedom in the style and arrangements of the sections, the editors would like to see the following clearly defined sections: Title (with authors names, physical and e-mail addresses), Abstract, Introduction, Material & Methods, Results, Discussion, Acknowledgments and References. This is a widely used scheme by scientists that everyone should be familiar with. No further instructions are given here, but every author should check the style of the journal.

Authors are advised to avoid any formatting of the text. The manuscripts will be stylised according to the font type and size adopted by the journal. However, check for: a) all species names must be given in italic, b) the authority and year of publication are required on the first appearance of a species name in the text, but not thereafter, and c) citations and reference list must be arranged following the format below.

Reference cited in the text should read as follows: Tillyard (1924), (Tillyard 1924), Swezey & Williams (1942).

The reference list should be prepared according to the following standard:

Swezey, O. & F. Williams, 1942. Dragonflies of Guam. Bernice P. Bishop Museum Bulletin 172: 3-6.

Tillyard, R., 1924. The dragonflies (Order Odonata) of Fiji, with special reference to a collection made by Mr. H.W. Simmonds, F.E.S., on the Island of Viti Levu. Transactions of the Entomological Society London 1923 III-IV: 305-346.

Citations of internet sources should include the date of access.

The manuscript should end with a list of captions to the figures and tables. The latter should be submitted separately from the text preferably as graphics made using one of the Microsoft Office products or as a high resolution picture saved as a .jpg .tif or .ps file. Pictures should be at least 11 cm wide and with a minimum 300 dpi resolution, better 360 dpi. Line drawings and graphics could have 1200 dpi for better details. If you compose many pictures to one figure, please submit the original files as well. Please leave some space in the upper left corner of each picture, to insert a letter (a, b, c...) later. Hand-made drawings should be scanned and submitted electronically. Printed figures sent by the post could be damaged, in which case authors will be asked to resubmit them.

Manuscripts not arranged according to these instructions may also be accepted, but in that case their publication will be delayed until the journal's standards are achieved.

