



The damselfly and dragonfly watercolour collection of Edmond de Selys Longchamps: II Calopterygines, Cordulines, Gomphines and Aeschnines

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In the nineteenth century Edmond de Selys Longchamps added watercolours, drawings and notes to his extensive collection of dragonfly and damselfly specimens. The majority of illustrations were executed by Selys and Guillaume Severin. The watercolour collection is currently part of the collection of the Royal Belgian Institute for Natural Sciences in Brussels. This previously unpublished material has now been scanned and is accessible on the website of this institute. This article presents the part of the collection concerning the following sous-familles according to Selys: Calopterygines (currently superfamilies Calopterygoidea and Epiophlebioidea), Cordulines (currently superfamily Libelluloidea), Gomphines (currently superfamily Petaluroidea, Gomphoidea, Cordulegastroidea and Aeshnoidea) and Aeschnines (currently superfamily Aeshnoidea). This part consists of 750 watercolours, 64 drawings and 285 text sheets. Characteristics and subject matter of the sheets with illustrations and text are presented. The majority (92%) of all sheets with illustrations have been associated with current species names (Calopterygines 268, Cordulines 109, Gomphines 268 and Aeschnines 111). We hope the digital images and documentation stress the value of the watercolour collection of Selys and promote it as a source for odonate research.

Keywords: Odonata; taxonomy; Severin; Zygoptera; Anisozygoptera; Anisoptera; watercolours; drawings; aquarelles

Introduction

The watercolour collection of Selys

Edmond Michel de Selys Longchamps (1813–1900) did important work in odonate classification and taxonomy (Wasscher & Dumont, 2013; Verspui & Wasscher, 2016). He acquired an extensive collection of Odonata from all over the world that is now housed in the Royal Belgian Institute of Natural Sciences (RBINS) in Brussels (Belgium). Many odonate species of his collection and some from other collections and museums were depicted in watercolours and drawings that were executed mostly by Selys himself and by Guillaume Severin. Selys' ambition was to include these watercolours in his upcoming publication “Histoires des insectes odonates” (Lameere, 1902). This work, first mentioned in Selys and Hagen (1854), was meant to describe and illustrate all odonate species of the world but it was never published. The watercolour

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collection was not widely known in the last century but was consulted by some odonatologists, including Erich Schmidt and Basil Elwood Montgomery, in the second half of the twentieth century (personal communication, Dumont, 18 February 2017). The rediscovery of the unpublished watercolour collection of Selys in 2002 (Verspui & Wasscher, 2016) made this valuable source of information more widely available for odonate research.

The role of Guillaume Severin

Guillaume Severin was born as Wilhelm Peter Robert Severin on 25 August 1862 in the Hague, the Netherlands (Anonymous, 1862). Around 1885, Severin worked as a decorative industrial designer at Liège in Belgium. He was first mentioned in Selys' diary on 26 February 1888 when he visited Selys' collection (Caulier-Mathy & Haesenne-Peremans, 2008). Selys used an illustration, made by Severin, in a publication written in 1889 (Figure 1) so around that time Severin started to paint Odonata for Selys. He executed many odonate watercolours, on commission and instructed by Selys, during the following period. Severin became engaged as assistant naturalist in December 1890 and acquired the position of curator of the Department of Arthropods in October 1899 at the Royal Museum in Brussels (Lameere *in* Calvert, 1939; Caulier-Mathy & Haesenne-Peremans, 2008). After Selys' death, Severin was instrumental in organising the description of the extensive Selys collection and in publishing the "Collections Zoologiques du baron Edm. de Selys Longchamps. Catalogue systématique et descriptif". He provided information to odonate specialists, René Martin and Friedrich Ris, whose detailed studies resulted in publications. The catalogue and the writers are discussed in more detail by Wasscher and Dumont (2013). Severin never published articles on Odonata himself. He was in contact with many international entomologists and was a key player in organising the first International Congress of Entomology in Brussels in 1910 (Lameere *in* Calvert, 1939). Severin died in 1938, aged 76.

The odonate classification of Selys

Selys published odonate classifications that incorporated all familles in 1871 and in 1896 (Selys, 1871a; Selys, 1896). We have chosen to retain in our article the French names for the levels of Selys' classification since their translation into English can create confusion. The category 'sous-genre' in the classification of Selys is largely comparable with the level of genus in the current classification of Odonata. The category 'famille' is not comparable with the current level of family and the two categories 'légion' and 'genre' are currently no longer in use. The names written by Selys on the illustrations of the watercolour collection are here referred to as Selys' names. In his classification of the Odonata in 1871 (Table 1) no légions were presented for the Libellulines and the Aeschnines.

In the publication from 1896 two tribes (Tribu), Zygoptera and Anisoptera, are placed in the sous-ordre Odonates (Odonata). No genres, sous-genres and species were presented in this scheme. Compared to the classification of 1871 an extra légion was added to both the Cordulines and the Calopterygines, respectively Gomphoides and Palaeophlebia. Selys presented légions for all sous-familles except for Aeschnines and Libellulines.

Verspui and Wasscher (2016) treated the watercolour collection comprising the sous-famille Agrionines. Here we describe the rest of the watercolour collection concerning the sous-familles Calopterygines, Cordulines, Gomphines and Aeschnines.

Calopterygines

Selys wrote a Synopsis and a Monograph concerning the sous-famille Calopterygines (Calopteryginae) around the same time and the classification differed on the level of légion

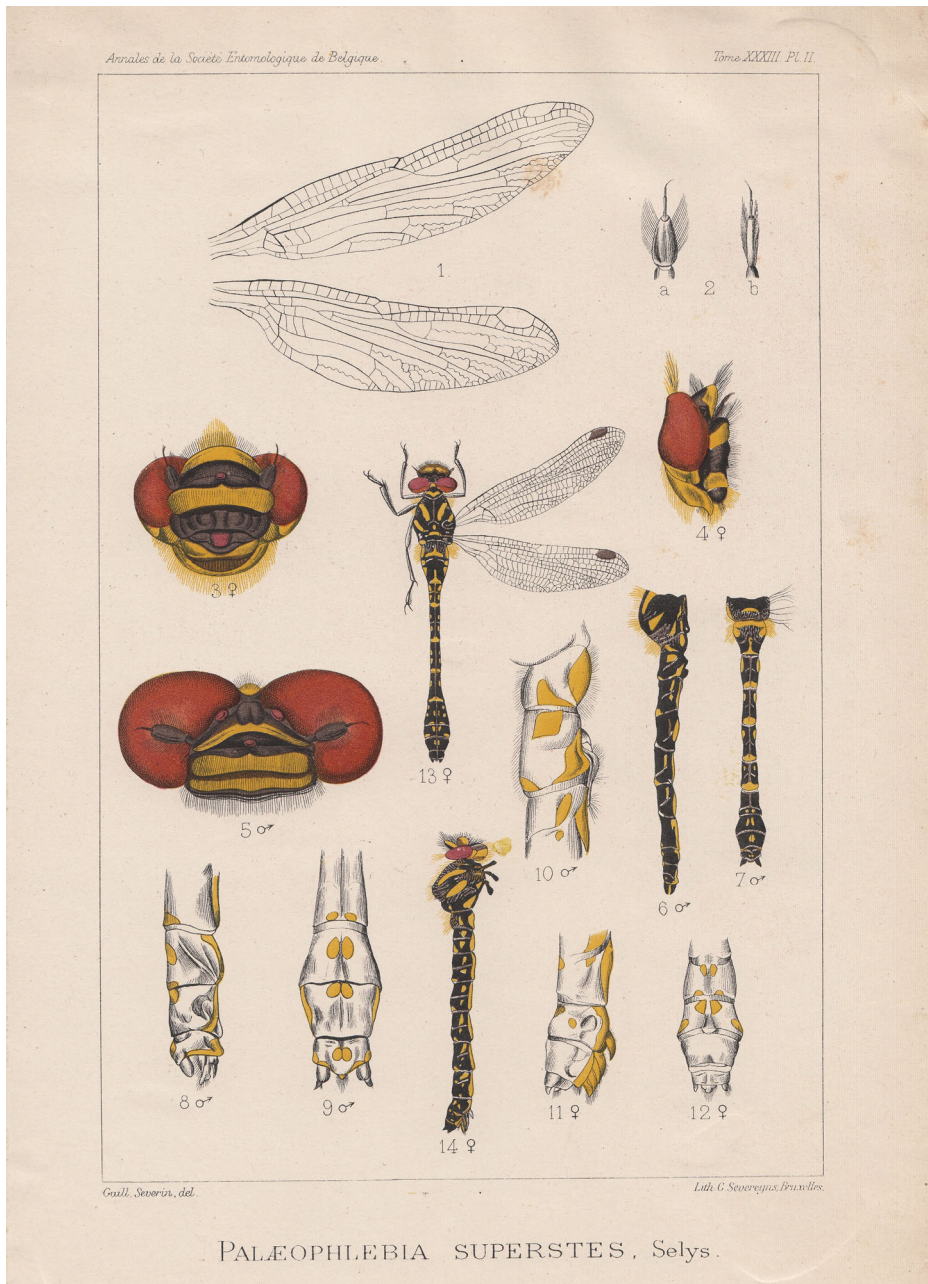


Figure 1. Chromolith print of *Paleophlebia superstes* (Ca22a, collection RBINS), currently *Epiophlebia superstes* (Selys, 1889), published in Selys (1889).

and genre (Selys, 1853; Selys & Hagen, 1854). In both cases 25 sous-genres were described. In the ‘Synopsis des Calopterygines’ (1853) seven légions were presented (Table 2) and the classification in the ‘Monographie des Calopterygines’ (1854) lacks two légions (Hetaerina and Dictierias) and one genre (Neurobasis). Selys also wrote four additions to the Synopsis (Selys, 1859a, 1869a, 1873a, 1879) and the ‘appendice aux troisième additions’ (Selys, 1875a). In 1889

Table 1. The classification of Odonata, presenting familles, sous-familles, légions and the number of sous-genres and species, in Selys (1871a).

Famille	Sous-famille	Légion	Number of sous-genres	Number of species
Libellulidées	Libellulines	—	41	461
	Cordulines	Cordulia, Macromia	11	83
Aeschnidées	Gomphines	Gomphus, Lindenia, Chlorogomphus, Cordulegaster, Petalura	39	172
		—	9	108
Agrionidées	Calopterygines	Calopteryx, Euphoea, Amphipteryx, Libellago, Thore	31	160
	Agrionines	Pseudostigma, Lestes, Podagrion, Platycnemis, Agrion, Protoneura	59	373

Table 2. The classification of the Calopterygines in Selys (1853).

Légion	Genre	Sous-genre
Calopteryx	Calopteryx	<i>Sylphis, Calopteryx, Matrona</i>
	Neurobasis	<i>Neurobasis</i>
	Echo	<i>Echo, Mnaïs, Sapho</i>
	Phaon	<i>Cleis, Phaon</i>
	Vestalis	<i>Vestalis</i>
Hetaerina	Hetaerina	<i>Laïs, Hetaerina</i>
Euphaea	Euphaea	<i>Anisopleura, Epallage, Euphaea, Dysphaea</i>
Dicterias	Heliocharis	<i>Heliocharis</i>
	Dicterias	<i>Dicterias</i>
Libellago	Libellago	<i>Libellago, Rhinocypha, Micromerus</i>
Amphiteryx	Amphiteryx	<i>Amphipteryx</i>
Thore	Thore	<i>Chalcopteryx, Thore, Cora</i>

Selys presented Palaeophlebia as a “nouvelle légion de Caloptérygines” (new légion of the Calopterygines) (Selys, 1889) (Figure 1).

Cordulines

The sous-famille Cordulines (Cordulinae) is discussed by Selys in a Synopsis (Selys, 1871b). He placed 11 sous-genres within six genres and in two légions. He also wrote two additions to the Synopsis (Selys, 1874; Selys, 1878a). In his publication in 1878 Selys presented another classification of the Cordulines and he reduced the number of genres to five by placing sous-genre *Idionyx* not in genre *Idionyx* but in genre *Macromia*. He also added six new sous-genres and changed the name of the genre *Cordulephyta* to *Cordulephia* (Table 3).

Table 3. The classification of the Cordulines in Selys (1878a).

Légion	Genre	Sous-genre
Cordulia	Cordulephia	<i>Cordulephia</i>
	Cordulia	<i>Hemicordulia, Somatochlora, Neurocordulia, Tetragoneura, Epicordulia, Epitheca, Cordulia, Oxygastra, Gomphomacromia</i>
Macromia	Aeschnosoma	<i>Aeschnosoma</i>
	Macromia	<i>Epophthalmia, Macromia, Didymops, Phyllomacromia, Idionyx</i>
	Synthemis	<i>Synthemis</i>

Gomphines

Selys wrote a Synopsis (Selys, 1854) and a Monograph with Hagen (Selys & Hagen, 1858) of the sous-famille Gomphines (Gomphinae). He wrote additions to the Synopsis (Selys, 1859b, 1869b, 1873b, 1878b) and the ‘appendice aux troisième additions’ (Selys, 1875b). In the ‘Monographie des Gomphines’ he placed 37 sous-genres in 12 genres and in 6 légions. In the publication of 1873b Selys presented another classification of the Gomphines with five légions, 12 genres and 46 sous-genres. All sous-genres from the classification of 1858 are part of the classification of 1873 but nine new sous-genres were added (Table 4). In his odonate classification of 1896, Selys presents six légions in the Gomphines comparable to those used in 1858: Gomphus, Gomphoides, Lindenia, Chlorogomphus, Cordulegaster and Petalura (Selys, 1896).

Table 4. The classification of the Gomphines in Selys (1873b).

Légion	Genre	Sous-genre
Gomphus	Gomphus	<i>Heterogomphus, Onychogomphus, Erpetogomphus, Ophiogomphus, Ceratogomphus, Phyllogomphus, Microgomphus, Macrogomphus, Octogomphus, Dromogomphus, Gomphus, Cyclogomphus, Anormogomphus, Platygomphus, Austrogomphus, Hemigomphus, Neogomphus, Cyanogomphus, Epigomphus, Agriogomphus</i>
Lindenia	Progomphus	<i>Progomphus</i>
	Gomphoides	<i>Gomphoides, Cyclophylla, Aphylla</i>
	Zonophora	<i>Diaphlebia, Zonophora</i>
	Hagenius	<i>Hagenius, Sieboldius</i>
	Diastatomma	<i>Diastatomma</i>
	Lindenia	<i>Gomphidia, Ictinus, Lindenia, Cacus</i>
Chlorogomphus	Chlorogomphus	<i>Chlorogomphus</i>
Cordulegaster	Cordulegaster	<i>Thecaphora, Anotogaster, Thecagaster, Cordulegaster</i>
	Petalia	<i>Petalia, Phyllopetalia, Hypopetalia, Allopetalia</i>
Petalura	Petalura	<i>Petalura, Uropetala, Tachopteryx</i>
	Phenes	<i>Phenes</i>

Aeschnines

The sous-famille Aeschnines (Aeschninae) was discussed by Selys in a Synopsis (Selys, 1883). In the Synopsis he placed 23 sous-genres in five genres (Table 5).

Table 5. The classification of the Aeschnines in Selys (1883).

Genre	Sous-genre
Anax	<i>Anax, Hemianax</i>
Aeschna	<i>Anaciaeschna, Aeschna, Epiaeschna, Brachytron, Acanthaeschna, Austroaeschna, Gomphaeschna, Allopetalia, Basiaeschna, Fonscolombia, Amphiaeschna, Caliaeschna, Cephalaeschna</i>
Telephlebia	<i>Telephlebia, Aeschnophlebia</i>
Gynacantha	<i>Tetracanthagyna, Triacanthagyna, Gynacantha, Heliaeschna</i>
Staurophlebia	<i>Neuraeschna, Staurophlebia</i>

Material and methods

Verspui and Wasscher (2016) provide a general description of the watercolour collection and the explanation of the unique codes given to the watercolours, drawings and text sheets. The illustrations and texts concerning Calopterygines, Cordulines, Gomphines and Aeschnines were

scanned at a resolution of 300 dpi using a Canoscan LIDE210 digital scanner in February, May, June and October 2014. The digital images are created and stored in high quality (TIF) and lower quality (JPG).

Subject matter and characteristics of both sheets with illustrations and text sheets were analysed. All information gathered from watercolours, drawings and texts is linked to the digital images of the sheets.

Information on the locality of the depicted specimens was recorded from the sheets with illustrations and the corresponding text sheets. An interpretation was made concerning the geographical information in order to match the locality to a country and a continent. The division of the world into continents was based on Selys' Monographs (Selys & Hagen, 1854; Selys & Hagen, 1858): Europe, Afrique, Amérique, Asie and Océanie. We allocated various localities in America to North America (Canada south through present-day Panama and the Caribbean) or South America. Oceania comprises Australia, New Zealand, Polynesia, Micronesia and Melanesia. New Guinea and Indonesian islands we considered part of Asia.

The name written by Selys on the illustrations was either the name he gave the species he described, the name he intended to publish or the species name already in use. The sous-genre and species-group names given by Selys are treated as species names but are not followed by an author because this information was not always provided by Selys on the sheets. The names written by Selys on the illustrations of the watercolour collection are here referred to as Selys' names and followed by codes that indicate specific illustrations. Searching for a given species in the watercolour collection requires knowledge of the nineteenth century name. To facilitate this search, we checked whether the Selys' names accompanying the illustrations are still in use. The association with current species names was checked for the sheets with illustrations of one species and with a binomial Selys' name or a Selys' name comparable to a species-group name.

To associate the Selys' names with current species names the 'Calopterygoidea of the World' (Hämäläinen, 2016) was used as a primary source for the Calopterygoidea and 'The World Odonata list' (Schorr & Paulson, 2017) as a primary source for species of other superfamilies. These sources provide the current author of a species and the year of description. Taxonomic experts gave their opinion on illustrations, accompanied by Selys' names not currently in use. Illustrations with Selys' names that consist of one term and are comparable to a species-group name were also examined. Based on expert opinion some illustrations were identified and Selys' names were associated with current species names. When the experts found associated species names that are still uncertain, possible current names were suggested. Additional references are used to find associations: Asahina (1975); Belle (1973, 1989); Bick and Bick (1985); Bridges (1994); Cabot (1872); Calvert (1917); Chao and Xu (1987); Donnelly and Tennessen (1994); Dunkle (1991); Garrison (1994, 2006); Garrison and von Ellenrieder (2014); Garrison, von Ellenrieder, and Louton (2006); Geijskes and van Tol (1983); Hämäläinen (1989, 1990, 2009); Hämäläinen, Reels and Zhang (2009); Hämäläinen, Dow and Stokvis (2015); Hämäläinen and van Tol (2005); Hayashi, Dobata, and Futahashi (2004); Kirby (1890); Laidlaw (1914, 1950); Lieftinck (1932, 1936, 1949, 1954, 1964, 1965); Machado (1984, 1985); Manh (2011); Martin (1902, 1907, 1908, 1909a, 1909b); Needham and Betten (1901); Orr (2003); Orr and Hämäläinen (2007); Paulson (2011); Peters and Theisinger (2011); Rowe and Marinov (2013); Sadeghi and Dumont (2014); Schmidt (1934); Schneider (1986); Selys (1869a, 1870, 1871b, 1879, 1891, 1894); Selys and Hagen (1850, 1854); Steinmann (1997); Theisinger (1985); Tsuda (2000); van Tol (2017); von Ellenrieder and Garrison (2003); Wang (2000); Ware, Pilgrim, May, Donnelly, and Tennessen (2016) and Williamson (1909).

Martin's unpublished manuscript, a Monograph of the "Famille des Calopterygidae", provided additional information. This manuscript was submitted to the series 'Collections Zoologiques du Baron Edm. de Selys Longchamps Catalogue Systématique et Descriptif' in 1912, but it remained unpublished. The manuscript was unexpectedly found in October 2013 at the

University of Florida (Hämäläinen, 2015). The pages of this manuscript, that were used, are presented in Appendix 3.

Visits to the Selys' collection (RBINS) with odonate specimens also supplied information that led to association of Selys' names with current species names.

Results

Information from the illustrations

The part of the watercolour collection concerning Calopterygines, Cordulines, Gomphines and Aeschnines has 1107 sheets of which 821 are sheets with illustrations (Table 6).

The sheets with illustrations contain watercolours and/or drawings in graphite pencil or ink. On the illustration of *Sapho orichalcea* (Ca41b) (Figure 2) the dark coloured wings seem not to have been executed solely with watercolour paint because craquele can be observed. Whitish covering paint (opaque white) is also present. We consulted Marieke van Delft of the Royal Library Den Haag (the Netherlands) and she confirmed that other paint besides watercolour paint was used in this illustration (personal communication, van Delft, 11 January 2017). Part of the sheets with illustrations have protective sheets attached. On a few protective sheets traces of paint from the illustrations can be seen, suggesting that they were added before the paint of the illustrations was dry. On some sheets with illustrations remains of glue are present on the top of the sheets, possibly from now missing protective sheets.

Most sheets have illustrations of one species and most seem to be illustrated to scale. Two watercolour paintings, likely executed by Selys, depict more than one odonate species. The watercolour Ae74b illustrates three different Aeschnines and the illustration Ca101a has six small watercolours depicting part of the abdomen of *Libellago* males (Calopterygines). In the watercolour collection seven drawings with more than one species are present, representing the outline of wings of Calopterygines species (four sheets) and the appendages of Cordulines species (two sheets). One sheet has some smaller drawings and notes concerning two species of *Idionyx* (Cordulines) (Co58b; Figure 3). Four sheets without illustrations contain just a sign for the sex or a number and seem to be unfinished.

One illustration of *Palaeophlebia superstes* (Ca22a), currently *Epiophlebia superstes* Selys, 1889, stands out because it is not a watercolour but a print, identical to the illustration in Selys' publication in 1889 (Figure 1). Another remarkable illustration is the watercolour of *Brachytron pratense* (Ae69a) that has real dragonfly wings attached to the sheet.

Most watercolours were executed by Severin (695). These watercolours have few notes, written by Selys, on them. They have just species names (Selys' names) followed by surnames that often are the persons who published the first description of the species. The signature of Severin was added in most cases at the bottom left of the sheet (e.g. Figure 2). Selys contributed to

Table 6. The number of sheets with illustrations, watercolours, drawings and text sheets concerning Calopterygines, Cordulines, Gomphines and Aeschnines in the watercolour collection of Selys.

Sous-famille	Number of sheets with illustrations	Number of watercolours	Number of drawings	Number of text sheets
Calopterygines	288	242	46	107
Cordulines	116	97	19	37
Gomphines	287	283	4	67
Aeschnines	130	128	2	75
Total	821	750	71	286

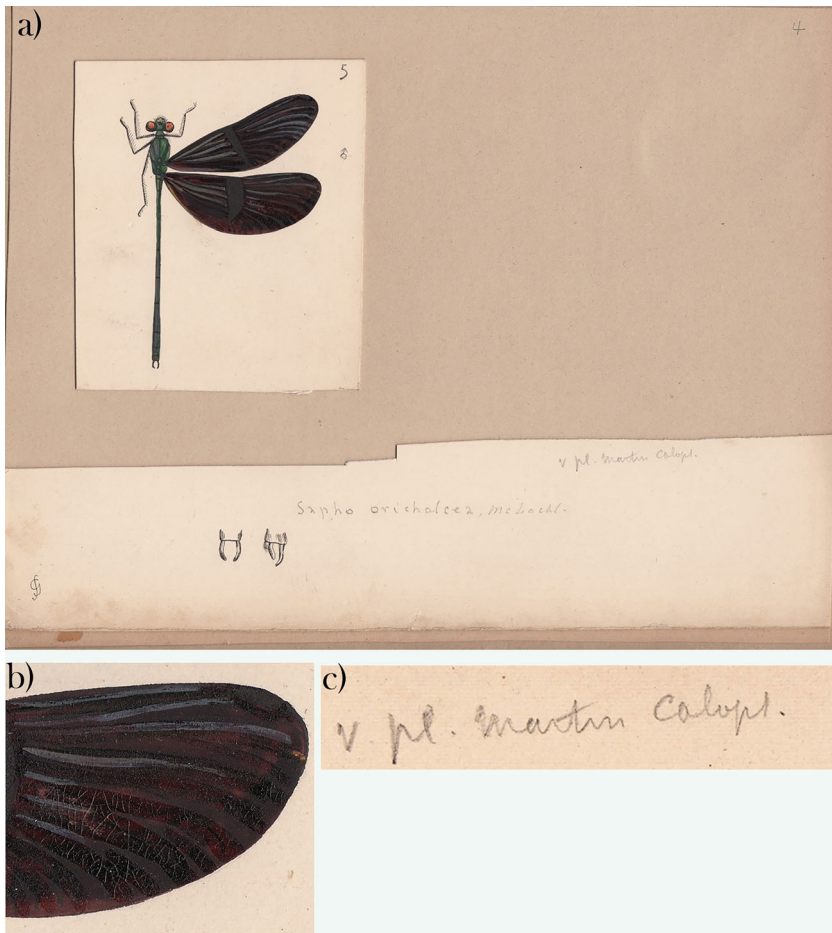


Figure 2. Watercolour of *Sapho orichalcea* McLachlan, 1869, executed by Severin (Ca41b, collection RBINS). (a) watercolour with re-attached cut-out; (b) wing, detail of watercolour, with craquele; (c) note, detail of watercolour.

the collection by executing 50 watercolours and all drawings. On some illustrations he noted the location and the date so these illustrations can without a doubt be attributed to Selys (e.g. Go16b). Some sheets consist of watercolours executed by both Severin and Selys. On six sheets with illustrations of Gomphines species, the note “E. S.” is added to the small watercolours executed by Selys e.g. the watercolour of *Aphylla dlheringi* (Go96a). The differences in style between Severin and Selys seem clear (see discussion). Almost all notes on the sheets with illustrations seem to have been written by Selys (see discussion).

On an exceptional watercolour (Ae75a) the note “Dessin fait par Vander Linden en Italie” (Illustration made by Vander Linden in Italy) has been written. This indicates that Pierre Léonard Vander Linden (1797–1831) executed this illustration of *Aeshna affinis* in the period that he lived in Italy (1817–1820). A print, likely based on this watercolour, was published in Vander Linden (1820b). This watercolour is half a century older than the other illustrations in the watercolour collection, that can be dated. For more details see Wasscher, Verspui, and Cammaerts (2016).

The names underneath the illustrations, the Selys’ names, are predominantly binomial but there are watercolours that have only the name of the sous-genre (comparable to the genus-group name), e.g. *Allopetalia* (Ae52a), or that have only one term and are comparable to the species-group name, e.g. *genei* (Go16b). On some sheets with illustrations no names are written, for

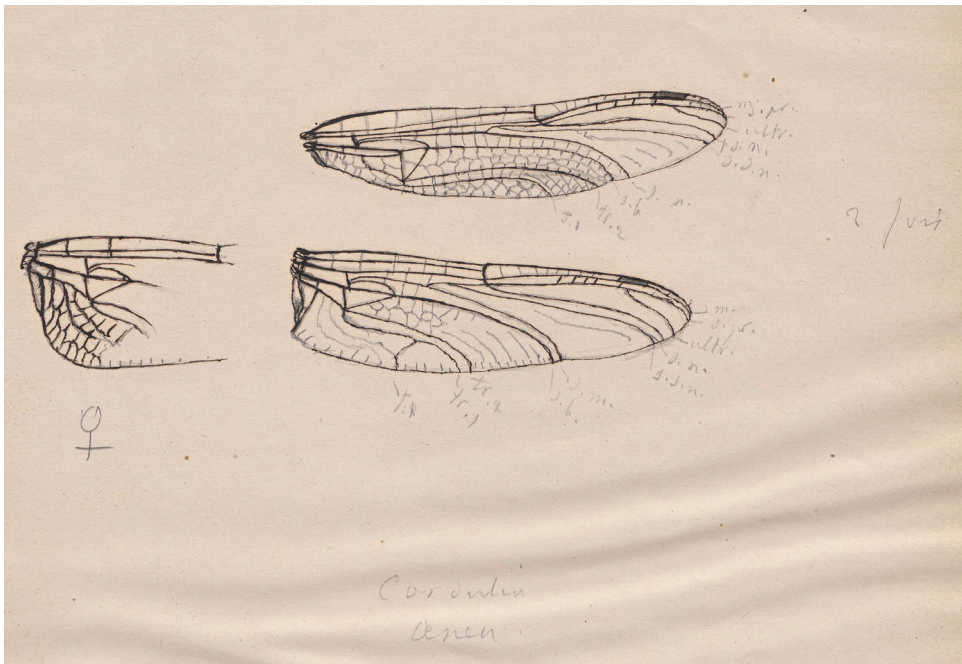


Figure 4. Drawing of a wing of *Cordulia oenea* dated July 1870, executed by Selys (detail of Co40a, collection RBINS). For this illustration with the current name *Cordulia aenea* (Linnaeus, 1758) Selys used the spelling *oenea* instead of the regular spelling *aenea*. This alternation of *ae* and *oe* was observed several times in notes or text, written by Selys.

watercolour of *ancilla* (Ca27b). The name *ancilla* refers to a subspecies of *Calopteryx splendens* (Hämäläinen, 2016).

The surname(s) following the Selys' names are: Albarda, Bates, Brauer, Burmeister, Charpentier, d'Orbiguey Blanchard, Dale, Doner, Drury, Erichson, Eversmann, Fabricius, Fonscolombe, Förster, Guérin-Méneville, Hagen, Harris, Hoffmannsegg, Karsch, Kirby, Latreille, Leach, Linnaeus, Martin, McLachlan, Müller, Palisot de Beauvois, Percheron, Pictet, Rambur, Say, Schneider, Selys, Uhler, Vander Linden, Walsh, Waterhouse, White, Zetterstedt. Selys put his own name on 377 sheets behind the species names and wrote his name in combination with the names Bates, Förster, Karsch, Rambur and Walsh on 12 sheets. Often these names are the persons who published the first description of species. Henry Bates was mentioned together with Selys seven times but he never described an odonate species. He was a collector in the Amazon and sometimes provided manuscript names. The note "Aeschnosoma furcifer Bates forcipula H" on the illustration (Co41a) of a species now known as *Aeschnosoma forcipula* Hagen in Selys, 1871 testifies to this.

The watercolours executed by Severin are not dated, but some of the drawings and watercolours executed by Selys have a note with a date. Selys' first dated illustrations, six drawings of the wings of Cordulines species e.g. *Cordulia oenea* (Co40a; Figure 4) were executed in July 1870, before he published his *Synopsis des Cordulines* in 1871. Six illustrations of Calopterygines species are dated and they were executed in 1880 (1), 1881 (2) and 1889 (3). Only two illustrations of Aeschnines species are dated (both 13 February 1881) and one illustration of the Gomphines, *genei* (Go16b) had a note "3 Xbre. 1885 (3 December 1885).

Only eight sheets had a note of the place where the illustration was made. Selys executed seven in Liège (Belgium) where he had a residence and one in Longchamps (his chateau Longchamps in Waremme, Belgium).

The illustrations are based mostly on specimens in Selys' collection but only on two sheets with illustrations were references made in his notes to "ma collection" (my collection) and to "coll. Selys" (collection Selys). Other collections that are referred to are those of Robert McLachlan (12 times) and René Martin (three times). In the notes on the illustrations several museums are mentioned: Bremen (Germany), Brussels (Belgium), Genoa (Italy), Leiden (the Netherlands), London (UK) and Madrid (Spain).

The term "type" is used in the notes on the illustrations only once, in the watercolour of *Neurobasis chinensis australis* (Ca47a), currently *Neurobasis australis* Selys, 1878. The abbreviation "n. sp." for nouvelle species (new species), suggesting a type-specimen, is written on three illustrations (Co58b, Go133b and Ae64b).

A number of sheets with illustrations depicting species of the Calopterygines, the Cordulines and the Aeschnines (61) are no longer complete. Part of the sheets was cut out, e.g. Figure 2, and in some cases these cut-outs were re-attached. When none or a small part of the cut-out was re-attached, there is loss of information. In the majority of the 35 sheets of the Calopterygines (25) the cut-outs were not re-attached. On four of those sheets no illustrations are left at all and only the Selys' names remain. In 26 cases the note "voir planche Martin Calopt" or "v pl Martin Calopt." (look at plates Martin Calopterygines) was written next to the cut-outs, e.g. the watercolour of *Sapho orichalcea* (Ca41b; Figure 2). The handwriting of this note seems to differ from the other notes on the illustration (see discussion). In 15 sheets of the Cordulines, part was removed and in all cases these cut-outs were re-attached. In one case, the illustration of *Neocordulia sericea* (Co31b), the parts were pasted on a new sheet. In 11 sheets of the Aeshnidae 10 parts were cut out and were re-attached except for the cut-out of *Aeschna circumcincta martini* (Ae45a). On some of the cut-out species names were written in a different handwriting than the other notes written by Selys on the illustration (see discussion).

Information from the text sheets

The text on the 286 text sheets of this part of the watercolour collection (Table 6) was written in ink or pencil and Selys seems to have written the texts in almost all cases (see discussion). There are separation sheets with only family or subfamily names (see Verspui & Wasscher, 2016, figure 3), lists of species (see Verspui & Wasscher, 2016, figure 11), small notes, a comparison between species, e.g. text and small figures concerning two *Idionyx* species (Co58b; Figure 3) and worklists. An interesting worklist is TAe19 (Figure 5). It was dated 3 June 1893 and Selys wrote it to Severin. The text contains Selys' comments on the illustrations of Severin demonstrated by the following segments "Dessin de Onychogomphus macrodon Selys ♂ – sera difficile à corriger parce que vous avez seulement dessiné les segments 7,8,9,10,." (Illustration of *Onychogomphus macrodon* Selys ♂ is difficult to correct because you only have illustrated segments 7,8,9,10.) and "Je vous retourner donc le ♂ rétablé comme il doit être." (So I return to you the ♂ re-established as it should be.).

Locality

The distribution of the localities of the depicted specimens of this part of the watercolour collection with a note of locality shows that the specimens originate from all over the world. Notes that give information on localities are written on only 33 of the 821 sheets with illustrations but the text sheets provide more information on localities. Most illustrations of the Calopterygines and the Gomphines are from Asia and most illustrations of the Cordulines and the Aeschnines from America (Table 7).

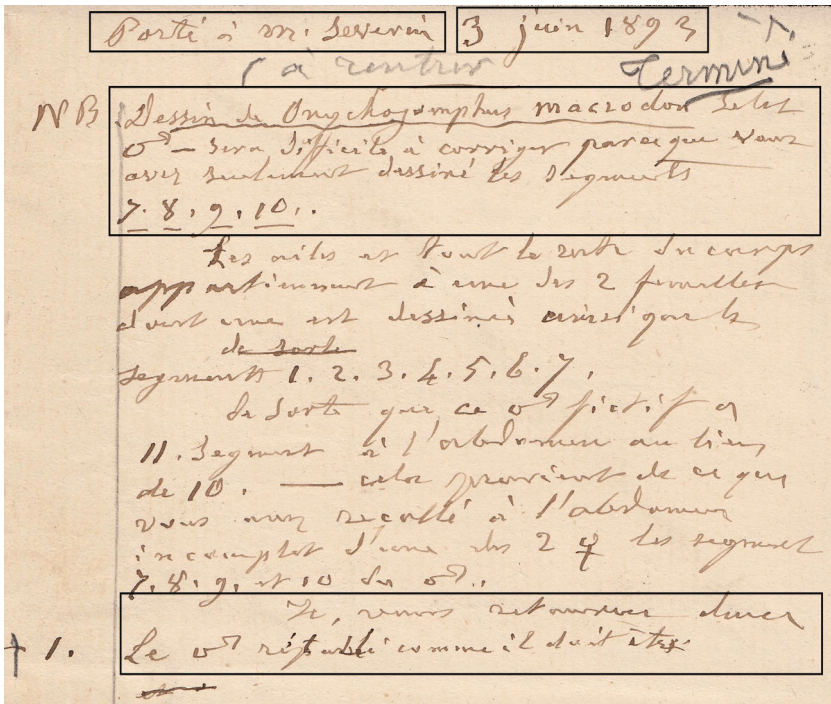


Figure 5. Text sheet, written by Selys (detail of TAe19, collection RBINS).

Table 7. The number of species from continents that are matched with the localities of the depicted odonates of Calopterygines, Cordulines, Gomphines and Aeschnines. The records with localities matched with only one continent were used.

Sous-famille	Number of species with localities in Amérique	Number of species with localities in Europe	Number of species with localities in Afrique	Number of species with localities in Asie	Number of species with localities in Océanie
Calopterygines	74	7	21	128	1
Cordulines	31	9	9	22	16
Gomphines	9	1	10	22	0
Aeschnines	37	14	6	34	8
Total	151	31	46	206	25

Severin did illustrate one dragonfly species from a Dutch locality (“Zuyderzee” and “Hollande”). This watercolour of *Aeschna rufescens* (Ae43a) is discussed in Verspui (2017). Also the almost 250 localities in the islands of the Dutch East Indies (currently Indonesia) that are noted on illustrations or text sheets by Selys are presented in this forthcoming paper.

Associating Selys’ names with current species name

There are 812 sheets with illustrations of one odonate species in this part of the watercolour collection. Of these sheets 19 cannot be associated with a current species names because no names or only the genus-group names were present (six and 13 respectively). Four sheets with no names also contain no illustrations.

Subsequently 793 sheets with illustrations were available to search for an association and 757 sheets with Selys’ names have been associated with current species names (Appendix 1).

The associations were made by references or by seeking expert opinions. More information on expert opinions is provided in Appendix 2. For the Calopterygines 268 illustrations (95%) were associated with current species names, for the Cordulines 109 (96%), for the Gomphines 268 (93%) and for the Aeschnines 112 (87%). Information from labels in Selys' specimen collection in RBINS was used four times. In the case of the watercolour of *Orooescha petalura* (Ae46a) the name label next to the pinned specimen made the connection between the genus *Orooeschna* and *Aeschna*. This identification was supported by the drawing of the characteristic appendages of *Aeshna petalura* Martin, 1908 next to the pinned specimen that was similar to those of the watercolour. Three times the labels, attached to the specimens in the collection by visiting experts in the past, gave us information about the identification of the specimens with a manuscript name. *Gomphus fruhstorferi* (Go66a) was associated with *Burmagomphus williamsoni javicus* Schmidt, 1934, using the label added by Maurits Lieftinck in 1939, *Gomphus melanogaster* (Go70a) with *Gomphus consanguis* Selys, 1879 using the label added by Erich Schmidt in 1937 and *Progomphus heterogenus* (Go87b) with *Progomphus polygonus* Selys, 1879 using the label added by Jean Belle in 1971.

Possible current names are presented for 37 Selys' names based on the opinion of experts and references (Table 8 and Appendix 2). Five Selys' names of Calopterygines species, four of Cordulines species, 12 of Gomphines species and 16 of Aeschnines species were associated with possible current names.

Discussion

Selys' watercolour collection depicting damselflies and dragonflies has two distinct parts. The first part concerning Agrionines was executed almost entirely by Selys between 1874 and 1900. The majority of these illustrations were made between 1875 and 1887 (see Verspui & Wasscher, 2016, figure 7). The second part concerning Calopterygines, Cordulines, Gomphines and Aeschnines was executed for the greater part by Severin between 1889 and 1899. Here we consider issues relating to the second part of the watercolour collection and continue with discussing issues concerning the watercolour collection as a whole.

Second part of the watercolour collection

Interpretation and accuracy

Selys produced 121 illustrations of species belonging to the sous-familles Calopterygines, Cordulines, Gomphines and Aeschnines. Notes with a date on these illustrations show they were executed in 1870, 1880, 1881, 1885 and 1889. In his diary (Caulier-Mathy & Haesenne-Peremans, 2008) the production of illustrations by Selys himself is mentioned twice, in 1893 (Gomphines) and in 1894 (Aeschnines). This last reference is on the first of March 1894: "Ebauché les caractères des trente sous-genres aeschnines d'après Karsch." (Sketched the characters of thirty sous-genres of the Aeschnines according to Karsch.) This seems to be a response to the critical article by Ferdinand Karsch (Karsch, 1891) on Selys' classification of the Aeschnines (Selys, 1883). On 21 March 1894 Selys states in his diary "Terminé les diagnoses des genres d'aeschnines dans une méthode controversée avec celles de Karsch." (Finished the diagnosis of the genres of the Aeschnines with a method that is contrary to the method of Karsch). This suggests Selys did not change his view on the classification of Aeschnines but he still refrained from presenting légions for this sous-famille in his 1896 classification (Selys, 1896).

Dating the watercolours, executed by Severin, is not straightforward because no notes with dates are on the sheets with illustrations. Selys' diary (Caulier-Mathy & Haesenne-Peremans,

Table 8. Selys' names associated with possible current species names.

Selys' name	Code of the sheet	Possible current name	Consulted experts
<i>Euphaea variegata aspasia</i>	Ca4a	<i>Euphaea aspasia</i> Selys, 1853	MH
<i>Hetaerina mortua</i>	Ca66a	<i>Hetaerina</i> spec.	RG
<i>H. mortua</i>	Ca145a	<i>Hetaerina</i> spec.	RG
<i>Sapho macrostigma</i>	Ca41a	<i>Sapho orichalcea</i> McLachan, 1869	KD
<i>Sapho oricalcea gloriosa</i>	Ca42a	<i>Sapho gloriosa</i> McLachlan in Selys, 1873	MH KD
<i>Macromia carolina</i>	Co48a	<i>Macromia illinoiensis georgina</i> (Selys, 1878)	RG
<i>obsoleta</i>	Co38b	<i>Neurocordulia obsoleta</i> (Say, 1840)	RG
<i>princeps</i>	Co37b	<i>Epithea princeps</i> Hagen, 1861	RG
<i>semiaquea</i>	Co36b	<i>Epithea semiaquea</i> (Burmeister, 1839)	RG
<i>Aphylla dIheringi</i>	Go96a	<i>Aphylla</i> spec.	RG
<i>Gomphidia icterhinia</i>	Go117b	<i>Gomphidia javanica</i> Förster, 1899	RG
<i>Gomphus fluviatilis</i>	Go53b	<i>Gomphus</i> spec.	RG
<i>Gomphus nigrilabris</i>	Go64b	<i>Davidius lunulatus</i> Bartenef, 1914	RG HZ
<i>Hetergomphus circularis</i>	Go6b	<i>Orientogomphus circularis</i>	KV MW
<i>Ictinus microphyllus</i>	Go118a	<i>Ictinogomphus</i> spec.	RG
<i>Leptogomphus transiens</i>	Go69a	<i>Burnmagomphus</i> spec.	HZ
<i>Macrogomphus ceylonicus</i>	Go42a Go42b	<i>Macrogomphus lankanensis</i> Fraser, 1933	MB
<i>Microgomphus furcifer</i>	Go37b	<i>Microgomphus</i> spec.	RG
<i>O. hageni</i>	Go18a	<i>Paragomphus</i> spec.	KD
<i>Ophiogomphus quadricornis</i>	Go31b	<i>Ophiogomphus</i> spec.	RG HZ
<i>Aeschna benedeni</i>	Ae44b	<i>Rhionaeschna</i> spec. (<i>punctata</i> group)	NV
<i>Aeschna circumcincta / martini</i>	Ae45a	<i>Anaciaeschna martini</i> (Selys, 1897)	KV MW
<i>Aeschna punctata</i>	Ae44a	<i>Rhionaeschna</i> spec. (<i>punctata</i> group)	AM
<i>albifrons</i>	Ae72b	<i>Oligoaeschna</i> spec.	NV
<i>Allopetalia reticulata reticulosa</i>	Ae50b	<i>Allopetalia reticulosa</i> Selys, 1873	JD RG
<i>Cephalaeschna connexa</i>	Ae63b	<i>Cephalaeschna</i> spec.	VK
<i>Corduliaeschna acutifrons</i>	Ae65a	<i>Cephalaeschna</i> spec.	TK
<i>Gynacantha flavistyla</i>	Ae20b	<i>Gynacantha helenga</i> Williamson & Williamson, 1930	NV
<i>Gynacantha megastima</i>	Ae24b	<i>Gynacantha</i> spec.	NV
<i>Gynacantha stylata/khasiaca</i>	Ae21b	<i>Gynacantha khasiaca</i> McLachlan, 1896	TK
<i>Gynacantha subtuberculata</i>	Ae25a	<i>Gynacantha</i> spec. (male) Aeshnidae (female)	VK GT AO JV
<i>Hoplonaeschna Allopetalia reticulata</i>	Ae50a	<i>Allopetalia reticulosa</i> Selys, 1873	JD RG
<i>idae</i>	Ae26a	<i>Heliaeschna</i> spec.	MW
<i>Mesogyna idae</i>	Ae26b	<i>Heliaeschna</i> spec. (female)	MW
<i>Nasiaeschna cavinasa</i>	Ae71a	<i>Nasiaeschna pentacantha</i> (Rambur, 1842)	KV MW
<i>Synaeschna/ Cephalaeschna masoni</i>	Ae63a	<i>Cephalaeschna masoni</i> (Martin, 1909)	KV MW

Abbreviations of consulted experts: AM Angelo Machado; AO Albert Orr; GT Günther Theisinger; HZ Haomiao Zhang; JD Jürg De Marmels; JV Jan van Tol; KD KD Dijkstra; KV Karin Verspui; MB Matjaž Bedjanič; MH Matti Hämmäläinen; MW Marcel Wasscher; NV Natalia von Ellenrieder; RG Rosser Garrison; TK Tom Kompier; VK Vincent Kalkman.

2008) and the text sheets, written by Selys, are used to construct a probable timeline for illustrations of different groups by Severin (Table 9). The first illustrations of *Palaeophlebia superstes* (Calopterygines) were made by Severin for a publication of Selys in 1889 and on 14 July 1889 Selys wrote in his diary “M. Séverin me rapporte les dessus [probably dessins] de paleophlebia superstes selys de la collection Pryer” (Mister Severin gave me the designs of *Palaeophlebia superstes* Selys of the Pryer collection). In the second half of 1891 species of the Gomphines were the first set Severin depicted. Selys wrote on 15 August 1891 in his diary “Préparé boîte de vingt-cinq gomphines à dessiner” (Prepared box with 25 gomphines to be painted). This seems to be the set of sheets where the Gomphines were depicted with yellow markings in small drawings and signed with a calligraphed broad ‘GS’ (for Guillaume Severin). They were executed in the same style as the 1889 *Paleophlebia* watercolours (Ca21a and Ca21b) and the print of *Palaeophlebia* (Ca22a; Figure 1). Twenty-seven illustrations match these characteristics and these 27 illustrated species belong currently to the following families: Cordulegastridae (22),

Table 9. Production of watercolours by Severin in relation to year for different sous-familles.

year sous-famille	Gomphines	Cordulines	Aeschnines	Calopterygines	Libellulines
1889				+ x	
1890					
1891	+ x				
1892	+ x	+ x	+		
1893	+	+	+ x		
1894	+		+ x	+ x	+
1895				+ x	
1896			+	+ x	
1897				+ x	+ x
1898					
1899				+ x	
1900					

+ Information from text sheets of the watercolour collection.
 x Information from Selys' diary.

Table 10. Number of watercolours, made by Severin, of different sous-familles and the number of sheets with the characteristics glue rests and relief marks. Families arranged from supposed relative early (left) to relative late (right).

Sous-famille	Gomphines	Cordulines	Aeschnines	Calopterygines	Libellulines
Bristol LM relief mark	0/270	0/92	1/111	20/220	
Glue rests on horizontal representation	130/270	18/92	0/111	3/220	

Chlorogomphidae (1), Austropetaliidae (2) and Gomphidae (2). There are two illustrations more than mentioned in the diary but they may have been added at a later date. Two other characteristics are not evenly distributed over de sous-familles (Table 10). This might mean, but cannot be proven, that brown glue rests on the edge of the sheets with illustrations (as in Figure 6) indicate relatively early watercolours and the relief marks ‘Bristol LM’ on the paper indicate relatively late watercolours. Using these characteristics we suggest the arrangement as proposed in Table 10. Severin’s illustration of species belonging to the Cordulines and the Aeschnines followed. In 1894 the first references to executing watercolours of species belonging to the Libellulines are seen. The last reference in the diary concerning the production of illustrations is on 13 September 1899: “Porté caloptérygines à dessiner pour Séverin” (brought Calopterygines to Severin to be painted). This suggests that in 1899 Severin was illustrating species of the Calopterygines.

A comparison between the illustrations executed by Severin and Selys reveals the differences between these artists. In the Argionines part almost all sheets with illustrations, executed by Selys, have many small watercolours depicting parts of a damselfly (head thorax, abdomen, etc.) separately. In the second part, concerning Calopterygines, Cordulines, Gomphines and Aeschnines, Selys depicted most Odonata whole with two of the wings just as Severin did but on a few occasions he drew none or four wings. Severin used ink or paint for the outline whereas Selys used pencil. Severin’s watercolours are more detailed and precise so it seems that Severin was the better skilled artist. To illustrate this, we compared the watercolours and drawings of a male *Paragomphus genei*, executed by Selys and Severin, with a modern illustration of this species by Richard Lewington, published in Dijkstra and Lewington (2006) (Figure 7; Table 11). In all three illustrations the characteristic green thorax is present although the colour in Lewington’s illustration is more vivid because Selys and Severin likely based their work on pinned specimens. Also two of the three diagnostic characters for separating the genera of the Gomphidae (Dijkstra & Lewington, 2006) can be seen, firstly the broad flaps on both segments eight and nine and secondly the upper appendages that are much longer than the lower and parallel with tips curved down like hooks. Several differences can be observed comparing the



Figure 6. Watercolour of *Macromia carolina*, executed by Severin (Co48a, collection RBINS) associated with the possible name *Macromia illinoiensis georgina* (Selys, 1878).

illustrations (Figure 7; Table 11). One of the possible reasons Selys' illustration of *Paragomphus genei* is less precise is that it was not meant for publication.

The handwriting on the sheets with illustrations is variable but seems mostly done in the same style and can be attributed to Selys (see Figures 2–6). It varies from neatly written characters to undecipherable ones. The mistakes in spelling or the indecipherable characters are due to the fact that these texts or notes on the illustrations seem to be working documents for Selys. An example of a difficult interpretation follows. It took us some attempts to untangle the words written on the drawing (Co42a) identified as *Oxygastra curtisii* (Dale, 1834). The Selys' name consists of two sous-genre names written on top of each other. "Eu" and "curtisii" are easily readable but the text in between can be deciphered as "Chlorosoma" and "Cordulia". In 1850 Selys & Hagen classified *curtisii* as a *Cordulia*. The drawing of *Somatochlora metallica* (Co38a) has the note "2 fois ♀ Somatochlora EucorDulea Chlorosoma metallica". *Eucordulia* is a genus-group name that must thus be regarded as a manuscript name for a number of Cordulines species.

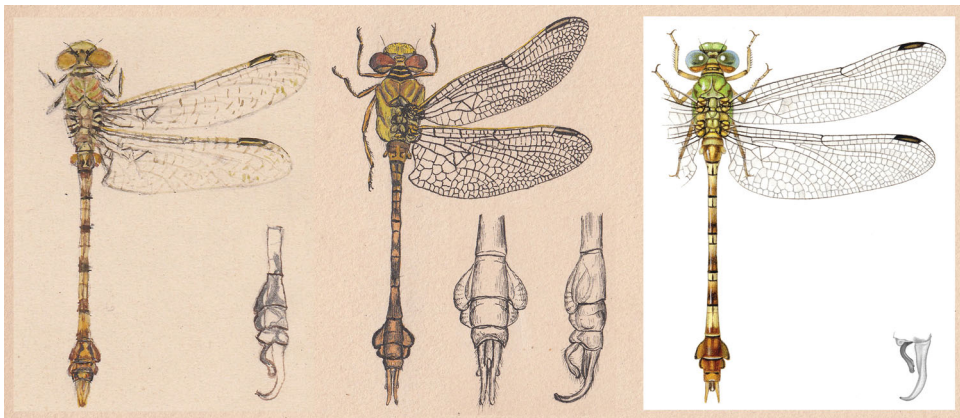


Figure 7. Comparison between three paintings and drawings of male *Paragomphus genei* (Selys, 1841). (a) watercolour of a specimen from Sardinia, executed by Selys in 1885; (b) watercolour executed by Severin; (c) modern illustration by Richard Lewington (published in Dijkstra and Lewington, 2006). Parts (a) (Go16b) and (b) (Go15a) belong to the watercolour collection of Selys (collection RBINS).

Table 11. Differences in characters between three watercolours of male specimens of *Paragomphus genei* by Selys, Severin and Richard Lewington (published in Dijkstra and Lewington, 2006). Venation names (MP and CuA) follow Riek & Kukulavá-Peck (1984).

Characters	Illustration Selys	Illustration Severin	Illustration Lewington
Colours postfrons	Greenish	Yellowish	Green
Wing shape	Schematic	Too compact	Correct
Absence anal loop	Unclear	Yes	Yes
Antenodals front wing	11	11	12
Field between MP and CuA in hind wing	Too broad	Correct	Correct
Veins in wings	Schematic	Location correct but too thick	Correct
Shape smallest cells in wings	Unclear	Not entirely correct	Correct

In the diary of Selys the view that Selys wrote the names and notes on the sheets with illustrations is supported e.g. 18 April 1896 and 19 April 1896: “Écrit les noms sur les dessins des cordulines”(wrote the names on the illustrations of the cordulines) and “numeroté et achevé les dessins des cordulines” (numbered and finished the illustrations of the cordulines).

Sometimes the handwriting seems to differ from the handwriting of Selys (Figure 8). The first example is the note “Voir planche Martin Caloptér” (see plates Martin Calopterygines) or a variation of this text on some illustrations executed by Severin. The note is found next to cut-outs in the sheet, e.g. the watercolour of *Sapho orichalcea* (Ca41b) (Figure 2) and is made in a writing style that resembles the handwriting of either Severin or Martin more than that of Selys. Another example is the species names written on some of the re-attached cut-outs of the Aeschnines. These names sometimes differ from the names Selys wrote on the same sheets with illustrations. The three species names on the cut-outs, that are different, correspond with the names Martin used in the colour plates (planches) of his publication on the collection of Selys (Martin, 1908, 1909a, 1909b). The handwriting on the cut-outs resembles that seen in the unpublished manuscript of Martin more than that of Selys, e.g. *Amphiaeschna perampla* (Ae28b) (see Figure 8 and Appendix 3). Lastly some species names are written on the illustration (both in ink and graphite pencil) in a clearly different style than Selys’ handwriting, e.g. the watercolour of *Macrogomphus robustus* (Go41a) (Figure 9).

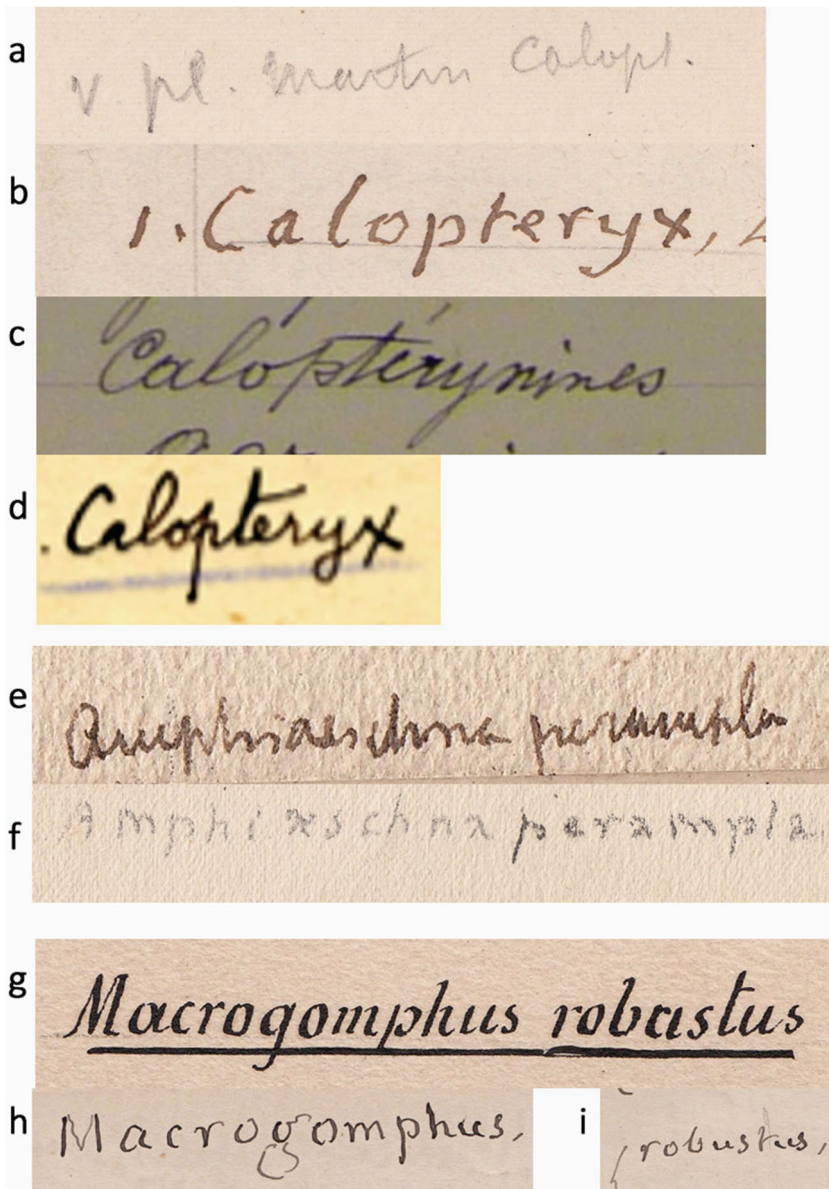


Figure 8. Comparison of the different styles of handwriting belonging to Selys, Severin and Martin. (a) note on watercolour Ca41b (detail of Figure 2); (b) fragment of text sheet TCa15, written by Selys; (c) fragment of report, written by Severin (1908); (d) fragment of unpublished manuscript, written by Martin; (e) note on replaced cut-out (in black and white or colour, vertical) of watercolour Ae28b; (f) note on watercolour Ae28b, written by Selys; (g) note on watercolour Go41a; (h) and (i) fragments of text sheet TGo14, written by Selys. Parts (a), (b), (e), (f), (g), (h) and (i) belong to the watercolour collection of Selys (collection RBINS). Part (b) belongs to the archives of the University of Liège. Part (d) will soon be returned to collection RBINS.

Almost all text on the text sheets seems to be in Selys' hand. However in a few sheets a different characteristic handwriting can be seen, e.g. in textsheet TCa104, that can be attributed to Hermann Hagen.

That some watercolour illustrations have been cut out of sheets is quite remarkable and raises the question of why this was done. The note "voir planche Calopteryg. Martin" (look at plates



Figure 9. Watercolour of female *Macrogomphus robustus* (Selys, 1854), executed by Severin (Go41a, collection RBINS).

Calopterygines Martin) on 26 illustrations of Calopterygines suggests that these cut-outs were sent to or taken by René Martin. In the majority of the illustrations concerning Calopterygines the cut-outs were not returned, in contrast to the illustrations of the Cordulines and Aeschnines where almost all cut-outs were re-attached. All species of the Cordulines and Aeschnines, whose illustrations were removed, are figured in Martin's publications on the Cordulines (Martin, 1907) and on Aeschnines in the Selys collection (Martin, 1908, 1909a, 1909b). The nine colour plates in Martin's publications on the Cordulines and Aeschnines in Selys' collection have under each plate printed: "pinx Menger et Severin" and this refers to the executing artists, Severin and E.

(Emile, source letter to Severin in archives RBINS) C. Menger, who were both connected to RBINS. The illustrations on these colour plates are made in a style that differs from the style of the watercolours of Severin in the watercolour collection. We suggest that the original cut-outs have been used as basis for creating several illustrations in colour, likely by Menger, that were subsequently used to create the printed illustrations (chromoliths) in the publications of Martin on the collection of Selys. Colour plates (planches) of the Calopterygines were planned but were never published (see Appendix 3). The removed illustrations, that are still missing, could possibly be part of the odonate collection of Martin that was donated to the Muséum National d' Histoire Naturelle in Paris (Calvert, 1927).

Associating Selys' names with current species names

For the Calopterygines, Cordulines, Gomphines and Aeschnines we tried to associate Selys' names with current species names. We want to stress that the given associations need to be followed up by taxonomic research including examination of collection specimens. This is needed to verify our association of names as correct. More extensive taxonomic study is also needed to substantiate the possible species names presented in Table 8. Not finding associations was due to the use of manuscript names or to incomplete or absent Selys' names.

The sheets with illustrations with Selys' names are associated with current species names and subsequently could be placed in current families and current superfamilies. The majority of the illustrated species of the Calopterygines are currently placed in the superfamily Calopterygoidea Selys, 1850 of the suborder Zygoptera Selys, 1854. For this superfamily 19 families are distinguished in Dijkstra, Kalkman, Dow, Stokvis, and van Tol (2013) and 10 families in Dijkstra, Bechly et al. (2013) due to a different definition of the family Megapodagrionidae, *sensu stricto* (with three genera) instead of *sensu lato* (with 42 genera). We followed Dijkstra, Kalkman et al. (2013) for the classification of the Calopterygoidea, conforming with Hämäläinen (2016). Two groups, that now belong to the Calopterygoidea, were placed by Selys in the Agrionines and are treated in Verspui and Wasscher (2016): the family Hypolestidae and the Tatocnemidae, which is group seven in the *incertae sedis*.

Four illustrations of the Calopterygines depict the species *Epiophlebia superstes* (Selys, 1889) (Ca21a, Ca21b, Ca22a, Ca160a), which is now in a superfamily of its own, Epiophlebioidea Mutkowsky, 1910 of the suborder Anisozygoptera Handlirsch, 1906. For this classification and the classification of all Anisoptera, we follow Dijkstra, Bechly et al. (2013). The illustrated species of the Cordulines belong now to the superfamily Libelluloidea Leach, 1815 within the suborder Anisoptera. These species either are placed in one of the three families Synthemistidae, Macromiidae or Corduliidae or are considered to be *incertae sedis* within this superfamily. The illustrated species of the Gomphines are placed in one of these superfamilies of the suborder Anisoptera: Petaluroidea, Gomphoidea, Cordulegastroidea or Aeshnoidea (in the family Austropetaliidae). The illustrated species of the Aeschnines currently belong to the family Aeshnidae of the superfamily Aeshnoidea of the suborder Anisoptera.

Opportunities presented by the watercolour collection

From the second part of the watercolour collection, we present three illustrations that can be seen as a source of new information.

The watercolour of *Macromia carolina* (Co48a) (Figure 6) has a manuscript name. According to Martin (1907) the specimen does not exist in the Selys collection but checking the collection revealed there is a specimen labelled *Macromia carolina* S. and *Epopthalmia carolina*. The identity of the dragonfly depicted in the watercolour was studied by Garrison (personal



Figure 10. Watercolour of *Aeschna punctata*, executed by Severin (Ae44a, collection RBINS) identified as a possibly undescribed *Rhionaeschna* species of the *punctata* group.

communication, 4 January 2016) and the illustration probably represents *Macromia illinoisensis georgina* (Selys, 1878).

The species *Macrogomphus robustus* is according to the IUCN Red List only known from its male (Dow, 2010). The watercolour collection however contains a watercolour of the female (Go41a) (Figure 9). To supplement this illustration with information from the depicted specimen is difficult because the only specimen of *Macrogomphus robustus* currently present in the specimen collection of RBINS (Brussels) is a male.

The *Aeschna punctata* depicted in the watercolour Ae44a (Figure 10) seems to be, according to Machado (personal communication, 3 June 2016), not conspecific with *Aeschna punctata* that was described by Martin in 1908. This last species is now known as *Rhionaeschna punctata* (Martin, 1908). Study of the specimen in the Selys' collection, the holotype of *Rhionaeschna punctata* (Martin, 1908) and other *Rhionaeschna* species of the *punctata* group can determine if a species new to science is present in the Selys' collection.

The watercolour collection as a whole

Inspiration for Selys to work on watercolours likely came from the illustrations in the publications of Vander Linden (Vander Linden, 1820a, 1820b). Lameere (1902) stated that Selys



Figure 11. Distribution of localities per continent for those illustrated specimens in the watercolour collection with a note on locality.

as a young entomologist was inspired by Vander Linden after reading his work and started to catalogue the Odonata of Belgium. Within a month after Selys wrote in his diary that he saw “Les dessins de plantes de Mérian” (The illustrations of plants of Merian) during a visit to Stockholm, he commenced with his first odonate watercolour of *Agrion minutissimum* (Ag85a), currently *Calvertagrion minutissimum* (Selys, 1876), on 3 September 1874. The illustrations of Maria Sibylla Merian (1647–1717) may well have been the inspiration.

The illustrated specimens in the watercolour collection with a note on locality originate from all over the world. Most specimens come from the Asian continent (Figure 11).

We present this overview of the families in the Odonata according to modern classification whereby the Calopterygoidea follow Dijkstra, Kalkman et al. (2013) and Hämäläinen (2016) and all other superfamilies follow Dijkstra, Bechly et al. (2013) (Table 12). All current superfamilies and the majority of the current families are represented in the watercolour collection of Selys in RBINS. The species-rich families of the Coenagrionidae and of the Gomphidae are covered with the most watercolours. There are also 100 or more watercolours of species belonging to the families Calopterygidae and Aeshnidae.

The most species-rich Libellulidae family with the highest number of genera is lacking. A possible reason for the lack of illustrations of species of the Libellulidae in the watercolour collection is that the classification of this group was still ongoing during the end of Selys’ life. Selys’ comment in Selys (1896), “non divisées encore en Légions” (not divided in Légions yet), suggests this. Selys adopted the classification of the Libellulines by Friedrich Brauer (1868) in his own classification (Selys, 1871a) and he did not publish a synopsis or monograph for this sous-famille.

The families Pseudolestidae, Rimanellidae and Pentaplebiidae are also not represented. The single species of the Pseudolestidae, *Pseudolestes mirabilis*, was described by William Kirby in 1900, the last year of Selys’ life, and the species of the Rimanellidae and Pentaplebiidae were described after his death.

There are several illustrations that were made but that are currently missing from the watercolour collection in the cabinet at the Entomology department of RBINS (Brussels). For example, information from textsheet TCo7 suggests there exists an illustration of *Macromia septima*

Table 12. The modern odonate families with the number of genera in relation to the presence of illustrations (watercolours and drawings) and the number of watercolours in the watercolour collection of Selys at RBINS. Classification follows Dijkstra, Bechly et al. (2013), except for the Calopterygoidea (*), where classification follows Dijkstra, Kalkman et al. (2013).

Suborder	Superfamily	Family	Number of Genera	Illustrations	Number of watercolours		
Zygoptera	Lestoidea	Hemiphlebiidae	1	+	1		
		Perilestidae	2	+	–		
		Synlestidae	9	+	1		
	Platystictoidea	Calopterygoidea*	Lestidae	9	+	36	
			Platystictidae	6	+	19	
			Amphipterygidae	1	+	1	
			Argiolestidae	20	+	–	
			Calopterygidae	21	+	100	
			Chlorocyphidae	20	+	56	
			Devadattidae	1	+	1	
			Dicteriidae	2	+	4	
			Euphaeidae	9	+	32	
			Heteragrionidae	2	+	–	
			Hypolestidae	1	+	–	
			Lestoideidae	2	+	1	
			Megapodagrionidae	3	+	–	
			Pentaplebiidae	1	–	–	
			Philogangidae	1	+	1	
			Philogeniidae	2	+	–	
	Philosinidae	2	+	–			
	Polythoridae	7	+	34			
	Pseudolestidae	1	–	–			
	Rimanellidae	1	–	–			
	Thaumatoneuridae	2	+	1			
	Genera <i>incertae sedis</i>	14	+	1			
	Coenagrionoidea	Coenagrionoidea	Isostictidae	12	+	1	
			Platycnemididae	40	+	92	
			Coenagrionidae	114	+	337	
	Anisozygoptera	Epiophlebioidea	Epiophlebiidae	1	+	3	
	Anisoptera	Aeshnoidea	Austropetaliidae	4	+	7	
			Aeshnidae	51	+	110	
		Petaluroidea	Gomphoidea	Petaluridae	5	+	11
				Gomphidae	87	+	208
Cordulegastroidea		Libelluloidea	Chlorogomphidae	3	+	5	
			Cordulegastridae	3	+	32	
			Neopetaliidae	1	+	1	
Libelluloidea		Libelluloidea	Synthemistidae	9	+	6	
			Macromiidae	4	+	26	
			Corduliidae	20	+	53	
			Libellulidae	142	–	–	
			Genera <i>incertae sedis</i>	19	+	11	

Martin, 1904 according to the text “cherchez dessin de Macr. septima sp. Java” (search for illustration of *Macromia septima* species Java). Selys wrote a text on “Récapitulation des Dessins” of the Cordulines dated April 1896 (TC05). He presented numbers of illustrations (likely meaning the watercolours) for each sous-genre. For the sous-genres *Somatochlora* and *Macromia* Selys listed in this textsheet respectively 25 and 17 illustrations but nowadays 24 and 16 are present. So two watercolours seem to be missing.

Also in the diary of Selys texts suggest illustrations were made that are not in the collection of RBINS, e.g. 12 May 1897, “Séverin m’y remet les dessins des aethriamanta” (Severin returned to me the paintings of Aethriamanta). The genus *Aethriamanta* Kirby, 1889 belongs to the family Libellulidae which is not represented in the watercolour collection in RBINS. Recently we learned that in Senckenberg Forschungsinstitut und Naturmuseum in Frankfurt

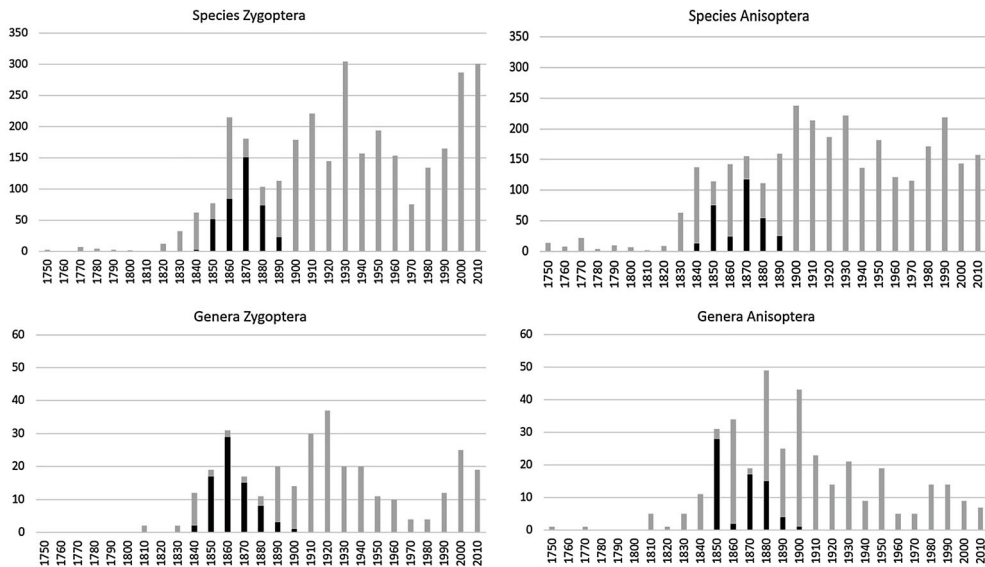


Figure 12. First description of species and genera of Zygoptera and Anisoptera in relation to time for the period 1750–2016, specifying Selys’ contribution per decennium. Black bars show the number of species and genera described by Selys.

(Germany) a number of watercolours depicting Libellulidae were located (personal communication, Schneider, 19 March 2016) and these very likely belong to the watercolour collection of Selys.

In the process of investigating different methods to digitise the watercolour collection, several sheets (TCa12, Ca9a, Ca9b, Ca11a, Ca11b, TAg12, Ag4a, Ag4b, TAg18, Ag5a, Ag5b, TAg19, Ag56a, Ag56b) were taken by staff of RBINS and went missing. They are still present somewhere in the RBINS building but are no longer part of 13 archive folders of the watercolour collection. Fortunately they had already been photographed and the images of these missing sheets are available on the website of RBINS.

The backbone for the planned publication “Histoires des insectes odonates”, describing all Odonata of the world, was the odonate taxonomy described in Selys’ Synopses and Monographs. He had been the leading researcher in this field between 1850 and 1890 (Figure 12, created with data from Schorr & Paulson, 2017). In this period there were substantial contributions in describing taxa by other odonatologists: Hagen and Brauer between 1860 and 1870, Kirby between 1889 and 1890 and McLachlan for the whole period. Selys’ last comprehensive overview was his ‘Revision du synopsis des agrionines’ (Selys, 1886) but he continued publishing new species and genera on a smaller scale until the end of his life. In Selys’ time 2000 odonate species were known (Selys, 1896) and Selys described 697 of them (35%). After 1890 numerous authors started to publish in this field and described new species. They continued to build on Selys’ foundation of odonate taxonomy. His importance for odonate taxonomy today can be demonstrated by his description of 14% of the current Zygoptera species (3133), 25% of the current Anisozygoptera species (4) and 10% of the current Anisoptera species (3060). Selys is still the odonatologist who described most of the known species of Odonata up till now.

Another important part of “Histoires des insectes odonates” would have been the watercolours. Selys worked on the watercolours of the Agrionines from 1874 onwards and instructed Severin to execute watercolours for species of other sous-familles between 1889 and 1899. During this last period finishing the collection of watercolours in cooperation with Severin seemed to take priority over his taxonomic work.

At the end of his life Selys seemed to have abandoned the idea of finishing his ambitious work “Histoires des insectes odonates”. The Libellulines was the last sous-famille not treated by Selys in a monograph or a synopsis. We found no indications that Selys worked on the classification of this family or that instructions were given to Severin to illustrate the species of this family structurally. After Selys’ death, it became clear that he had allocated money to enable the taxonomic research to continue instead of producing more watercolours of all odonate species in his collection. For the Odonata the planned separate volumes of the ‘Collections Zoologiques du Baron Edmond de Selys-Longchamps’ would represent an overview of the species in Selys’ collection and would encompass all odonate species of the world. This would perhaps resemble the aspiration Selys had with his “Histoires des insectes odonates”. Regretfully the volumes, that were published, were limited to those concerning Aeschnines, Cordulines and Libellulines. These publications were the result of detailed work by Martin and especially by Ris (see for more details Wasscher & Dumont, 2013). Martin also produced manuscripts concerning Calopterygines (see Appendix 3) and the genera of the Gomphines but these were never published (Calvert, 1927). Posthumously Selys did achieve publication of a partial overview, with a limited number of illustrations based on the watercolours of Severin.

Conclusion

Even now, more than hundred years after Selys’ death, the niche of presenting an illustrated taxonomic overview of all the Odonata of the World is still not filled. To be fair the number of dragonfly and damselfly species has risen to almost 6200 so this seems an even more ambitious plan now than in Selys’ time. The online lists ‘The World Odonata list’ (Schorr & Paulson, 2017) and ‘Global Species Database of Odonata’ (van Tol, 2017) aim to document all Odonata of the world from a taxonomic point of view. An overview of the illustrations of all the odonate species of the world is not realised yet but a website like alledonata.com can in future possibly fulfil such a role. A combination of documenting and illustrating all species of the world has been realised only for birds in the ‘Handbook of the Birds of the World’ (Hoyo, Elliot, Sargatal, & Christie, published in 17 volumes between 1992 and 2013). In the future we can hope Selys’ dream becomes true by combining the existing lists of species, illustrations, completed with distribution maps, covering all Odonata of the world.

Firstly we have made the illustrations and texts of this important watercolour collection of Selys digitally available at the website of RBINS (<http://new-virtualcollections.naturalsciences.be/archives>). Secondly we have presented an overview containing our interpretation of the content in two publications (Verspui & Wasscher, 2016 and this article). We hope that our efforts lead to everyone interested in Odonatology valuing this previously unknown aspect of the monumental work of Edmond de Selys Longchamps and that the watercolour collection will be used often as a source for further odonate research. We believe that Selys would have been delighted to see this part of his collection available to the world.

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Supplemental data

Supplemental data for this article (Appendix 2 and Appendix 3) can be accessed at <https://doi.org/10.1080/13887890.2017.1330226>.

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Appendix 1. List of illustrated species of Calopterygines, Cordulines, Gomphines and Aeshnines in the watercolour collection of Selys that are associated with current species names

Current species names, generic names, family names, current superfamily and current suborder are listed. For each current species name the author and the year of description is recorded. In square brackets the associated name written by Selys on the illustrations (Selys' name) and if necessary the abbreviation of the consulted expert is added. For references concerning associations we used as a primary source for the species of the Calopterygoidea the list of Hämäläinen (2016) and for species of other superfamilies of sub-orders Anisoptera and Anisozygoptera 'The World Odonata list' (Schorr & Paulson 2017). For further information on references see material and methods.

The Selys' names are spelled in the way it was written on the original illustrations. Selys' names are written, as is customary for current species names, with the generic name beginning with a capital letter. Generic names were abbreviated when possible, also in Selys' names. Varietal names or race names are not included here. When no name was

present but a text sheet with information was attached, the probable name was put between quotes. For the sequence of the family names Dijkstra, Kalkman et al. (2013) is followed for the Zygoptera and Dijkstra, Bechly et al (2013) for the Anisozygoptera and the Anisoptera.

Abbreviations for consulted experts: GT Günther Theischinger, HK Haruki Karube, HZ Haomiao Zhang, JV Jan van Tol, KD KD Dijkstra, KV Karin Verspui, MH Matti Hämäläinen, MW Marcel Wasscher, NV Natalia von Ellenrieder, RD Rory Dow, RG Rosser Garrison and VK Vincent Kalkman.

Abbreviations for experts who identified specimens in the collection of Selys (RBINS) and put information on the accompanying labels: ES Erich Schmidt (1937), JB Jean Belle (1971), ML Maurits Lieftrink (1939). The year of identification is added in brackets.

Notes

¹ Selys' names spelled differently than current species names. Small changes in the name-endings of the species-group names (-i, -ii, -a, -us, -um, -is, -e) are not indicated. Also changes between "ae" and "oe" are not indicated (see caption Figure 4).

² Selys' names that are not binomial names and are comparable to species-group names.

id. No difference between Selys' names and current species names.

Suborder Zygoptera

Superfamily Calopterygoidea

Amphipterygidae: *Amphipteryx* *A. agrioides* Selys, 1853 [id.], *A. agrioides* Selys, 1853 [*Amphipteryx agrioides*; MH]

Calopterygidae: *Atrocalopteryx* *A. atrata* (Selys, 1853) [*atrata*²; MH], *A. atrata* (Selys, 1853) [*Calopteryx atrata*], *A. oberthueri* (McLachlan, 1894) [*Calopteryx oberthueri*¹]; *Bryoplathanon* *B. globifer* (Hagen in Selys, 1853) [*Lais Heteroerina globifer*¹], *B. globifer* (Hagen in Selys, 1853) [*Lais globifera*]; *Caliphaea* *C. consimilis* McLachlan, 1894 [id.]; *Calopteryx* *C. aequabilis* Say, 1840 [*C. dimidiata*; MH], *C. amata* Hagen, 1889 [id.], *C. angustipennis* (Selys, 1853) [*Sylphis elegans*], *C. cornelia* Selys, 1853 [id.], *C. dimidiata* Burmeister, 1839 [id.], *C. exul* Selys, 1853 [*C. splendens*], *C. haemorrhoidalis* (Vander Linden, 1825) [id.], *C. japonica* Selys, 1869 [id.], *C. maculata* (Palisot de Beauvois, 1805) [id.], *C. orientalis* Selys, 1887 [*C. splendens*], *C. splendens* (Harris, 1780) [id.], *C. splendens* (Harris, 1780) [*ancilla*²], *C. syriaca* Rambur, 1842 [*C. splendens*], *C. virgo* (Linnaeus, 1758) [id.], *C. xanthostoma* (Charpentier, 1825) [*C. splendens*]; *Echo* *E. margarita* Selys, 1853 [id.], *E. uniformis* Selys, 1879 [id.]; *Hetaerina* *H. americana* (Fabricius, 1798) [*Haeterina americana*¹], *H. americana* (Fabricius, 1798) [*H. basalis*], *H. americana* (Fabricius, 1798) [*H. californica*], *H. americana* (Fabricius, 1798) [*H. pseudamericana*], *H. auripennis* (Burmeister, 1839) [id.], *H. brightwelli* (Kirby, 1823) [id.], *H. brightwelli* (Kirby, 1823) [*Hoeterina brightwelli*], *H. caja* Drury, 1773 [id.], *H. caja* Drury, 1773 [*H. dominula*], *H. capitalis* Selys, 1873 [id.], *H. cruentata* (Rambur, 1842) [*cruentata*²; MH], *H. cruentata* (Rambur, 1842) [*Heterina cruentata*¹], *H. duplex* Selys, 1869 [*Hoeterina duplex*¹], *H. fuscoguttata* Selys, 1878 [*H. atriguttata*], *H. hebe* Selys, 1853 [*Haeterina sanguinolenta*¹], *H. hebe* Selys, 1853 [id.], *H. longipes* Hagen in Selys, 1853 [*H. carnifex*], *H. majuscula* Selys, 1853 [id.], *H. moribunda* Hagen in Selys, 1853 [id.], *H. occisa* Hagen in Selys, 1853 [id.], *H. rosea* Selys, 1880 [*H. donna*], *H. rosea* Selys, 1853 [*Hoeterina rosea*¹], *H. sanguinea* Selys, 1853 [*Hoeterina brevistyla*¹], *H. sanguinea* Selys, 1853 [*Hoeterina sanguinea*¹], *H. sempronina* Hagen in Selys, 1853 [id.], *H. simplex* Selys, 1853 [*Haeterina simplex*¹], *H. simplex* Selys, 1853 [*Hoeterina simplex*¹], *H. titia* (Drury, 1773) [*H. rupamensis*], *H. titia* (Drury, 1773) [id.], *H. titia* (Drury, 1773) [*H. tricolor*], *H. vulnerata* Hagen in Selys, 1853 [id.]; *Matrona* *M. basilaris* Selys, 1853 [id.], *M. nigripictus* Selys, 1879 [id.]; *Matronoides* *M. cyaneipennis* Förster, 1897 [*Matrona astigma* *Matronoides cyanipennis*¹]; *Mnais* *M. andersoni* McLachlan in Selys, 1873 [id.], *M. costalis* Selys, 1869 [*M. pruinosa*; MH], *M. pruinosa* Selys, 1853 [id.]; MH], *M. pruinosa* Selys, 1853 [*M. strigata*; MH]; *Mnesarete* *M. aenea* (Selys, 1853) [*Lais aenea*], *M. borchgravi* (Selys, 1869) [*ina borchgravi*¹; MH], *M. cupraea* (Selys, 1853) [*Lais cupraea*], *M. devillei* (Selys, 1880) [*Lais devillei*], *M. fulgida* (Selys, 1879) [*Lais fulgida*], *M. guttifera* (Selys, 1873) [*Lais guttifera*], *M. hauxwelli* (Selys, 1869) [*Lais hauxwelli*], *M. hyalina* (Hagen in Selys, 1853) [*Lais hyalina*], *M. metallica* (Selys, 1869) [*Lais metallica*], *M. pruinosa* (Hagen in Selys, 1853) [*Lais pruinosa*], *M. smaragdina* (Selys, 1869) [*Lais smaragdina*]; *Neurobasis* *N. australis* Selys, 1878 [id.], *N. australis* Selys, 1878 [*N. chinensis*], *N. chinensis* (Linnaeus, 1758) [id.], *N. florida* Hagen in Walker, 1853 [*N. chinensis*], *N. kaupii* Brauer, 1867 [*N. chinensis*], *N. luzoniensis* Selys, 1879 [*N. chinensis*]; *Ormenophlebia* *O. imperatrix* (McLachlan, 1878) [*Lais imperatrix*]; *Phaon* *P. iridipennis* (Burmeister, 1839) [id.]; *Psolodesmus* *P. mandarinus* McLachlan, 1870 [id.]; *Sapho* *S. bicolor* Selys, 1853 [id.], *S. ciliata* (Fabricius, 1781) [id.], *S. gloriosa* McLachlan in Selys, 1873 [id.], *S. orichalcea* McLachlan, 1869 [id.]; *Umma* *U. cincta* (Hagen in Selys, 1853) [*Cleis cincta*¹], *U. longistigma* (Selys, 1869) [*Cleis longistigma*; KV&MW], *U. mesostigma* (Selys, 1879) [*Cleis mesostigma*]; *Vestalaria* *V. smaragdina* (Selys, 1879) [*Vestalis smaragdina*]; *Vestalis* *V. amoena* Selys, 1853 [id.], *V. apicalis* Selys, 1873 [id.], *V. beryllae* Laidlaw, 1915 [*V. elongata*], *V. gracilis* (Rambur, 1842) [id.], *V. luctuosa* (Burmeister, 1839) [id.], *V. lugens* Albarda in Selys, 1879 [id.], *V. melania* Selys, 1873 [id.]

Chlorocyphidae: *Aristocypha* *A. cuneata* (Selys, 1853) [*Rhinocypha cuneata*], *A. fenestrella* (Rambur, 1842) [*Rhinocypha fenestrella*], *A. fulgipennis* (Guérin, 1831) [*Rhinocypha fulgidipennis*¹; MH], *A. immaculata* (Selys, 1879) [*Rhinocypha immaculata*], *A. iridea* Selys, 1891 [*Rhinocypha iridea*], *A. quadrimaculata* (Selys, 1853) [*Rhinocypha fenestrella*; MH], *A. spuria* (Selys, 1879) [*Rhinocypha cuneata*; MH], *A. trifasciata* (Selys, 1853) [*Rhinocypha bifasciata*], *A. trifasciata* (Selys, 1853) [*Rhinocypha trifasciata*]; *Chlorocypha* *C. cancellata* (Selys, 1879) [*Libellago cancellata*], *C. curta* (Hagen in Selys, 1853) [*Libellago curta*], *C. cyanifrons* (Selys, 1873) [*Libellago cyanifrons*], *C. dispar* (Palisot de Beauvois, 1805) [*Libellago dispar*], *C. rubida* (Hagen in Selys, 1853) [*Libellago rubida*]; *Cyran* *C. unicolor* (Hagen

in Selys, 1869) [*Libellago asiatica*; MH], *C. angustior* Hämäläinen, 1989 [*Libellago asiatica*; MH]; ***Heliocypha*** *H. angusta* (Hagen in Selys, 1853) [*Rhinocypha angusta*], *H. angusta* (Hagen in Selys, 1853) [*Rhinocypha interposita*; MH], *H. biforata* (Selys, 1859) [*biforata*²; MH], *H. biforata* (Selys, 1859) [*Rhinocypha biforata*], *H. biseriata* (Selys, 1859) [*biseriata*²; MH], *H. biseriata* (Selys, 1859) [*Rhinocypha biseriata*], *H. bisignata* (Hagen in Selys, 1853) [*Rhinocypha bisignata*], *H. fenestrata* (Burmeister, 1839) [*Libellago fenestrata*], *H. perforata* (Percheron, 1835) [*Rhinocypha limbata*], *H. perforata* (Percheron, 1835) [*Rhinocypha perforata*]; ***Indocypha*** *I. vittata* Selys, 1891 [*Libellago asiatica*]; ***Libellago*** *L. aurantiaca* (Selys, 1859) [*Micromerus aurantiacus*], *L. hyalina* (Selys, 1859) [*Micromerus hyalinus*], *L. lineata* (Burmeister, 1839) [*Micromerus lineatus*], *L. rufescens* (Selys, 1873) [*Micromerus rufescens*], *L. semiopaca* (Selys, 1873) [*Micromerus minus*], *L. semiopaca* (Selys, 1873) [*Micromerus semiopacus*], *L. stigmatizans* (Selys, 1869) [*Micromerus stigmatizans*], *L. sumatrana* (Albarda in Selys, 1879) [*Micromerus sumatranus*], *L. sumatrana* (Albarda in Selys, 1879) [*Rhinocypha sumatrana*], *L. xanthocyana* (Selys, 1869) [*Micromerus xanthocyanus*]; ***Pachycypha*** *P. aurea* Lieftinck, 1950 [*Micromerus annulatus*; MH]; ***Paracypha*** *P. unimaculata* (Selys, 1853) [*Rhinocypha unimaculata*]; ***Platycypha*** *P. caligata* (Selys, 1853) [*Libellago caligata*]; ***Rhinocypha*** *R. anisoptera* Selys, 1879 [id.], *R. colorata* Selys, 1869 [id.], *R. cucullata* Selys, 1873 [id.], *R. frontalis* Selys, 1873 [id.], *R. heterostigma* Rambur, 1842 [id.], *R. humeralis* Selys, 1873 [*R. eximia*], *R. humeralis* Selys, 1873 [id.], *R. ignipennis* Selys, 1879 [id.], *R. monochroa* Selys, 1873 [id.], *R. moultoni* Laidlaw, 1915 [*R. tenuis*; MH], *R. pagenstecheri* Förster, 1897 [id.], *R. semitincta* Selys, 1869 [id.], *R. stygia* Förster, 1897 [id.], *R. tincta* Rambur, 1842 [id.], *R. trimaculata* Selys, 1853 [id.], *R. turconii* Selys, 1891 [id.], *R. ustulata* Brauer, 1867 [*R. terminata*]; ***Sclerocypha*** *S. bisignata* (McLachlan, 1870) [*Micromerus bisignatus*]; ***Sundacypha*** *S. petiolata* (Selys, 1859) [*Rhinocypha petiolata*],

Devadattidae: *Devadatta* *D. argyroides* (Selys, 1859) [*Amphipteryx argyroides*; MH], *D. argyroides* (Selys, 1859) [*Tetraphlebia argyroides*¹; MH]

Dicteriidae: *Dicterias* *D. atrosanguinea* Selys, 1853 [id.]; ***Heliocharis*** *H. amazona* Selys, 1853 [id.], *H. amazona* Selys, 1853 [*H. batesi*; MH], *H. amazona* Selys, 1853 [*H. brasiliensis*], *H. amazona* Selys, 1853 [*H. libera*]

Euphaeidae: *Anisopleura* *A. comes* Hagen, 1880 [id.], *A. furcata* Selys, 1891 [id.], *A. lestoides* Selys, 1853 [id.]; *Bayadera* *B. hyalina* Selys, 1879 [id.], *B. indica* (Selys, 1853) [id.]; ***Dysphaea*** *D. dimidiata* Selys, 1853 [id.], *D. dimidiata* Selys, 1853 [*Dysphoea dimidiata*], *D. dimidiata* Selys, 1853 [*Euphaea dimidiata*], *D. lugens* Selys, 1873 [*D. dimidiata*]; ***Epallage*** *E. fatime* (Charpentier, 1840) [*E. alma*], *E. fatime* (Charpentier, 1840) [id.]; ***Euphaea*** *E. bocki* McLachlan, 1880 [*Euphaea bocki*], *E. dispar* Rambur, 1842 [id.], *E. dispar* Rambur, 1842 [*Euphaea dispar*], *E. guerini* Rambur, 1842 [id.], *E. impar* Selys, 1859 [id.], *E. lara lombocensis* McLachlan, 1898 [*E. auripennis*], *E. masoni* Selys, 1879 [*E. massoni*], *E. modigliani* Selys, 1898 [id.], *E. ochracea* Selys, 1859 [id.], *E. opaca* Selys, 1853 [id.], *E. refulgens* Hagen in Selys, 1853 [*E. semperi*], *E. refulgens* Hagen in Selys, 1853 [*Euphaea refulgens*], *E. splendens* Hagen in Selys, 1853 [id.], *E. splendens* Hagen in Selys, 1853 [*E. carissima*], *E. subcostalis* Selys, 1873 [*E. tricolor*; MH], *E. tricolor* Selys, 1859 [id.], *E. variegata* Rambur, 1842 [id.]

Lestoideidae: *Diphlebia* *D. lestoides* (Selys, 1853) [id.]

Philogangidae: *Philoganga* *P. montana* (Hagen in Selys, 1859) [*Anisoneura montana*]

Polythoridae: *Chalcoteryx* *C. rutilans* (Rambur, 1842) [id.], *C. scintillans* McLachlan, 1870 [id.]; *Cora* *C. cyane* McLachlan, 1881 [id.], *C. cyane* McLachlan, 1881 [*Thore Cora cyane*], *C. dualis* McLachlan, 1878 [*C. duellis*¹], *C. inca* Selys, 1873 [id.], *C. jocosa* McLachlan, 1881 [id.], *C. marina* Selys, 1868 [*C. alcyone*], *C. marina* Selys, 1868 [id.], *C. munda* McLachlan, 1878 [id.], *C. semiopaca* Selys, 1878 [id.], *C. terminalis* McLachlan, 1878 [id.]; ***Euthore*** *E. fasciata* (Hagen in Selys, 1853) [*E. plagiata*], *E. hyalina* (Selys, 1853) [*hyalina*²; MH]; ***Polythore*** *P. aurora* (Selys, 1879) [*Thore aurora*], *P. boliviana* (McLachlan, 1878) [*Thore boliviana*], *P. concinna* (McLachlan, 1881) [*Th. concinna*; MH], *P. concinna* (McLachlan, 1881) [*Thore concinna*], *P. derivata* (McLachlan, 1881) [*Thore derivata*], *P. gigantea* (Selys, 1853) [*Thore gigantea*], *P. mutata* (McLachlan, 1881) [*Th. mutata*; MH], *P. ornata* (Selys, 1879) [*Thore ornata*], *P. picta* (Rambur, 1842) [*Thore picta*; KV&MW], *P. picta* (Rambur, 1842) [*Thore saundersi*], *P. procera* (Selys, 1869) [*Thore gigantea*; MH], *P. procera* (Selys, 1869) [*Thore procera*], *P. victoria* (McLachlan, 1869) [*Thore victoria*], *P. victoria* (McLachlan, 1869) [*Th. victoria*], *P. vittata* (Selys, 1869) [*Th. aequatorialis*], *P. vittata* (Selys, 1869) [*Thore aequatorialis*; MH], *P. vittata* (Selys, 1869) [*Thore albovittata*], *P. vittata* (Selys, 1869) [*Thore vittata*]

Thaumatoneuridae: *Thaumatoneura* *T. inopinata* McLachlan, 1897 [id.],

Suborder **Anisozygoptera**

Superfamily **Epiophleboidea**

Epiophlebiidae: *Epiophlebia* *E. superstes* (Selys, 1889) [*Palaeophlebia superstes*; MH], *E. superstes* (Selys, 1889) [*Palaeophlebia superstes*]

Suborder **Anisoptera**

Superfamily **Aeshnoidea**

Aeshnidae: *Acanthaeschna* *A. victoria* Martin, 1901 [*Acanthoeschna victoria*]; ***Aeschnophlebia*** *A. anisoptera* Selys, 1883 [id.], *A. longistigma* Selys, 1883 [id.], *A. optata* Selys, 1883 [id.]; ***Aeshna*** *A. affinis* Vander Linden, 1820 [*Aeschna affinis*], *A. affinis* Vander Linden, 1820 [*Ae. affinis*; KV&MW], *A. brevistyla* Rambur, 1842 [*Aeschna brevistyla*], *A.*

caerulea (Ström, 1783) [*Aeschna borealis*], *A. crenata* Hagen, 1856 [*Aeschna crenata*], *A. cyanea* (Müller, 1764) [*Aeschna cyanea*], *A. grandis* (Linnaeus, 1758) [*Aeschna grandis*], *A. juncea* (Linnaeus, 1758) [*Aeschna juncea*], *A. mixta* Latreille, 1805 [*Aeschna mixta*], *A. petalura* Martin, 1908 [*Orooeschna petalura*; KV&MW], *A. septentrionalis* Burmeister, 1839 [*Aeschna septentrionalis*¹], *A. viridis* Eversmann, 1836 [*Aeschna viridis*], *A. viridis* Eversmann, 1836 [*Oe. viridis*]; **Allopetalia** *A. pustulosa* Selys, 1873 [id.]; **Amphiaeschna** *A. ampla* (Rambur, 1842) [id.]; **Anaciaeschna** *A. isocoela* (Müller, 1767) [*Aeschna rufescens*], *A. jaspidea* (Burmeister, 1839) [id.], *A. triangulifera* McLachlan, 1896 [*Aeschna natalensis*; KD]; **Anax** *A. amazili* (Burmeister, 1839) [id.], *A. ephippiger* (Burmeister, 1839) [*A. ephippigerus*], *A. ephippiger* (Burmeister, 1839) [*Hemianax ephippigerus*], *A. fumosus* Hagen, 1867 [id.], *A. georgius* Selys, 1872 [id.], *A. gibbosulus* Rambur, 1842 [id.], *A. guttatus* (Burmeister, 1839) [id.], *A. immaculifrons* Rambur, 1842 [id.], *A. imperator* Leach, 1815 [*A. cyanoverum formosus*; KV&MW], *A. imperator* Leach, 1815 [*A. formosus*], *A. junius* (Drury, 1770) [id.], *A. longipes* Hagen, 1861 [id.], *A. nigrofasciatus* Oguma, 1915 [*A. maculifrons*; VK], *A. papuensis* (Burmeister, 1839) [*Hemianax papuensis*], *A. parthenope* (Selys, 1839) [*A. julius*], *A. parthenope* (Selys, 1839) [id.], *A. speratus* Hagen, 1867 [*A. rutherfordi*], *A. tristis* Hagen, 1867 [*A. goliath*], *A. tumorifer* McLachlan, 1885 [id.]; **Austroaeschna** *A. parvistigma* Selys, 1883 [id.], *A. unicornis* Martin, 1901 [*Acanthoeschna unicornis*]; **Basiaeschna** *B. janata* (Say, 1840) [*Basioeschna janata*]; **Boyeria** *B. irene* (Fonscolombe, 1838) [*Fonscolombia irene*], *B. maclachlani* Selys, 1883 [*Fonscolombia maclachlani*], *B. vinosa* (Say, 1840) [*Fonscolombia vinosa*]; **Brachytron** *B. pratense* (Müller, 1764) [*Brachytron pratense*¹], *B. pratense* (Müller, 1764) [id.]; **Caliaeschna** *C. microstigma* (Schneider, 1845) [*Calioeschna microstigma*]; **Castoraeschna** *C. castor* (Brauer, 1865) [*Aeschna castor*]; **Cephaloeschna** *C. orbifrons* Selys, 1883 [*C. orbifrons incerta*], *C. orbifrons* Selys, 1883 [*Cephaloeschna orbifrons*]; **Coryphaeschna** *C. adnexa* (Hagen, 1861) [*Aeschna adnexa*], *C. adnexa* (Hagen, 1861) [*Aeschna cyanifrons*], *C. ingens* (Rambur, 1842) [*Aeschna ingens*], *C. perrensi* (McLachlan, 1887) [*Aeschna rufina*], *C. viriditas* Calvert, 1952 [*Aeschna virens*]; **Epiaeschna** *E. heros* (Fabricius, 1798) [id.]; **Gomphaeschna** *G. furcillata* (Say, 1840) [*Gomphoeschna furcillata*]; **Gynacantha** *G. basiguttata* Selys, 1882 [id.], *G. bifida* Rambur, 1842 [id.], *G. cylindrata* Karsch, 1891 [*G. contorta*], *G. gracilis* (Burmeister, 1839) [id.], *G. hyalina* Selys, 1882 [id.], *G. membranalis* Karsch, 1891 [*G. obscuripennis gracilis*; NV], *G. mexicana* Selys, 1868 [id.], *G. nervosa* Rambur, 1842 [id.], *G. rosenbergi* Brauer, 1867 [id.], *G. subinterrupta* Rambur, 1842 [id.]; **Gynacanthaeschna** *G. sikkima* (Karsch, 1891) [*Cephaloeschna sikkima*], *G. sikkima* (Karsch, 1891) [*Cephaloeschna lugubris*]; **Heliaeschna** *H. fuliginosa* Karsch, 1893 [id.], *H. idae* (Brauer, 1865) [*Mesogyna idae*; MW], *H. simplicia* (Karsch, 1891) [id.], *H. uninervulata* Martin, 1909 [*Mesogyna uninervulata*]; MW]; **Indaeschna** *I. grubraueri* (Förster, 1904) [*Amphiaeschna peruviana*]; **Neuraeschna** *N. claviforcipata* Martin, 1909 [*Neurooeschna claviforceps*¹], *N. costalis* (Burmeister, 1839) [*Neurooeschna costalis*], *N. costalis* (Burmeister, 1839) [*Neurooeschna costalis*], *N. harpya* Martin, 1909 [*Neurooeschna harpyia*¹]; **Oligoeschna** *O. modigliani* Selys, 1889 [*Aeschna Oligoeschna modigliani*], *O. modigliani* Selys, 1889 [*Oligoeschna modigliani*]; **Oplonaeschna** *O. armata* (Hagen, 1861) [*Oplonaeschna armata*]; **Pinheyschna** *P. waterstoni* Peters & Theisinger, 2011 [*Aeschna ragazzi*]; **Planaeschna** *P. intercedens* (Martin, 1909) [*Plaoeschna intercedens*¹], *P. milnei* (Selys, 1883) [*P. milnei*¹]; **Polycanthagyna** *P. melanictera* (Selys, 1883) [*Aeschna melanictera*]; **Remartinia** *R. luteipennis* (Burmeister, 1839) [*Aeschna excisa*]; **Rhionaeschna** *R. bonariensis* (Rambur, 1842) [*Aeschna bonariensis*], *R. bonariensis* (Rambur, 1842) [*Aeschna dichrostigma*], *R. californica* (Calvert, 1895) [*Aeschna intermixta*; NV], *R. confusa* (Rambur, 1842) [*Aeschna confusa*], *R. diffinis* (Rambur, 1842) [*Aeschna diffinis*¹], *R. marchali* (Rambur, 1842) [*Aeschna marchali*], *R. multicolor* (Hagen, 1861) [*Aeschna multicolor*]; **Sarasaeschna** *S. pryleri* (Martin, 1909) [*Oligoeschna pryleri*]; **Staurophebia** *S. gigantula* Martin, 1909 [id.], *S. reticulata* (Burmeister, 1839) [id.]; **Telephlebia** *T. godeffroyi* Selys, 1883 [id.], *T. godeffroyi* Selys, 1883 [*T. godeffroyi*¹], *T. godeffroyi* Selys, 1883 [*Acanthoeschna godeffroyi*; GT]; **Tetracanthagyna** *T. plagiata* (Waterhouse, 1877) [id.]; **Triacanthagyna** *T. trifida* (Rambur, 1842) [*Triacanthagyna trifida*]; NV]

Austropetaliiidae: **Hypopetalia** *H. pestilens* McLachlan, 1870 [id.]; **Phyllopetalia** *P. apicalis* Selys, 1858 [id.], *P. apicalis* Selys, 1858 [*Petalia apicalis*; RG], *P. apicalis* Selys, 1858 [*Ph. apicalis*; RG], *P. apollo* Selys, 1878 [id.], *P. stictica* Hagen in Selys, 1858 [id.], *P. stictica* Hagen in Selys, 1858 [*stictica*²; RG]

Superfamily **Petaluroidea**

Petaluridae: **Petalura** *P. gigantea* Leach, 1815 [id.]; **Phenes** *P. raptor* Rambur, 1842 [id.]; **Tachopteryx** *T. thoreyi* (Hagen in Selys, 1858) [id.]; **Tanypteryx** *T. hageni* (Selys, 1879) [*Tachopteryx hageni*], *T. pryleri* (Selys, 1889) [*Tachopteryx pryleri*]; **Uropetala** *U. carovei* (White, 1846) [*U. carovei*]

Superfamily **Gomphoidea**

Gomphidae: **Agriogomphus** *A. sylvicola* Selys, 1869 [id.]; **Anisogomphus** *A. bivittatus* Selys, 1854 [*Gomphus bivittatus*], *A. occipitalis* (Selys, 1854) [*Gomphus occipitalis*]; **Anormogomphus** *A. heteropterus* Selys, 1854 [id.]; **Antipodogomphus** *A. acolythus* (Martin, 1901) [*Austrogomphus acolythus*], *A. proselythus* (Martin, 1901) [*Austrogomphus proselythus*]; **Aphylla** *A. brevipes* Selys, 1854 [id.], *A. dentata* Selys, 1859 [id.], *A. edentata* Selys, 1869 [id.], *A. producta* Selys, 1854 [id.], *A. tenuis* Hagen in Selys, 1859 [id.], *A. williamsoni* (Gloyd, 1936) [*A. floridana*; RG]; **Arigomphus** *A. pallidus* (Rambur, 1842) [*Gomphus pallidus*]; **Asiagomphus** *A. melaenops* (Selys, 1854) [*Gomphus melaenops*¹], *A. personatus* (Selys, 1873) [*Gomphus personatus*]; **Austrogomphus** *A. amphiclitus* (Selys, 1873) [id.], *A. guerini* (Rambur, 1842) [id.], *A. ochraceus* (Selys, 1869) [*Hemigomphus ochraceus*]; **Burmogomphus** *B. williamsoni javicus* Schmidt, 1934 [*Gomphus fruhstorferi*; ML]; **Cacoides** *C. latro* (Erichson, 1848) [*Cacus latro*]; **Ceratogomphus** *C. pictus* Hagen in Selys, 1854 [id.]; **Crenigomphus** *C. abyssinicus* (Selys, 1878) [id.], *C. denticulatus* Selys, 1892 [id.]; **Cyanogomphus** *C. waltheri* Selys, 1873 [*C. waltheri*¹]; **Cyclogomphus** *C. heterostylus* Selys, 1854 [id.]; **Davidius** *D. nanus* (Selys, 1869) [id.]; **Desmogomphus** *D. paucinervis* (Selys, 1873) [*Progomphus paucinervis*]; **Diaphlebia** *D. angustipennis* Selys, 1854 [*Diaphlebia*]; **Diastatomma** *D. bicolor* Selys, 1869 [id.], *D. tricolor* (Palisot de Beauvois,

1805 [id.]; **Dromogomphus** *D. armatus* Selys, 1854 [id.], *D. spinosus* Selys, 1854 [id.]; **Ebegomphus** *E. demerarae* Selys, 1894 [*Cyanogomphus demerarae*]; **Epigomphus** *E. obtusus* Selys, 1869 [id.], *E. paludosus* Hagen in Selys, 1854 [id.], *E. subobtusus* Selys, 1878 [id.]; **Erpetogomphus** *E. boa* Selys, 1859 [id.], *E. compositus* Hagen in Selys, 1858 [id.], *E. crotalinus* (Hagen in Selys, 1854) [*Herpetogomphus crotalinus*], *E. designatus* Hagen in Selys, 1858 [id.], *E. elaps* Selys, 1858 [id.], *E. eutainia* Calvert, 1905 [*Cyanogomphus mexicanus*; RG], *E. eutainia* Calvert, 1905 [*E. mentriessi*; RG], *E. eutainia* Calvert, 1905 [*Herpetogomphus berus*], *E. viperinus* Selys, 1868 [*Herpetogomphus viperinus*]; **Gastrogomphus** *G. abdominalis* (McLachlan, 1884) [*Gomphus abdominalis*]; **Gomphidia** *G. confluens* Selys, 1878 [*G. chinensis*; RG&HZ], *G. kirschii* Selys, 1878 [id.], *G. maclachlani* Selys, 1873 [id.], *G. t-nigrum* Selys, 1854 [id.]; **Gomphoides** *G. infumata* (Rambur, 1842) [id.]; **Gomphurus** *G. dilatatus* Rambur, 1854 [*Gomphus dilatatus*], *G. externus* Hagen in Selys, 1858 [*Gomphus externus*], *G. fraternus* (Say, 1840) [*Gomphus fraternus*], *G. vastus* Walsh, 1862 [*Gomphus vastus*]; **Gomphus** *G. graslinii* Rambur, 1842 [*G. graslini*], *G. lucasii* Selys, 1849 [id.], *G. pulchellus* Selys, 1840 [id.], *G. schneiderii* Selys in Selys & Hagen, 1850 [*G. schneideri*], *G. similimus* Selys, 1840 [id.], *G. vulgatissimus* (Linnaeus, 1758) [id.]; **Hagenius** *H. brevistylus* Selys, 1854 [*H. brevistylus*], *H. brevistylus* Selys, 1854 [id.]; **Heligomphus** *H. nietneri* (Hagen in Selys, 1878) [*Leptogomphus nietneri*]; **Hemigomphus** *H. gouldii* (Selys, 1854) [id.], *H. heteroclytus* Selys, 1854 [*H. heteroclytus*¹]; **Hylogomphus** *H. adelphus* Selys, 1858 [*Gomphus adelphus*]; **Ictinogomphus** *I. acutus* (Laidlaw, 1914) [*Ictinus acutus*], *I. angulosus* (Selys, 1854) [*Ictinus angulosus*], *I. angulosus* (Selys, 1854) [*Ictinus atrox*], *I. australis* (Selys, 1873) [*Ictinus australis*], *I. decoratus* (Selys, 1854) [*Ictinus decoratus*], *I. decoratus* (Selys, 1854) [*Ictinus melanops*], *I. ferox* (Rambur, 1842) [*Ictinus ferox*], *I. ferox* (Rambur, 1842) [*Ictinus pugnax*], *I. rapax* (Rambur, 1842) [*Ictinus rapax*]; **Idiogomphoides** *I. ictinia* (Selys, 1878) [*Gomphoides ictinia*]; **Isomma** *I. hieroglyphicum* Selys, 1892 [id.]; **Lamelligomphus** *L. biforceps* (Selys, 1878) [*Onychogomphus cerastis biforceps*]; **Lanthus** *L. parvulus* (Selys, 1854) [*Gomphus parvulus*]; **Leptogomphus** *L. gestroi* Selys, 1891 [id.], *L. inclitus* Selys, 1878 [id.], *L. lansbergei* Selys, 1878 [*L. lansbergi*], *L. semperi* Selys, 1878 [id.]; **Lindenia** *L. tetraphylla* (Vander Linden, 1825) [id.]; **Macrogomphus** *M. abnormis* Selys, 1884 [id.], *M. annulatus* (Selys, 1854) [id.], *M. decemlineatus* Selys, 1878 [id.], *M. montanus* Selys, 1869 [id.], *M. parallelogramma* (Burmeister, 1839) [*M. albardae*], *M. parallelogramma* (Burmeister, 1839) [*M. parallelogramma*¹], *M. quadratus* Selys, 1878 [id.], *M. robustus* (Selys, 1854) [id.]; **Megalogomphus** *M. cochinchinensis* (Selys, 1878) [*Heterogomphus cochinchinensis*], *M. icterops* (Martin, 1902) [*Gomphus icterops*; RD], *M. icterops* (Martin, 1902) [*Heterogomphus icterops*], *M. smithii* (Selys, 1854) [*Heterogomphus smithii*]; **Melligomphus** *M. viridicostus* (Oguma, 1926) [*Onychogomphus bicornutus*; HK]; **Microgomphus** *M. chelifera* Selys, 1858 [id.]; **Neogomphus** *N. molestus* (Hagen in Selys, 1854) [id.]; **Nepogomphus** *N. fruhstorferi* (Lieftinck, 1934) [*Onychogomphus fruhstorferi*], *N. modestus* (Selys, 1878) [*Onychogomphus modestus*]; **Nihonogomphus** *N. ruptus* (Selys & Hagen, 1858) [*Onychogomphus ruptus*]; **Notogomphus** *N. spinosus* (Karsch, 1890) [*Podogomphus spinosus*]; **Nychogomphus** *N. geometricus* (Selys, 1854) [*Onychogomphus geometricus*]; **Octogomphus** *O. specularis* (Hagen in Selys, 1859) [id.]; **Onychogomphus** *O. aequistylus* Selys, 1892 [id.], *O. annularis* Selys, 1894 [*Onychogomphus annularis*¹], *O. assimilis* (Schneider, 1845) [*Ophiogomphus assimilis*], *O. costae* Selys, 1885 [id.], *O. flavifrons* Selys, 1894 [id.], *O. flexuosus* (Schneider, 1845) [id.], *O. forcipatus* (Linnaeus, 1758) [id.], *O. grammicus* (Rambur, 1842) [id.], *O. lefebvrei* (Rambur, 1842) [*O. lefebvrei*], *O. maclachlani* Selys, 1894 [*O. maclachlani*], *O. macronotus* Selys, 1887 [id.], *O. maculivertex* (Selys, 1891) [id.], *O. saundersii* Selys, 1854 [id.], *O. uncatu* (Selys, 1854) [id.]; **Ophiogomphus** *O. cecilia* (Geoffroy in Fourcroy, 1785) [*O. serpentinus*], *O. cerastis* Selys, 1854 [*Onychogomphus cerastis*], *O. colubrinus* Selys, 1854 [id.], *O. mainensis* Packard, 1863 [id.], *O. morrisoni* Selys, 1879 [id.], *O. rupinulensis* Walsh, 1862 [id.], *O. severus* Hagen, 1874 [*O. montanus*], *O. severus* Hagen, 1874 [*O. obsoletus*; RG], *O. severus* Hagen, 1874 [id.]; **Orientogomphus** *O. circularis* (Selys, 1894) [*Onychogomphus circularis*]; **Paragomphus** *P. cognatus* (Rambur, 1842) [*Onychogomphus cognatus*], *P. cognatus* (Rambur, 1842) [*Onychogomphus obliterated*], *P. fritillarius* (Selys, 1892) [*Onychogomphus fritillarius*], *P. genei* (Selys, 1841) [*Onychogomphus atratus*], *P. genei* (Selys, 1841) [*genei*²; RG], *P. genei* (Selys, 1841) [*Gomphus genei*], *P. genei* (Selys, 1841) [*Onychogomphus genei*], *P. genei* (Selys, 1841) [*Onychogomphus hageni*], *P. lineatus* (Selys, 1850) [*Onychogomphus lineatus*], *P. madegassus* (Karsch, 1890) [*Onychogomphus madegassus*], *P. pumilio* (Rambur, 1842) [*Onychogomphus pumilio*], *P. reinwardtii* (Selys, 1854) [*Onychogomphus reinwardtii*]; **Phanogomphus** *P. exilis* Selys, 1854 [*Gomphus exilis*], *P. graslinellus* Walsh, 1862 [*Gomphus graslinellus*], *P. militaris* Hagen in Selys, 1858 [*Gomphus militaris*], *P. minutus* Rambur, 1842 [*Gomphus minutus*], *P. spicatus* Hagen in Selys, 1854 [*Gomphus spicatus*]; **Phyllocycla** *P. argentina* (Hagen in Selys, 1878) [*Cyclophylla argentina*], *P. diphylla* (Selys, 1854) [*Cyclophylla diphylla*], *P. elongata* (Selys in Selys & Hagen, 1858) [*Cyclophylla elongata*], *P. gladiata* (Hagen in Selys, 1854) [*Cyclophylla gladiata*], *P. ophis* (Selys, 1869) [*Cyclophylla ophis*], *P. pegasus* (Selys, 1869) [*Cyclophylla pegasus*], *P. signata* (Hagen in Selys, 1854) [*Cyclophylla signata*]; **Phyllogomphoides** *P. andromeda* (Selys, 1869) [*Cyclophylla andromeda*], *P. annectens* (Selys, 1869) [*Gomphoides annectens*], *P. audaux* (Hagen in Selys, 1854) [*Gomphoides audaux*], *P. fuliginosus* (Hagen in Selys, 1854) [*Gomphoides fuliginosa*], *P. pacificus* (Selys, 1873) [*Gomphoides pacifica*], *P. regularis* (Selys, 1873) [*Gomphoides regularis*], *P. semicircularis* (Selys, 1854) [*Gomphoides semicircularis*], *P. stigmatus* (Say, 1840) [*Gomphoides stigmata*], *P. suasus* (Selys, 1859) [*Gomphoides suasus*]; **Phyllogomphus** *P. aethiops* Selys, 1854 [id.]; **Platygomphus** *P. dolabratus* Selys, 1854 [id.], *P. feae* Selys, 1891 [id.]; **Progomphus** *P. complicatus* Selys, 1854 [id.], *P. costalis* Hagen in Selys, 1854 [id.], *P. elegans* Belle, 1973 [id.], *P. gracilis* Hagen in Selys, 1854 [*Progomphus elegans*], *P. gracilis* Hagen in Selys, 1854 [id.], *P. intricatus* Hagen in Selys, 1858 [id.], *P. obscurus* (Rambur, 1842) [id.], *P. polygonus* Selys, 1879 [*P. heterogenus*; JB], *P. pygmaeus* Selys, 1873 [*P. pygmaeus*]; **Scalmodomphus** *S. bistrigatus* (Hagen, 1854) [*Onychogomphus bistrigatus*], *S. bistrigatus* (Hagen, 1854) [*Onychogomphus m-flavum*]; **Shaogomphus** *S. postocularis* (Selys, 1869) [*Gomphus epophthalmus*], *S. postocularis* (Selys, 1869) [*Gomphus postocularis*]; **Sieboldius** *S. albardae* Selys, 1886 [*Hagenius albardae*], *S. japonicus* Selys, 1854 [*Hagenius japonicus*]; **Sinicinogomphus** *S. clavatus* (Fabricius, 1775) [*Gomphidia ecorruta*; HZ], *S. clavatus* (Fabricius, 1775) [*Ictinus clavatus*]; **Stenogomphus** *S. consanguis* Selys, 1879 [*Gomphus melanogaster*; ES], **Stylurus** *S. annicola* (Walsh, 1862) [*Gomphus annicola*], *S. flavipes* (Charpentier, 1825) [*Gomphus flavipes*], *S. plagiatus* (Selys, 1854) [*Gomphus elongatus*], *S. plagiatus* (Selys, 1854) [*Gomphus*

plagiatus), *S. scudderi* (Selys, 1873) [*Gomphus scudderi*], *S. spiniceps* (Walsh, 1862) [*Gomphus spiniceps*]; **Trigomphus** *T. interruptus* (Selys, 1854) [*Hemigomphus interruptus*], *T. melampus* (Selys, 1869) [*Gomphus melampus*], *T. nigripes* (Selys, 1887) [*Gomphus nigripes*]; **Zonophora** *Z. batesi* Selys, 1869 [id.], *Z. calippus* Selys, 1869 [id.], *Z. campanulata* (Burmeister, 1839) [id.]

Superfamily Cordulegastroidea

Chlorogomphidae: **Chlorogomphus** *C. magnificus* Selys, 1854 [id.], *C. speciosus* (Selys, 1891) [*Orogomphus Chlorogomphus speciosus*]; **Watanabeopetalia** *W. atkinsoni* (Selys, 1878) [*Orogomphus atkinsoni*], *W. atkinsoni* (Selys, 1878) [*Orogomphus atkinsoni*]

Cordulegastridae: **Anotogaster** *A. basalis* Selys, 1854 [id.], *A. nipalensis* (Selys, 1854) [id.], *A. sieboldii* (Selys, 1854) [id.]; **Cordulegaster** *C. bidentata* Selys, 1843 [*C. bidentatus*], *C. boltoni* (Donovan, 1807) [*C. annulatus*], *C. brevistigma* Selys, 1854 [id.], *C. charpentieri* (Kolenati, 1846) [id.], *C. diadema* Selys, 1868 [id.], *C. diastatops* (Selys, 1854) [id.], *C. dorsalis* Hagen in Selys, 1858 [id.], *C. erronea* Selys, 1878 [*Corduleg. erroneus*], *C. erronea* Selys, 1878 [*C. erroneus*], *C. godmani* McLachlan, 1878 [id.], *C. insignis* Schneider, 1845 [*Cordulegaster bid insignis*¹], *C. insignis* Schneider, 1845 [id.], *C. maculata* Selys, 1854 [*C. maculatus*], *C. obliqua* (Say, 1840) [*C. obliquus*], *C. picta* Selys, 1854 [*C. pictus*], *C. sayi* Selys, 1854 [id.]; **Neallogaster** *N. latifrons* (Selys, 1878) [*Allogaster latifrons*], *N. pekinensis* (McLachlan in Selys, 1886) [*Cordulegaster pekinensis*]

Neopetaliidae: **Neopetalia** *N. punctata* (Hagen in Selys, 1854) [*Petalia punctata*]

Superfamily Libelluloidea

Synthemistidae: **Eusynthemis** *E. brevistyla* (Selys, 1871) [*Synthemis brevistyla*], *E. guttata* (Selys, 1871) [*Synthemis guttata*]; **Palaeosynthemis** *P. primigenia* (Förster, 1903) [*Synthemis beccari*]; **Synthemis** *S. macrostigma* Selys, 1871 [id.], *S. miranda* Selys, 1871 [id.], *S. regina* Selys, 1874 [id.]

Macromiidae: **Didymops** *D. transversa* (Say, 1840) [*D. servilii*], *D. transversa* (Say, 1840) [id.]; **Epophthalmia** *E. australis* Hagen, 1867 [id.], *E. elegans* (Brauer, 1865) [*E. bivittata elegans*; MH], *E. elegans* (Brauer, 1865) [id.], *E. frontalis* Selys, 1871 [id.], *E. vittata* Burmeister, 1839 [*E. cyanocephala*], *E. vittata* Burmeister, 1839 [id.], *E. vittigera* (Rambur, 1842) [id.]; **Macromia** *M. amphigena* Selys, 1871 [id.], *M. amphigena* Selys, 1871 [*M. fraenata*], *M. annulata* Hagen, 1861 [id.], *M. cincta* Rambur, 1842 [*M. bivittata*; MH], *M. cincta* Rambur, 1842 [id.], *M. cingulata* Rambur, 1842 [id.], *M. illinoiensis georgina* Walsh, 1862 [*M. georgina*], *M. magnifica* McLachlan in Selys, 1874 [id.], *M. moorei* Selys, 1874 [id.], *M. splendens* (Pictet, 1843) [id.], *M. taeniolata* Rambur, 1842 [id.], *M. westwoodii* Selys, 1874 [*M. westwoodi*]; **Phyllomacromia** *P. africana* (Hagen in Selys, 1871) [id.], *P. melania* (Selys, 1871) [*Macromia melania*], *P. picta* (Hagen in Selys, 1871) [*P. tropicalis*], *P. sophia* (Selys, 1871) [*Macromia sophia*], *P. trifasciata* (Rambur, 1842) [id.]

Corduliidae: **Aeschnosoma** *A. elegans* Selys, 1871 [id.], *A. forcipula* Hagen in Selys, 1871 [id.], *A. forcipula* Hagen in Selys, 1871 [*A. furcifer forcipula*; MH]; **Cordulia** *C. aenea* (Linnaeus, 1758) [*C. oenea*], *C. aenea* (Linnaeus, 1758) [id.], *C. shurtleffi* Scudder, 1866 [*"Cordulia shurtleff¹"*; MH]; **Dorocordulia** *D. lepida* (Hagen in Selys, 1871) [*Neurocordulia lepida*¹; MH], *D. libera* (Selys, 1871) [*Neurocordulia libera*; MH]; **Epitheca** *E. bimaculata* (Charpentier, 1825) [id.], *E. bimaculata sibirica* Selys, 1887 [*E. sibirica*; MH], *E. canis* (McLachlan, 1886) [*truncata*²; RG], *E. cynosura* (Say, 1840) [*Tetragoneura complanata*], *E. cynosura* (Say, 1840) [*Tetragoneura lateralis*; RG], *E. marginata* Selys, 1887 [id.], *E. princeps* Hagen, 1861 [*Epicordulia princeps*], *E. princeps* Hagen, 1861 [*Epicordulia regina*], *E. semiaquea* (Burmeister, 1839) [*Tetragoneura semiaquea*], *E. spinigera* (Selys, 1871) [*Tetragoneura spinigera*], *E. spinosa* (Hagen in Selys, 1878) [*Tetragoneura spinosa*]; **Helocordulia** *H. selysii* (Hagen in Selys, 1878) [*Neurocordulia selysii*]; **Hemicordulia** *H. asiatica* Selys, 1878 [id.], *H. assimilis* Hagen in Selys, 1871 [id.], *H. australiae* (Rambur, 1842) [id.], *H. novaehollandiae* Selys, 1871 [*H. novaehollandiae*¹], *H. oceanica* Selys, 1871 [id.], *H. similis* (Rambur, 1842) [id.], *H. tau* Selys, 1871 [id.]; **Heteroniaia** *H. heterodoxa* (Selys, 1878) [*Somatochlora heterodoxa*¹]; **Paracordulia** *P. sericea* (Selys, 1871) [*Neocordulia sericea*]; **Procordulia** *P. affinis* (Selys, 1871) [*Somatochlora affinis*], *P. grayi* (Selys, 1871) [*Somatochlora grayi*], *P. irregularis* Martin, 1907 [*Somatochlora irregularis*; JV], *P. jacksoniensis* (Rambur, 1842) [*Somatochlora jacksoniensis*], *P. sambawana* (Förster, 1899) [*Somatochlora lansbergi*], *P. smithii* (White, 1846) [*Somatochlora smithii*]; **Somatochlora** *S. albicincta* (Burmeister, 1839) [id.], *S. alpestris* (Selys, 1840) [id.], *S. arctica* (Zetterstedt, 1840) [id.], *S. cingulata* (Selys, 1871) [id.], *S. elongata* (Scudder, 1866) [id.], *S. ensigera* Martin, 1907 [id.], *S. filosa* (Hagen, 1861) [id.], *S. flavomaculata* (Vander Linden, 1825) [id.], *S. forcipata* (Scudder, 1866) [id.], *S. franklini* Selys, 1878 [*S. franckini*¹], *S. graeseri* Selys, 1887 [id.], *S. linearis* (Hagen, 1861) [id.], *S. metallica* (Vander Linden, 1825) [id.], *S. semicircularis* (Selys, 1871) [id.], *S. tenebrosa* (Say, 1840) [id.], *S. viridiaenea* (Uhler, 1858) [*S. atrovirens*]

Incertae sedis superfamily Libelluloidea: **Cordulephyia** *C. pygmaea* Selys, 1870 [*C. pygmaea*¹], *C. pygmaea* Selys, 1870 [*Chlorophya pygmaea*¹; MH]; **Gomphomacromia** *G. fallax* McLachlan, 1881 [id.], *G. paradoxa* Brauer, 1864 [id.]; **Idionyx** *I. montana* Karsch, 1891 [id.], *I. optata* Selys, 1878 [id.], *I. yolanda* Selys, 1871 [id.]; **Neocordulia** *N. andrognis* (Selys, 1871) [id.], *N. batesi* (Selys, 1871) [id.], *N. setifera* (Hagen in Selys, 1871) [id.], *N. volxemi* (Selys, 1874) [id.]; **Oxygastra** *O. curtisii* (Dale, 1834) [*Eu Cordulia Chlorosoma curtisii*; MH], *O. curtisii* (Dale, 1834) [*O. curtisii*]