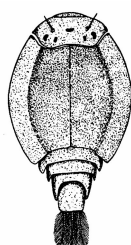


# Catalogue of the Mayflies of Germany, Austria and Switzerland and their Synonyms (Insecta, Ephemeroptera)

by

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Cover: Imago (after VAYSSIERE, 1881) and larva (after SCHOENEMUND, 1930a) of  
*Prosopistoma pennigerum* and pictogram of Germany, Austria and Switzerland

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Authorized translation of

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## 1. Introduction

The knowledge of the mayflies or Ephemeroptera increased considerably in Central Europe in the last 30 years. Beside a number of more or less current faunal lists of all countries a number of modern keys for single countries and even for the whole of Central Europe exist. However, so far a recapitulatory listing which makes at least all subjective synonyms accessible apart from the valid names and designates also relevant misinterpretations in the older literature (nomina abusa) is missing.

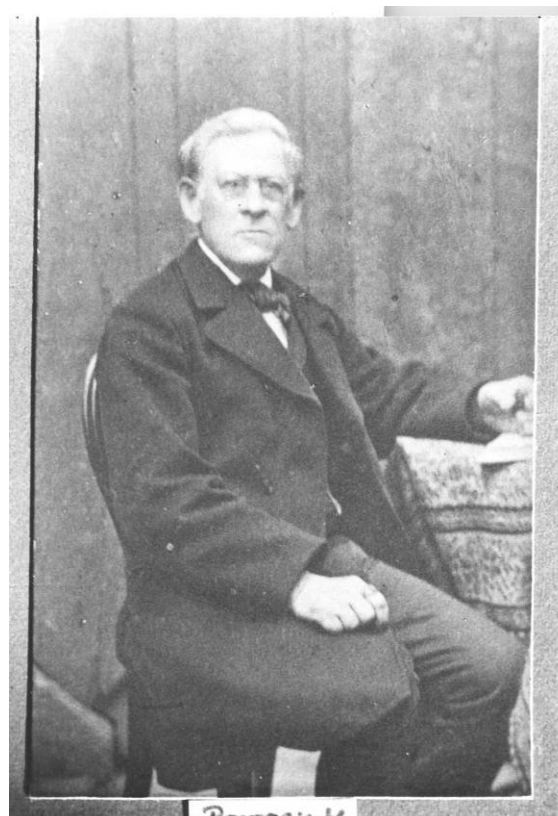
Such a catalogue is required by mayfly specialists as well as by curators of museum collections or it may be helpful for a wide range of entomologists which, for example, in the context of the production of so-called red data lists of endangered animals need reliable assistance when interpreting older faunistic literature.

Michael Rostock (1879: p 83) a famous German entomologist complained about the difficult nomenclatural conditions within the Neuroptera sensu Linnaeus to which the mayflies also belong „Die Untergattungen und Unter-Untergattungen sind schon jetzt so zerplittert und verwirrt, ... , dass sie kein Mensch mehr übersehen kann. Die Arten sind, oft der unbedeutendsten Verschiedenheiten wegen, zu ganz unnöthigen Gattungen ja zu Familien und Ordnungen erhoben, wodurch nur die Uebersicht erschwert wird und der Nachwelt die Reinigung des Augiasstalls vorbehalten bleibt“.

[The sugenera and sub-subgenera are even today so fragmented and confused ... that nobody is able to have a general overview. The species, due to insignificant differences, are frequently upgraded to totally unnecessary genera or even to families or orders with the only result that the overview is complicated and the purification of the Augean stables is reserved for posterity (authors transl.)]

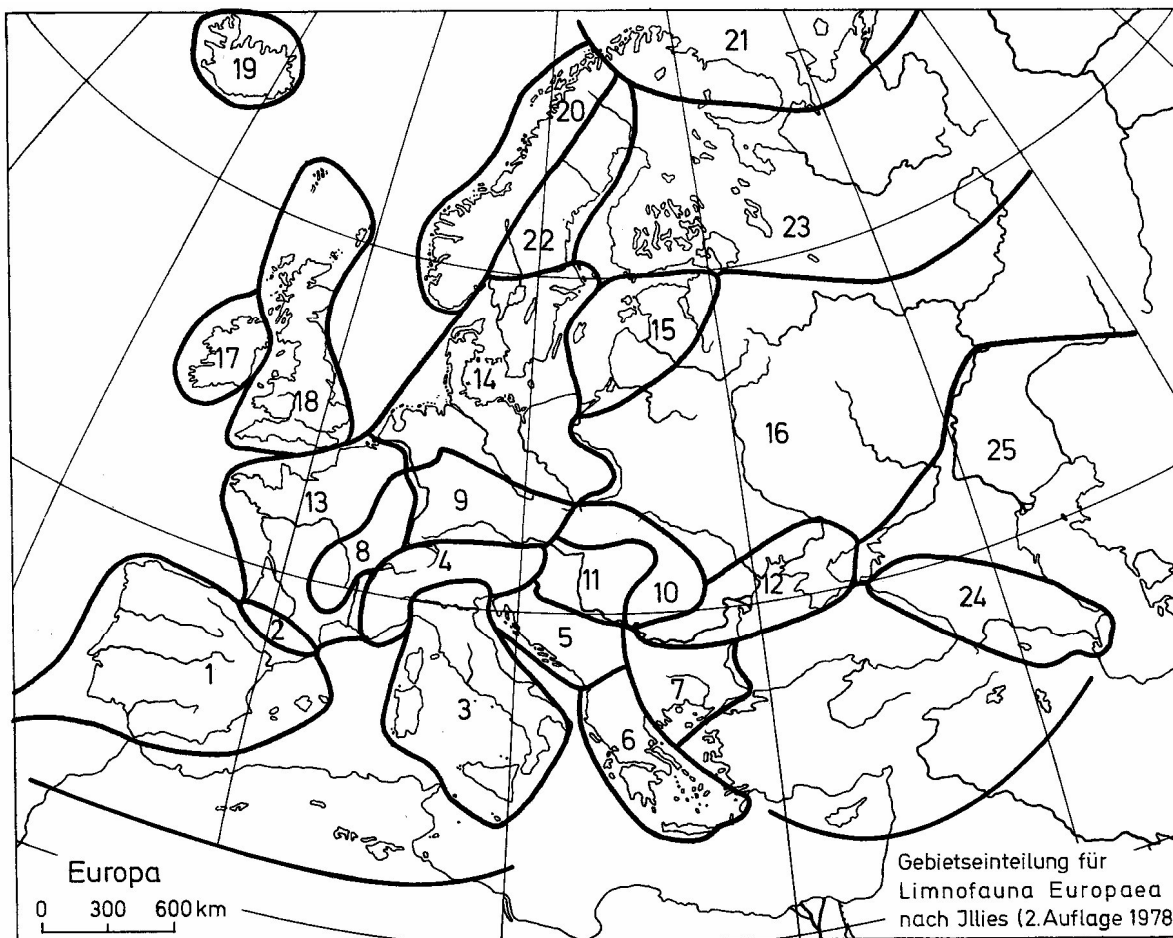
We can treat nomenclatural involvements in general as kinds of formal or judicial decisions. On the other side mayflies are with respect to their taxonomy also a very sophisticated insect order and even today misidentifications, especially within the

species rich genera, are the rule rather than the exception. Keeping in mind that the species composition of Central Europe was only known at a fraction in the 18<sup>th</sup> and 19<sup>th</sup> century and in addition considering that only a few species had been described sufficiently then, it becomes clear that also the synonyms would not comply with modern taxonomic criteria.



**fig. 1:** The teacher and significant German entomologist Michael Rostock (Dretschien) \*21.Apr.1821 – †17.Sep.1893

For these reasons this catalogue should be understood as a guide through the jungle of the widespread nomenclatural literature only. There is definitely no guarantee for the correctness of the nomenclatural activities of the cited authors. But in contrast to most other catalogues the author makes the effort to name the authors required for all nomenclatural operations. If necessary the reader is able to verify the significance of the basical nomenclatural article. In the case of contradictory information adequate annotations are given. Such species are often designated as nomina dubia or “nomina inquirenda” respectively.



**fig. 2:** Limnofaunistic regions after ILLIES (1978): LF 1: Iberian Peninsula, LF 2: The Pyrenees, LF 3: Italy, LF 4: Alps, LF 5: Dinaric Western Balkan, LF 6: Hellenic Western Balkan, LF 7: Eastern Balkan, LF 8: Western Mountains, LF 9: Central Mountain, LF 10: The Carpathians, LF 11: Hungarian Plains, LF 12: Pontic Province, LF 13: Western Lowlands, LF 14: Central Lowlands, LF 15: Baltic Province, LF 16: Eastern Lowlands, LF 17: Ireland, LF 18: England, LF 19: Island, LF 20: Boreal Highlands, LF 21: Tundra, LF 22: Northern Sweden, LF 23: Taiga, LF 24 The Caucasus, LF 25 Caspian Plains.

For these reasons it must be clear that for all users that at least older faunistic records should be interpreted with extreme care. If such records are the only sources for the occurrence of a distinct species in a larger area and are therefore relevant for threat analysis the corresponding collections, as far as they exist must be reviewed.

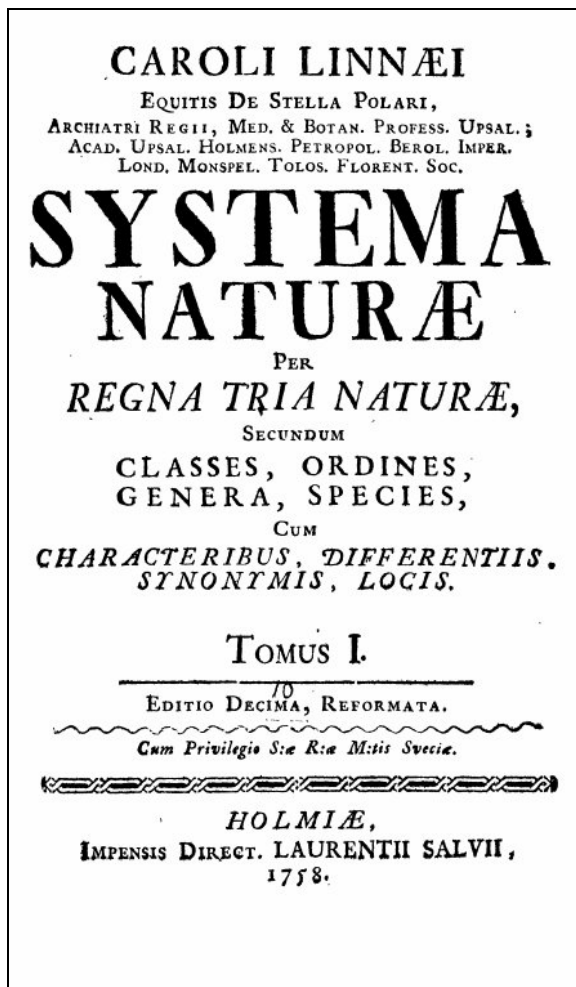
Otherwise it is sometimes only possible to determine particular species in monotypic families or genera after figures in the basic literature.

## 2. Area covered

The catalogue is in the tradition of "Verzeichniss der Neuropteren Deutschlands, Österreichs und der Schweiz" of ROSTOCK (1881), whereas in this work only the mayflies are treated. The variety

of the species is mainly founded on the summarizing work of BAUERNFEIND (1994, 1995) for Austria, SARTORI & LANDOLT (1999) for Switzerland and HAYBACH & MALZACHER (2003) for Germany. Moreover several updating articles which are quoted at the corresponding species texts are considered. In this context I'm very grateful to all colleagues who made their articles available for me.

To assure the account of this catalogue in the German-speaking region at least for some years without essential supplements we extend the area of incorporated species to Central-Europe in a wide sense. It covers here Great Britain, the northern European plains, the central and western mountains and the Alps.



**fig. 3:** The 10th edition of Systema Naturae of Carolus LINNAEUS (1758), starting point for the binominal nomenclature in zoology.

On the other side the species of the eastern European plains or Fennoscandia are only incorporated if they are at least penetrating one of the above mentioned regions.

Species, so far not recorded from Germany, Austria or Switzerland will be marked with a prefixed (\*) in chapter 4. They are only included if recorded from a neighbouring region of the Limnofauna Europaea (Lf) after ILLIES (1978, cf. fig. 2) and if its occurrence in the named area cannot be excluded with safety.

In these cases, as a rule only the nearest neighbouring region is mentioned.

### 3. Methods

Besides some of his own nomenclatural work in a marginal extent this catalogue is mainly the result of extensive bibliographic studies. For instance, all descriptions of central European species since the 10<sup>th</sup> edition of the Systema Naturae of Linnaeus (1758) are sighted and cited if possible in their original form.

In the few cases where this was impossible for me in spite of effort over many years this is marked with a prefixed (\*) in the reference list.

An indispensable starting point of the bibliographic work was the monograph of mayflies of the world by Eaton (1871). This famous author indexed all mayflies orbis terrarum published up to this time as well as their corresponding literature. Moreover, in many cases he revised the collections of the older authors.

Additionally the nomenclatural catalogues of EATON (1883-88), JACOB (1972), HUBBARD (1990), KLUGE (2004), as well as many other smaller works with revisions or nomenclatural notes were considered.

The work of BAUERNFEIND & SOLDAN (in prep.): „Ephemeroptera of Europe“ with extensive synonymies and nomenclature was able to be studied in a small part in a draft stage.

A desirable adoption of the nomenclature in both works was unfortunately not possible for reasons of time.

This catalogue should not be misunderstood as a reference for the German-speaking region or as a nomenclatural revision. The systematic concept of the lists is only mirroring my best subjective understanding and will, as everything in natural sciences, alter with new knowledge.

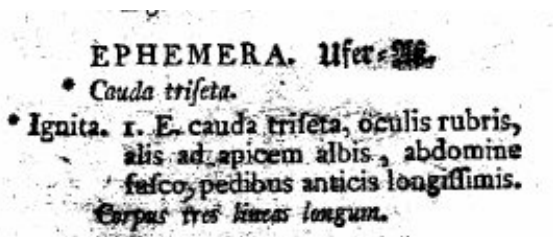
In general we could use any formal valid name for each Taxon, with a good reason even their subjective synonyms.

The use of genera or subgenera for higher taxa is moreover always also merely an expression of personal systematic understanding and is in general only reflecting the intention of the author to handle certain genera in a close or on a wide sense.

#### 4. Systematic List

The systematic index lists all taxa down from the level of the families in a legal nomenclatural notation. The classification follows mainly HUBBARD (1990) and KLUGE (2004), in details also HAYBACH & MALZACHER (2002, 2003). The combination of names which is subjectively favored by the author is printed in italics, initially followed by the objective synonyms and then by the subjective synonyms. Misinterpretations and misdescriptions (mostly nomina abusa) in relevant zoological literature are then listed with a prefixed tilde (~) for "is equivalent to". Incorrect synonymies are printed in squared brackets ( [ ] ). The original nominal combination is listed for all taxa that have been transferred to other genera.

Synonymies on genus and family level are not included. They are treated in a worldwide scope by HUBBARD (1990).



*Ephemerella* Ufer - Aas p. 97

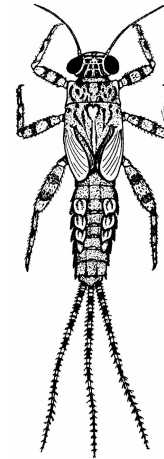
\* *Cauda trisetata*.

*Ignita* I. E. cauda trisetata, oculis rubris, alis ad apicem albis, abdomine fusco, pedibus anticis longissimis.

*Corpus tres lineas longum.*

**fig. 4:** original Latin description of *Ephemerella ignita* (Poda, 1761).

There are 5 objective and 14 subjective synonyms for this variable and common mayfly, most of all European mayflies which is distributed approximately transpalearctic.



**fig. 5:** *Ephemerella ignita*, larva after SCHOENEMUND (1930a).

Attention should be paid to the following notes:

- Nomina nuda are only treated when relevant for the current nomenclatural situation.
- The original authors and dates are given for each taxon name following the recommendation of art. 51 in the Code (ICZN, 1999). Revising authors and other references are given in brackets for a better separation.
- LINNAEUS is consistently written in this latinized form which has been used in the Xth edition of the „Systema naturae“ which is mandatory for the zoological nomenclature, even if species names of following editions have been published under the french spelling form LINNÉ (e. g. ed. XII, 1767).
- The original date of publication of the mayfly section of STEPHENS (1835-36: S. 53 ff.) is 1836, not 1835. The date of edition is April, 30<sup>th</sup>, 1836 expressly noted in a foot note on p. 57.
- Date of publication of all species of J. F. PICTET is here uniformly 1843, not 1843-45. The full text with all descriptions was published most probably in 1843 while all plates with the figures were published separately in 1845 (cf. PETERS et al. 1980). Remark.: Because personally I know no real proof that both parts have been published separately, also 1843-45 should be correct, while 1844 is simply wrong anyway.



Siphonuridae ULMER, 1920 in ULMER (1920a)

*Siphonurus* EATON, 1868 in EATON (1868b)

sg. *Siphonurus* s. str.

*Siphonurus (Siphonurus) aestivalis* EATON, 1903<sup>1</sup>

*Siphylurus aestivalis* Eaton, 1903; (orig.)

*Siphonurus aestivalis*; (nomen emend.) Ulmer (1920a)

*Siphylurus spinosus* Bengtsson, 1909; (syn.) Bengtsson (1917)

*Siphonurus vernalis* Tshernova, 1928a; (syn.) Puthz (1977b)

*Siphonurus (Siphonurus) armatus* EATON, 1870

*Siphonurus armatus* Eaton, 1870; (orig.)

*Siphylurus latus* Bengtsson, 1909; (syn.) Ulmer (1927)

*Siphonurus (Siphonurus) croaticus* ULMER, 1920b

*Siphonurus croaticus* Ulmer, 1920b; (orig.)

*Siphonurus (Siphonurus) lacustris* EATON, 1870

*Siphonurus lacustris* Eaton, 1870; (orig.)

*Siphylurus zetterstedti* Bengtsson, 1909; (syn.) Esben-Petersen (1916)

*Siphonurus pyrenaicus* Navás, 1930; (syn.) Puthz (1977b)

*Siphonurus nuessleri* Jacob, 1972b; (syn.) Puthz (1977b)

sg. *Siphylurella* BENGTTSSON, 1909

*Siphonurus (Siphylurella) alternatus* (SAY, 1824)

*Baetes* [sic] *alternata* Say, 1824; (orig.)

*Siphylurus alternatus*; comb. Eaton (1871)

*Siphonurus alternatus*; (nomen emend.) Ulmer (1920a)

*Siphylurella alternata*; (comb.) Bengtsson (1930a)

*Baetis annulata* Walker, 1853; (syn.) Eaton (1885)

*Siphylurus alternans*; (lapsus) Provancher (1878); (syn.) Eaton (1871)

*Siphylurus linnaeanus* Eaton, 1871; (syn.), Jacob (1972a), Puthz (1977b<sup>2</sup>)

*Siphylurella thomsoni* Bengtsson, 1909; (syn.) Lestage (1924a); Puthz (1977b)

*Siphylurella oblita* Bengtsson, 1909; (syn.?) Bengtsson (1930: via linnaeanus; Puthz (1977b)

~ *Baetis femorata* : Provancher (1876), nec Say; t. Provancher (1878: via alternans)

Ameletidae MCCAFFERTY, 1991

*Ameletus* EATON, 1885

*Ameletus inopinatus* EATON, 1887

*Ameletus alpinus* Bengtsson, 1913; (syn.) Brekke (1965)

*Ameletus eugenii* Sinitshenkova & Varychanova, 1989; (syn.) Kluge (1995)

*Parameletus affinis* Bengtsson, 1904; (nomen nudum) t. Bengtsson (1930a)

*Metreletus* DEMOULIN, 1951

*Metreletus balcanicus* (ULMER, 1920)

*Metretopus balcanicus* Ulmer, 1920 in Ulmer (1920b); (orig.) (typ. gen.)

*Metreletus balcanicus*; (comb.) Demoulin (1951)

*Ameletus hessei* Fizaine, 1931; (syn.) Puthz (1977a)

*Metretopus goetghebueri* Lestage, 1938; (syn.) Puthz (1977a)

*Metreletus hungaricus* Ujhelyi, 1960; (syn.) Puthz (1977a)

Ametropodidae BENGTTSSON, 1913

*Ametropus* ALBARDA, 1878

*Ametropus fragilis* ALBARDA, 1878 (typ. gen.)

*Ametropus eatoni* Brodsky, 1930 in Brodsky (1930a); (syn.) Landa (1969)

*Ametropus albrighi* Traver, 1935 *In*: Needham et al. (1935); (syn.) Jacob (2006)

<sup>1</sup> The generic names *Siphylurus* and *Ecdyurus* are, after ULMER (1920a) et auct., representing unjustified emendations of the older generic names *Siphonurus* and *Ecdyonurus*. Following art. 51.3.1 of the Code (ICZN, 1999), names of authors are not written in parantheses when first published with the incorrect spelling.

<sup>2</sup> It is not understandable why PUTHZ who knows the thesis of JACOB (1972a) very well published this species and some others as „new synonyms“ although they had been detected by JACOB before.

\*Metretopodidae LESTAGE, 1938

\**Metretopus* EATON, 1901

\**Metretopus borealis* (EATON, 1871) (LF 14 tr.)

*Heptagenia borealis* EATON, 1871 (orig.)

*Rhithrogena borealis*; (comb.) Eaton (1885)

*Metretopus norvegicus* Eaton, 1901; (typ. gen.) (syn.) Brekke (1940); cf. Kimmins (1960)

Baetidae LEACH, 1815

*Baetis* LEACH, 1815

sg. *Baetis* s. str.

*Baetis (Baetis) alpinus* (PICTET, 1843)

*Cloë alpina* Pictet, 1843; (orig.)

*Cloeon alpina*; (comb.) Walker (1853)

*Baetis amnicus* Eaton, 1871; (syn.) Eaton (1885)

*Baetis carpathica* Morton, 1910; (syn.) Müller-Liebenau (1969)

*Baetis Doreri* Degrange, 1957a; (syn.) Müller-Liebenau (1969)

*Baetis (Baetis) buceratus* EATON, 1870

*Baetis buceratus* Eaton, 1870; (orig.)

*Baetis scanicus* Bengtsson, 1917; (syn.) Müller-Liebenau (1964)

*Baetis Grandii* Grandi, 1948b; (syn.) Müller-Liebenau (1969)

*Baetis (Baetis) fuscatus* (LINNAEUS, 1761)

*Ephemera fuscata* Linnaeus, 1761; (orig.) (typ. gen.)

*Baetis fuscata*; (comb.) Stephens (1836)

*Cloeon fuscata*; (comb.) Walker (1853)

*Baetis fuscatus*; (comb.) Eaton (1870)

*Ephemera bioculata* Linnaeus, 1758; (syn.) Kimmins (1964), Brinck & Müller-Liebenau (1965)

*Ephemera binoculata* auct. = common inaccurate spelling of *bioculata*

*Ephemera flava* von Paula Schrank, 1776; (syn.) Eaton (1871: via *binoculata*)

*Ephemera diaphana* O.F. Müller, 1776; (syn.) Eaton (1871: via *binoculata*)

? *Ephemera lutea* Fourcroy, 1785 (nomen praeoccupatum) nec Linnaeus; (syn.) Olivier (1791) (via *bioculata*)

*Ephemera notata* Gmélin, 1789; (syn.) Eaton (1871: via *binoculatus*)

*Baetis flavescens* Curtis, 1834; (syn. ?) Eaton (1871: via *binoculatus*)

*Baetis autumnalis* Curtis, 1834; (syn. ?) Eaton (1871: via *binoculatus*)

*Baetis venustus* Eaton, 1885; (syn.) Müller-Liebenau (1967)

*Baetis andalusicus* Navás, 1911; (syn.) Alba-Tercedor (1984)

*Baetis (Baetis) liebenauae* KEFFERMÜLLER, 1974

*Baetis liebenauae* Keffermüller, 1974 (orig.)

*Baetis (Baetis) lutheri* MÜLLER-LIEBENAU, 1967

*Baetis lutheri* Müller-Liebenau, 1967; (orig.)

~ *Baetis subalpinus*: Müller-Liebenau (1960) nec Bengtsson; t. Müller-Liebenau (1967)

*Baetis (Baetis) melanonyx* (PICTET, 1843)

*Cloë melanonyx* Pictet, 1843; (orig.)

*Cloeon melanonyx*; (comb.) Walker (1853)

*Baetis melanonyx*; (comb.) Eaton (1871)

*Baetis kulindrophtalmus* Bogoescu, 1933; (syn.) Müller-Liebenau (1969)

*Baetis principii* Grandi, 1949; (syn.) Müller-Liebenau (1969)

*Baetis bengtssoni* Müller-Liebenau, 1966; (syn.) Müller-Liebenau (1969)

[= *Baetis finitimus* Eaton, 1871; (syn.) Eaton (1885), falsus = vernus; t. Müller-Liebenau (1969)]

*Baetis (Baetis) nexus* NAVÁS, 1918

*Baetis pentaphlebodes* Ujhelyi, 1966; (syn.) Alba-Tercedor (2002)

*Baetis (Baetis) nubecularis* EATON, 1898

*Baetis nubecularis* Eaton, 1898; (orig.)

\**Baetis (Baetis) pavidus* GRANDI, 1951 in Grandi (1951b) (LF 13)

*Baetis parva* Grandi, 1949 (orig.) (nomen praeoccupatum) [nec *Baetis parvus* Dodds, 1923]

*Baetis pavidus*; (nomen novum) Grandi (1951b)

*Baetis pavidus* Grandi, 1949 sensu Grandi, 1953 et auct.

- Baetis (Baetis) scambus* EATON, 1870  
*Baetis scambus* Eaton, 1870; (orig.)  
*Baetis hispanus* Navás, 1915; (syn.) Alba-Tercedor (1984)
- Baetis (Baetis) tracheatus* KEFFERMÜLLER & MACHEL, 1967  
*Baetis tracheatus* Keffermüller & Machel, 1967; (orig.)
- Baetis (Baetis) vardarensis* IKONOMOV, 1962  
*Baetis vardarensis* Ikonov, 1962a; (orig.)
- Baetis (Baetis) vernus* CURTIS, 1834  
*Baetis vernus* Curtis, 1834; (orig.)  
*Ephemera testacea* Gmélin, 1789; (syn.?) Eaton (1871: via phaeops)  
*Ephemera dubia* Stephens, 1836; (syn.) Eaton (1871: via phaeops)  
*Baetis phaeops* Eaton, 1870; (syn.) Eaton (1885)  
*Baetis tenax* Eaton 1870; (syn.) Müller-Liebenau (1969)  
*Baetis finitimus* Eaton 1871; (syn.) Müller-Liebenau (1969)
- sg. *Rhodobaetis* JACOB, 2003
- Baetis (Rhodobaetis) gemellus* EATON, 1885  
*Baetis gemellus* Eaton, 1885; (orig.)  
[= *Baetis rhodani*; (syn.) Kimmins (1960); (species propria ?) t. Müller-Liebenau (1969)]
- Baetis (Rhodobaetis) rhodani* (PICTET, 1843)  
*Cloë rhodani* Pictet, 1843; (orig.)  
*Cloeon rhodani*; (comb.) Walker (1853)  
*Baetis rhodani*; (comb.) Eaton (1871)  
*Baetis (Rhodobaetis) rhodani*; (comb.) Jacob, 2003  
*Baetis bocagii* Eaton, 1885; (syn.) Kimmins (1960)  
*Baetis gemellus* Eaton, 1885; (syn. ?) Kimmins (1960). t. Thomas (1999)  
*Baetis pusillus* Bengtsson, 1912a; (syn.) Müller-Liebenau (1969)  
*Baetis wallengreni* Bengtsson, 1912a; (syn.) Müller-Liebenau (1964)  
*Baetis iberi* Navás, 1913; (syn.) Alba-Tercedor (1984)
- sg. *Nigrobaetis* NOVIKOVA & KLUGE, 1987
- Baetis (Nigrobaetis) muticus* (LINNAEUS, 1758)  
*Ephemera mutica* Linnaeus, 1758; (orig.)  
*Baetis muticus*; (comb.) Eaton (1871: via pumila)  
*Baetis (Nigrobaetis) muticus*; (comb.) Novikova & Kluge (1987)  
*Alainites muticus*; (comb.) Waltz & McCafferty (1994) *In*: Waltz et al. (1994)  
*Ephemera striata* Linnaeus, 1767; (syn.) Linnaeus, 1767  
*Ephemera ciliata* Ström, 1783; (syn.) Wallengren (1882)  
*Cloe pumila* Burmeister, 1839; (syn.?) Eaton (1871); (syn.) Bengtsson (1912b<sup>3</sup>)  
*Baetis muticus intermedius* Alba-Tercedor, 1982a; (syn.) Sartori & Thomas (1991)  
*Baetis furcatus* Navás, 1933; (syn.) Alba-Tercedor (1984)
- Baetis (Nigrobaetis) digitatus* BENGTTSSON, 1912  
*Baetis digitatus* Bengtsson, 1912 in Bengtsson (1912a) (orig.)  
*Baetis (Nigrobaetis) digitatus*; (comb.) Novikova & Kluge (1987)  
? *Baetis rithralis* Soldán & Thomas, 1983; (syn.) Novikova & Kluge (1994)  
*Baetis digigracilis* Novikova (nomen nudum) *In*: Novikova & Kluge (1987); (syn.) Novikova & Kluge (1994)
- Baetis (Nigrobaetis) niger* (LINNAEUS, 1761)  
*Ephemera nigra* Linnaeus, 1761; (orig.)<sup>4</sup> (typ. subgen.)  
*Baëtis niger*; (comb.) Eaton (1870)  
*Baetis (Nigrobaetis) niger*; (comb.) Novikova & Kluge (1987)  
*Nigrobaetis niger*; (comb.) Waltz, McCafferty & Thomas (1994)  
*Baëtis incurvus* Bengtsson, 1912a; (syn.) Müller-Liebenau (1969)

<sup>3</sup> The synonymy of *pumila* BURMEISTER with *mutica* LINNAEUS is well-established, e.g. MÜLLER-LIEBENAU (1969), LANDA (1969), but remains unproved. From the 2 ♂♂ and 1 subimago mentioned in the original description, according to JACOB (1972a) only 1 Subimago (hand written label "*pumila* Br., Halae") is located in the collection of Burmeister. This specimen has been designated as the lectotype by Jacob but is in fact *Choroterpes picteti*. This species name is protected by reasons of nomenclatural stability and because the original description was founded on an imago, we don't apply the specific name *pumilus* Burmeister, following the recommendation of Jacob.

<sup>4</sup> According to EATON (1871: p. 4) in the collection of LINNAEUS' were located "1 ♀ sub. spurious und 1 ♀ sub. ticketted "*nigra*" in LINNÉS MS. of *L. marginata*."

[= *Ephemera cincta* Retzius, 1783; (syn.) Bengtsson (1912b: via *incurvus*), species propria t. Haybach & Jacob (2006)]

sg. *Labiobaetis* NOVIKOVA & KLUGE, 1987

\**Baetis (Labiobaetis) atrebatinus* EATON, 1870 (LF 4, 8, 13, 17, 18)

*Baetis atrebatinus* Eaton, 1870 (orig.) (typ. subgen.)

*Baetis (Labiobaetis) atrebatinus*; (comb.) Novikova & Kluge (1987)

*Labiobaetis atrebatinus*; (comb.) McCafferty & Waltz (1995)

[= *Baetis atrebatinus orientalis* Kluge, 1983; (syn.) Kluge (1995)]; subspecies propria Fujitami et al. (2005)

*Baetis (Labiobaetis) calcaratus* KEFFERMÜLLER, 1972 (species inquirenda)

*Baetis calcaratus* Keffermüller, 1972 in Keffermüller (1972a); (orig.)

*Baetis (Labiobaetis) calcaratus*; (comb.) Novikova & Kluge (1987)

*Labiobaetis calcaratus*; (comb.) McCafferty & Waltz (1995)

*Baetis (Labiobaetis) tricolor* TSHERNOVA, 1928

*Baetis tricolor* Tshernova, 1928b (orig.)

*Baetis (Labiobaetis) tricolor*; (comb.) Novikova & Kluge (1987)

*Labiobaetis tricolor*; (comb.) McCafferty & Waltz (1995)

[= *Cloe propinqua* Walsh, 1863; (syn.) Novikova & Kluge (1987); species propria; McCafferty & Waltz (1995)]

sg. *Acentrella* BENGTTSSON, 1912 in BENGTTSSON (1912a)

*Baetis (Acentrella) inexpectatus* (TSHERNOVA, 1928)

*Pseudocloeon inexpectatum* Tshernova, 1928; (orig.)

*Baetis inexpectatus*; (comb.) Keffermüller (1980)

*Baetis (Acentrella) inexpectatus*; (comb.) Novikova & Kluge (1987)

*Acentrella inexpectata*; (comb.) Jacob (1991)

*Pseudocloeon hyalopterum* Bogoescu, 1951; (syn.) Jacob (1972a)

*Baetis (Acentrella) sinaica* (BOGOESCU, 1931)

*Acentrella sinaica* BOGOESCU, 1931; (orig.)

*Baetis subatrebatinus* Grandi, 1957; (syn.) Müller-Liebenau (1969)

*Baetis pseudatrebatinus* Grandi, 1960; (syn.) Müller-Liebenau (1969) (via *subatrebatinus*)

~ *Baetis atrebatinus* : Grandi (1948a); nec Eaton, t. Müller-Liebenau (1969)

\**Baetopus* KEFFERMÜLLER, 1960

sg. *Baetopus* s. str.

\**Baetopus wartensis* KEFFERMÜLLER, 1960 (LF 14) (typ. gen.)

sg. *Raptobaetopus* MÜLLER-LIEBENAU, 1978

*Baetopus (Raptobaetopus) tenellus* (ALBARDA, 1878)

*Centroptilum tenellum* Albarda, 1878; (orig.)

*Baetopus tenellus*; (comb.) Tshernova (1964)

*Raptobaetopus tenellus*; (comb.) Müller-Liebenau (1978)

*Baetopus (Raptobaetopus) tenellus*; (comb.) Tshernova et al. (1986)

*Baetopus balticus* Kazlauskas & Sanwajtite, 1962; (syn.) Müller-Liebenau (1978)

~ *Baetis* (?) *niger* : Lestage (1919: Larve); t. Müller-Liebenau (1978)

*Centroptilum* EATON, 1869

*Centroptilum luteolum* (O.F. MÜLLER, 1776)

*Ephemera luteola* O.F. Müller, 1776 (orig.) (typ. gen.)

*Baetis luteolus*; (comb.) Eaton (1868b)

*Centroptilum luteolum*; (comb.) Eaton (1869)

*Cloëon ochraceum* Stephens, 1836; (syn.) Eaton (1871)

*Cloëon hyalinatum* Stephens, 1836; (syn.) Eaton (1871)

*Cloe translucida* Pictet, 1843; (syn.) Eaton (1871)

*Ephemera caudata* Ström, 1783; (syn.) Eaton (1885)

? *Ephemera albipes* Scopoli, 1763, (syn.) Eaton (1871)

~ *Cloëon albipennis* : Stephens, 1836 nec Fabricius; t. Eaton (1871)

~ *Cloë halterata* : Burmeister, 1839 nec Fabricius; t. Eaton (1871)

\**Centroptilum lituratum* (PICTET, 1843) (species inquirenda) (LF4)

*Cloe litura* Pictet, 1843 (orig.)

*Cloeon litura*; (comb.) Walker (1853)

Centroptilum ? lituratum; (comb.) Eaton (1871)

*Cloeon* LEACH, 1815

sg. *Cloeon* s. str.

*Cloeon (Cloeon) cognatum* STEPHENS, 1836 (species dubium)

*Cloeon cognatum* Stephens, 1836 (orig.)

*Cloeon dimidiatum* Curtis, 1834; (syn.?) Hagen (1857), Sowa (1975b)

*Cloë affinis* Rambur, 1842; (syn.); Sowa (1975b)

*Cloë apicalis* Costa, 1882; (syn.) Eaton (1885)

~ *Cloeon virgo* : Stephens (1836) nec Olivier; t. Sowa (1975b)

~ *Cloeon dipterum*: Eaton (1871) p.p. (1885) p.p. var 1; Sowa (1975b)

[= *Ephemera diptera* Linnaeus, 1761; (syn.) Eaton (1871), species propria t. Sowa (1975b)]

[= *Ephemera diptera* Linnaeus, 1761; (syn.) Randolph et al. (2003), contra Sowa (1975b)]

*Cloeon (Cloeon) dipterum* (LINNAEUS, 1761)

*Ephemera diptera* Linnaeus, 1761 (orig.)

*Cloeon dipterum* (comb.) Stephens (1836)

*Cloeon diptera*; (comb.) Walker (1853)

*Cloëopsis diptera* (comb.) Eaton (1866)

*Ephemera annulata* O.F. Müller, 1776; (syn.) Müller (1776)

*Ephemera rufula* O.F. Müller, 1776; (syn.) Sowa (1975b)

*Ephemera russula*, (lapsus) auct.; t. Eaton (1871: via *rufula*)

*Cloeon russulum*, (lapsus) auct.; t. Eaton (1871: via *rufula*)

*Cloeon marmoratum* Curtis, 1834 (nomen nudum); (syn.) Eaton (1871)

*Cloeon obscurum* Curtis, 1834; (syn.) Curtis (1834), Pictet (1843)

*Caenis sinensis* Walker, 1853; (syn.?) Eaton (1871: via *russulum*), Kimmins (1960)

*Cloeon zimini* Tshernova, 1930; (syn.) Kluge (1995)

*Cloeon szegedi* Jacob, 1969; (syn. ?) Sowa (1975b), Puthz (1978)

? *Cloeon pallida* Leach, 1815; (syn.) Eaton (1885); cf. aber Sowa (1975b) = *cognatum*

~ *Cloë halterata* : Rambur (1842) nec Fabricius; t. Eaton (1871)

~ *Cloë pumila* : Rambur (1842) nec Burmeister; t. Eaton (1871)

*Cloeon (Cloeon) inscriptum* BENGTTSSON, 1914

*Cloeon inscriptum* Bengtsson, 1914 (orig.)

~ *Cloeon dipterum* : Eaton (1871) p.p.; Eaton (1885) p.p. : Landa (1969) p.p.; t. Sowa (1975b)

~ *Cloeon inscriptum* : Ulmer (1929) : Schoenemund (1930a) : Mikulski (1936): Tschernova (1964); t. Sowa (1975b)

[= *Ephemera diptera*; (syn.) Landa (1969), species propria: Jacob (1972a), Sowa (1975b)]

sg. *Similecloeon* KLUGE & NOVIKOVA, 1992

*Cloeon (Similecloeon) simile* EATON, 1870

*Cloeon simile* Eaton, 1870; (orig.)

*Cloeon (Similecloeon) simile*; (comb.) Kluge & Novikova (1992)

*Procloeon hovassei* Verrier, 1949 in Verrier (1949a); (syn.) Illies (1967), cf. Sowa (1980)

? *Cloeon degrangei* Sowa, 1980; (syn.) Brulin & Masselot (2001)

? *Cloeon viride* Schneider, 1885; (syn.) Keffermüller (1972b); cf. Ulmer (1927)

? *Cloëon praetextum* Bengtsson, 1914; (syn.) Kimmins (1957a); contra Engblom (1996):  
bona species

incl. *Cloëon Schoenemundi* Bengtsson, 1936; contra Engblom (1996): bona species

incl. *Procloeon rabaudi* Verrier, 1949 in Verrier (1949b); p.p. Larve, t. Sowa (1980)

*Procloeon* BENGTTSSON, 1915<sup>5</sup>

sg. *Procloeon* s. str.

*Procloeon (Procloeon) bifidum* (BENGTTSSON, 1912)

*Cloëon bifidum* Bengtsson, 1912 in Bengtsson (1912a); (orig.) (typ. gen.)

*Pseudocloëon bifidum*; (comb.) Bengtsson (1914)

*Procloëon bifidum*; (comb.) Bengtsson (1915)

*Cloeon (Procloeon) bifidum*; (comb.) Kluge & Novikova (1992)

*Procloeon ornatum* Tshernova, 1928 in Tshernova (1928b); (syn.) Illies (1967: via *pseudorufulum*)

<sup>5</sup> Definition of *Procloeon* and *Pseudocentroptiloides* after KLUGE & NOVIKOVA (1992)

*Procloëon pseudorufulum* Kimmins, 1957 in Kimmins (1957b); (syn.) Jacob (1972a), Sowa (1975a)

*Procloëon lychnidense* Ikonomov, 1962 in Ikonomov (1962a); (syn.) Jacob (1972a), Sowa (1975a)

~ *Cloëon rufulum* : Eaton (1885) p.p. (var. 2) nec Müller; t. Kimmins (1957b)

~ *Clöëon rufulum* : Ulmer (1929) nec Müller; t. Jacob (1972a)

~ *Cloëon rufulum* : Schoenemund (1930a) nec Müller; t. Jacob (1972a)

\**Procloëon (Procloëon) macronyx* KLUGE & NOVIKOVA, 1992 (LF 14)

*Cloëon (Procloëon) macronyx* Kluge & Novikova, 1992; (orig.)

~ *Centroptilum nana* : Kazlauskas (1964) (partim larva) nec Bogoescu; t. Kluge & Novikova (1992)

~ *Centroptilum nanum* : Keffermüller & Sowa (1984) (partim larva) nec Bogoescu; t. Kluge & Novikova (1992)

~ *Cloëoptilum nanum* : Kazlauskas (1977) nec Bogoescu; t. Kluge & Novikova (1992)

~ *Centroptilum potamonensis* : Jacob (1973) (partim larva, non imago = *pulchrum*), t. Kluge & Novikova (1992)

*Procloëon (Procloëon) pennulatum* (EATON, 1870)

*Centroptilum pennulatum* Eaton, 1870; (orig.)

*Procloëon pennulatum*; (comb.) McCafferty & Waltz (1990)

*Pseudocentroptilum pennulatum*; (comb.) Belfiore & d'Antonio (1989)

*Cloëon (Procloëon) pennulatum*; (comb.) Kluge & Novikova (1992)

? *Centroptilum infrequens* McDunnough, 1924; (syn.) Lowen & Flannagan (1990)

*Procloëon (Procloëon) pulchrum* (EATON, 1885)

*Centroptilum pulchrum* Eaton, 1885; (orig.)

*Pseudocentroptilum pulchrum*; (comb.) Belfiore & d'Antonio (1989)

*Cloëon (Procloëon) pulchrum*; (comb.) Kluge & Novikova (1992)

*Centroptilum dacicum* Bogoescu & Tabacaru, 1966; (syn.) Keffermüller & Sowa (1975)

*Centroptilum potamonensis* Jacob, 1973, (syn.) Keffermüller & Sowa (1975<sup>6</sup>)

*Centroptilum forlivense* Grandi, 1964; (syn.?) Keffermüller & Sowa (1984)

incl. *Centroptilum parapulchrum* Keffermüller & Sowa, 1975 (species inquirenda)  
nec *Centroptilum pulchrum* Crass, 1947 = *Centroptilum crassi* Demoulin, 1970

sg. *Pseudocentroptilum* BOGOESCU, 1948<sup>7</sup>

\**Procloëon (Pseudocentroptilum) lacustre* (EATON, 1885) (LF 4) (species inquirenda)

*Centroptilum lacustre* Eaton, 1885 (orig.)

*Pseudocentroptilum lacustre*; (comb.) Belfiore & d'Antonio (1989)

*Procloëon (Pseudocentroptilum) stenopteryx* (EATON, 1871) (species inquirenda)

*Centroptilum stenopteryx* EATON, 1871 (orig.)

*Pseudocentroptilum stenopteryx*; (comb.) Belfiore & d'Antonio (1989)

\**Pseudocentroptiloides* JACOB, 1986 In: JACOB & GLAZACZOW (1986)<sup>8</sup>

\**Pseudocentroptiloides nana* (BOGOESCU, 1951) (LF 14)

*Centroptilum nana* Bogoescu, 1951 (orig.)

*Pseudocentroptilum nanum*; (comb.) Belfiore & d'Antonio (1989)

*Cloëon (Pseudocentroptiloides) nana*; (comb.) Kluge & Novikova (1992)

*Pseudocentroptilum shadini* Kazlauskas, 1964 (typ. gen.); (syn.) Kluge & Novikova (1992)

*Pseudocentroptiloides shadini*; (comb.) Jacob & Glazaczow, 1986

~ *Centroptilum nana* : Kazlauskas (1964) (partim: imago); t. Kluge & Novikova, (1992)

~ *Centroptilum nanum* : Keffermüller & Sowa (1984) (partim: imago, non larva); t. Kluge & Novikova (1992)

<sup>6</sup> The holotype of *potamonensis* is a male. Therefore this taxon is a younger subjective synonym of *pulchrum* not of *macronyx*.

<sup>7</sup> The classification of all species within this subgenus is questionable.

<sup>8</sup> A subgeneric placement of *Pseudocentroptiloides* within *Procloëon* would probably also be a good alternative.

Oligoneuriidae ULMER, 1914

*Oligoneuriella* ULMER, 1924

*Oligoneuriella rhenana* (IMHOFF, 1852)

*Oligoneuria rhenana* Imhoff, 1852; (orig.) (typ. gen.)

*Oligoneuriella rhenana*; (comb.) Ulmer (1924)

*Oligoneuria Garumnica* Joly, 1873; (syn.) Eaton (1883)

~ *Oligoneuria anomala* : Pictet (1845: pl. 46) nec Pictet (1843); t. Eaton (1871)

\**Oligoneuriella keffermuelleræ* SOWA, 1973 in SOWA (1973c) (LF 11, 14)

~ *Oligoneuriella mikulskii* : Keffermüller (1964) nec Sowa (1961), t. Sowa (1973c)

\**Oligoneuriella pallida* (HAGEN, 1855) (LF 11, 13, 14)

*Oligoneuria rhenana* var. *pallida* Hagen, 1855; (orig.)

*Oligoneuria pallida*; (comb.) Eaton (1871)

*Oligoneuriella pallida*; (comb.) Sowa (1973c)

*Oligoneuriella mikulskii* Sowa, 1961; (syn.) Sowa (1973c)

*Oligoneuriella poecile* Ikonov, 1962b; (syn.) Jacob (1972a: via *mikulskii*), Sowa (1973c:  
via *mikulskii*)

? *Oligoneuriella mongolica* Soldán & Landa, 1977; (syn.) Kluge (2004)

[= *Oligoneuriella rhenana*; (syn.) Eaton (1871); species propria t. Sowa (1973c)]

\**Oligoneuriella polonica* MOL, 1984 (LF 14)

~ *Oligoneuriella pallida* : Sowa (1973c) nec Hagen; t. Mol (1984)

\**Oligoneurisca* LESTAGE, 1938

\**Oligoneurisca borysthenica* (TSHERNOVA, 1937) (LF 14t, 16) (typ. gen.)

*Oligoneuriella borysthenica* Tshernova, 1937 (orig.) (typ. gen.)

*Oligoneurisca borysthenica*; (comb.) Lestage (1938)

Isonychiidae BURKS, 1953

*Isonychia* EATON, 1871

*Isonychia ignota* (WALKER, 1853)

*Baetis ignota* Walker, 1853; (orig.)

*Isonychia ignota*; (comb.) Eaton (1871)

*Chironetes ignotus*; (comb.) Eaton (1885)

*Palingenia Roeselii* Joly, 1872; (syn.) Lestage (1917, 1924a)

*Jolia roeselii*; (comb.) Eaton (1881)

*Isonychia ferruginea* Albarda, 1878; (syn.) Eaton (1879)

*Isonychia hainanensis* She & You, 1988; (syn.) Tiunova et al. (2004)

Arthropleidae BALTHASAR, 1937<sup>9</sup>

*Arthroplea* BENGTTSSON, 1908

*Arthroplea congener* BENGTTSSON, 1908; (typ. gen.)

*Eatonia borealis* Bengtsson, 1904; (nomen nudum) (syn.) Bengtsson (1908: via *R. elegans*)

*Remipalpus elegans* Bengtsson, 1908; (syn.) Bengtsson (1930a)

*Cinygma mirabilis* Aro, 1910; (syn.) Bengtsson (1930a)

*Haplogenia southi* Blair, 1929; (syn.) Bengtsson (1930a)

*Arthroplea frankenbergeri* Balthasar, 1937; (syn.) Landa (1954)

Heptageniidae NEEDHAM, 1901

*Epeorus* EATON, 1881 in EATON (1881b)

sg. *Epeorus* s. str.

*Epeorus (Epeorus) assimilis* EATON, 1885

~ *Baetis venosa* : Pictet, 1843 (S. 167-168); t. Ulmer (1921: S. 241)

[= *Baetis sylvicola* Pictet, 1865; (syn.) Puthz (1973c); species propria: Thomas et al. (2000a)]<sup>10</sup>

\**Epeorus (Epeorus) torrentium* EATON, 1881 in EATON (1881b) (typ. gen.) (LF 8, 13)

[= *Baetis sylvicola*; (syn.) Jacob (1972a); (species propria)]

sg. *Alpiron* BRAASCH, 2006

<sup>9</sup> The status of this family is under discussion. Many characters give good arguments for a placement within family Heptageniidae.

<sup>10</sup> *Epeorus sylvicola* is an endemic species of the Iberian Peninsula and the Pyrenees.

*Epeorus (Alpiron) alpicola* (EATON, 1871)<sup>11</sup>

*Heptagenia alpicola* Eaton, 1871; (orig.)

*Epeorus alpicola*; (comb.) Eaton (1885)

*Epeorus (Ironopsis) alpicola*; (comb.) Tomka & Zurwerra (1985)

*Iron (Alpiron) alpicola*; (comb.) (typ. subgen.) Braasch (2006)

*Epeorus alpicolus* Thomas, Marie & Brulin, 2000a; (syn.) Thomas & Brulin (2001)

*Iron steinmanni* Leger, 1926; (syn.) Ulmer (1929)

*Iron alpinus* Hubault, 1927; (syn.) Ulmer (1929)

Gattung *Rhithrogena* EATON, 1881 in EATON (1881b)

*Rhithrogena allobrogica* SOWA & DEGRANGE, 1987 in SOWA & DEGRANGE (1987a)

*Rhithrogena intermedia* "Metzler, Tomka & Zurwerra, 1987"; (nomen nudum); (syn.) Bauernfeind & Weichselbaumer (1994)

*Rhithrogena alpestris* EATON, 1885

*Rhithrogena alpicola* Navás, 1935; (syn.) Jacob (1972a), Puthz (1975)

*Rhithrogena (sic) brenneriana* Klapálek, 1905 in Klapálek (1905b); (syn.) Puthz (1975)

*Rhithrogena austriaca* SOWA & WEICHELBAUMER, 1988

*Rhithrogena beskidensis* ALBA-TERCEDOR & SOWA, 1987

~ *Rhithrogena aurantiaca* : Eaton (1885) partim

~ *Baetis aurantiaca* : Rostock (1875), t. Haybach (1998)

~ *Rhithrogena aurantiaca* : Schoenemund (1930a, Fig 42.), t. Haybach (1998)

~ *Rhithrogena diaphana* : Puthz (1973b) nec Navás partim

*Rhithrogena carpatoalpina* KLONOWSKA, OLECHOWSKA, SARTORI & WEICHELBAUMER, 1987

~ *Rhithrogena ferruginea* : Sowa (1971d) nec Navás partim; t. Klonowska et al., (1987)

*Rhithrogena circumtatica* SOWA & SOLDÁN, 1986

*Rhithrogena hybrida* : Sowa (1975c) nec Eaton; t. Sowa & Soldán (1986)

\**Rhithrogena corcontica* SOWA & SOLDÁN, 1986 (LF 9)

*Rhithrogena degrangei* SOWA, 1969

~ *Rhithrogena hybrida* : Ulmer (1927); t. Puthz (1975)

~ *Rhithrogena hybrida* : Ulmer (1929) : Schoenemund (1930a ?); t. Sowa (1969)

*Rhithrogena delphinensis* SOWA & DEGRANGE, 1987 (LF 4)

*Rhithrogena drieri* SOWA, 1971 in SOWA (1971d)

incl. *Rhithrogena colmarsensis* Sowa, 1984 (species inquirenda)

*Rhithrogena germanica* EATON, 1885

*Rhithrogena haarupi* Esben-Petersen, 1909; (syn.) Sowa (1971b)

*Rhithrogena ussingi* Esben-Petersen, 1910; (syn.) Mosely (1932: via haarupi)

*Rhithrogena fradgleyi* Blair, 1929; (syn.) Mosely (1932: via haarupi)

nec *Rhithrogena germanica* : Klapálek (1909): Ulmer (1929): Schoenemund (1930a) =

*R. sowai*; teste Puthz (1972)

*Rhithrogena gratianopolitana* SOWA, DEGRANGE & SARTORI, 1986

*Rhithrogena grischuna* SARTORI & OSWALD, 1988

*Rhithrogena hercynia* LANDA, 1969

*Rhithrogena hybrida* EATON, 1885

*Rhithrogena iridina* (KOLENATI, 1859)

*Baetis iridina* Kolenati, 1859 (orig.)

*Heptagenia iridana* (sic); (comb.) Eaton (1871)

*Heptagenia iridana* (sic); genus incertis Eaton (1887: p. 302)

*Heptagenia iridina*; (emend.) Ulmer (1920)

*Rhithrogena iridina*; (comb.) Puthz (1975)

*Rhithrogena picteti carpathica* Sowa, 1971 in Sowa (1971d); (syn.) Puthz (1975)

*Rhithrogena landai* SOWA & SOLDÁN, 1984

~ *Rhithrogena alpestris* : Landa (1969, p. p. Imago); t. Sowa & Soldán (1984)

<sup>11</sup> The generic treatment of the *Epeorus/Iron* complex or the subgeneric treatment of *Ironopsis/Alpiron* species complex is still under controversial discussion. This combination is therefore somewhat tentative. Because *Iron* is regarded as a synonym of *Epeorus* by many authors worldwide, we integrated *Alpiron* in *Epeorus* instead of *Iron*.



*Rhithrogena loyolaea* NAVÁS, 1922

*Rhithrogena loyolae* (lapsus); Illies (1967), Thomas, (1968b); t. Thomas (1970)

*Rhithrogena tatrix* Zelinka, 1953; (syn.) Thomas (1970)

incl. *Rhithrogena zelinkai* Sowa & Soldán, 1984 (species inquirenda)

~ *Rhithrogena nivata* : Grandi (1960) nec Eaton; t. Thomas (1970)

*Rhithrogena nivata* (EATON, 1871)

*Heptagenia nivata* Eaton, 1871; (orig.)

*Rhithrogena nivata*; (comb.) Eaton (1885)

*Rhithrogena picteti* SOWA, 1971

*Rhithrogena picteti picteti* Sowa, 1971 in Sowa (1971d); (orig.)

*Rhithrogena iridina picteti*; (comb.) Puthz (1975)

*Rhithrogena semicolorata picteti*; (comb.) Zurwerra, Metzler & Tomka (1987)

*Rhithrogena picteti*; (status novus) Sowa & Degrange (1987b)

~ *Baetis semicolorata* : Pictet (1843), nec Curtis; t. Sowa (1971d)

~ *Rhithrogena semitincta* : Kimmins (1936), nec Pictet; t. Sowa (1971d)

*Rhithrogena puthzi* SOWA, 1984

incl. *Rhithrogena endenensis* Metzler, Tomka & Zurwerra, 1985 (species inquirenda), t. Weichselbaumer (1997)

*Rhithrogena puytoraci* SOWA & DEGRANGE, 1987b

~ *Rhithrogena ferruginea* : Sowa (1971d) p.p. nec Navás, 1905; t. Sowa & Degrange (1987b)

*Rhithrogena rolandi* WEICHSELBAUMER, 1995<sup>12</sup>

*Rhithrogena savoiensis* ALBA-TERCEDOR & SOWA, 1987

~ *Rhithrogena aurantiaca* : Eaton (1885) p.p.; probably some central European records

*Rhithrogena semicolorata* (CURTIS, 1834)

*Baetis semicoloratus* Curtis, 1834: (orig.); (typ. gen.)

*Heptagenia semicolorata*; (comb.) Eaton (1871)

*Rhithrogena semicolorata*; (comb.) Eaton (1881b)

*Ephemera fuscata* von Paula Schrank, 1802; (syn.?) Eaton (1871) (nomen dubium)

*Baetis semitincta* Pictet, 1843; (syn.) Eaton (1871), Sowa (1971d)

*Rhithrogena vulpecula* Klapálek, 1905 in Klapálek (1905b); (syn.) Sowa (1971d)

*Rhithrogena grisoculata* Bogoescu, 1958; (syn.) Sowa (1971d)

~ *Rhithrogena semicolorata* var. *grisoculata* : Bogoescu (1933); t. Sowa (1971d)

*Rhithrogena taurisca* BAUERNFEIND, 1992

*Rhithrogena vaillanti* SOWA & DEGRANGE, 1987 in SOWA & DEGRANGE (1987a)

*Kageronia* MATSUMURA, 1931

*Kageronia fuscogrisea* (RETZIUS, 1783)

*Ephemere grise* en dessous de Geer, 1771; (nomen invalidum)

*Ephemera fusco-grisea* Retzius, 1783; (orig.)<sup>13</sup>

[= *Ephemera venosa* Fabricius, 1775; (syn.) Eaton (1871); species propria, t. Haybach & Jacob (2006)]

*Ecdyurus fusco-griseus*; (comb.) Bengtsson (1912b)

*Ecdyonurus fuscogriseus*; (comb.) Ulmer (1920a)

*Heptagenia fuscogrisea*; (comb.) Schoenemund (1930b)

*Heptagenia* (*Kageronia*) *fuscogrisea*; (comb.) Kluge (1988)

*Kageronia fuscogrisea*; (comb.) Jacob et al. (1996), Wang & McCafferty (2004)

*Ephemera nervosa* de Villers, 1789; (syn.) de Villers (1789) (nomen abortivum)

*Heptagenia volitans* Eaton, 1870; (syn.) Bengtsson (1912b)

*Echdyurus* [sic] *convergens* Aro, 1910; (syn.) Tiensuu (1939)

*Ecdyonurus confinis* Tshernova, 1928 in Tshernova (1928b); (syn.) Tshernova (1936)

*Ecdyonurus rossicus* Tshernova, 1928 in Tshernova (1928b); (syn.) Jacob (1972a)

<sup>12</sup> BAUERNFEIND & HUMPEŠCH (2002) regard this species as a supposed synonym „species inquirenda“ of *R. puytoraci*. This seems to be questionable after own taxonomic investigations of locotypical material of all stages of *R. rolandi* - species propria.

<sup>13</sup> After publication of the latinized binominal nomenclature by LINNAEUS (1758) several “Nomenclators” were published. Here RETZIUS translated a former work of DE GEER naming all species binominal after the method of LINNAEUS. In consequence RETZIUS and not DE GEER got authorship of all species.

*Heptagenia* WALSH, 1863

sg. *Heptagenia* s. str.

*Heptagenia (Heptagenia) flava* ROSTOCK, 1878

*Heptagenia flava* Rostock, 1878; (orig.)

*Ephemera citrina* Hummel, 1829; (syn.) Kluge (1987) (nomen oblitum)

*Heptagenia bipunctata* Esben-Petersen, 1916; (syn.) Kluge (1995)

*Heptagenia arsenjevi* Tshernova, 1952; (syn.) Baykova (1972)

*Heptagenia (Heptagenia) longicauda* (STEPHENS, 1836)

*Baetis longicauda* Stephens, 1836; (orig.)

*Heptagenia longicauda*; (comb.) Eaton (1871)

*Ephemera flavipennis* Dufor, 1841; (syn.) Kimmins (1942a)

*Baetis cerea* Pictet, 1843; (syn.) Eaton (1871)

[nec *Heptagenia longicauda* : Eaton (1871) = *Ecdyonurus dispar*, t. Kimmins (1942a)]

*Heptagenia (Heptagenia) sulphurea* (O.F. MÜLLER, 1776)

*Ephemera sulphurea* O.F. Müller, 1776; (orig.)

*Ephemera helvola* Sulzer, 1776; (syn.?) Eaton (1871: via *H. elegans*)

*Ephemera leucophthalma* Ström, 1783; (syn.) Eaton (1885)

*Ephemera ferruginea* Gmélin, 1789 (syn.?) Eaton (1871: via *H. elegans*)

*Baetis elegans* Curtis, 1834; (syn.) Eaton (1885)

*Baetis costalis* Curtis, 1834; (syn.) Eaton (1871: via *elegans*)

*Baetis straminea* Curtis, 1834; (syn. ?) Pictet, 1843

*Baetis cyanops* Pictet, 1843; (syn.) Eaton (1871: via *elegans*)

? *Heptagenia soldatovi* Tshernova, 1952; (syn.) Kluge (1987)

*Ephemera lutea* : Stephens, 1836, nec Linnaeus; t. Eaton (1871: via *H. elegans*) (rev

sg. *Dacnogenia* KLUGE, 1988

*Heptagenia (Dacnogenia) coeruleans* ROSTOCK, 1878

*Heptagenia coeruleans* Rostock, 1878; (orig.)

*Heptagenia (Dacnogenia) coeruleans*; (comb.) Kluge (1988)

*Dacnogenia coeruleans*; (comb.) Wang & McCafferty (2004)

*Heptagenia gallica* Eaton, 1885; (syn.) Rostock (1888)

*Electrogena* ZURWERRA & TOMKA, 1985

*Electrogena affinis* (EATON, 1883)

*Ecdyurus affinis* Eaton, 1883; (orig.)

*Ecdyonurus affinis*; (emend.) Ulmer (1920a)

*Heptagenia affinis*; (comb.) Schoenemund (1930b)

*Electrogena affinis*; (comb.) Zurwerra & Tomka (1986)

*Ecdyonurus fasciocolatus* Sowa, 1974; (syn.) Belfiore et al. (1999)

\**Electrogena gridellii* (GRANDI, 1953) (LF 4)

*Heptagenia gridellii* Grandi, 1953, (orig.)

*Ecdyonurus gridellii*; (comb.) Jacob (1972a), Belfiore (1981)

*Electrogena gridellii*; (comb.) Zurwerra & Tomka (1985)

*Electrogena lateralis* (CURTIS, 1834)

*Baetis lateralis* Curtis, 1834; (orig.); (typ. gen.)

*Heptagenia lateralis*; (comb.) Eaton (1871)

*Ecdyurus lateralis*; (comb.) Eaton (1887)

*Ecdyonurus lateralis*; (emend.) Ulmer (1920a)

*Heptagenia lateralis*; (comb.) Schoenemund (1930b)

*Electrogena lateralis*; (comb.) Zurwerra & Tomka (1985)

*Cloe Brunnea* Rambur, 1842; (syn.) Eaton (1871)

*Baetis obscura* : Pictet, 1843 nec Stephens; t. Eaton (1871)

*Ecdyonurus rivulorum* Navás, 1928; (syn.?) Thomas (1968b)

*Heptagenia concii* Grandi, 1953; (syn.) Belfiore (1981)

*Electrogena ujhelyii* (SOWA, 1981)

*Ecdyonurus ujhelyii* Sowa, 1981; (orig.)

*Electrogena ujhelyii*; (comb.) Zurwerra & Tomka (1986)

*Electrogena rivuscellana* Sartori & Landolt, 1991 *In*: Landolt et. al. (1991); (syn.) Belfiore & Desio (1995)

~ *Ecdyonurus subalpinus* : Ujhelyii (1966) nec Klapálek; t. Sowa (1981)

~ *Ecdyonurus gridellii* : Jacob (1972a, 1974a) nec Grandi

- ~ *Electrogena gridellii* : Zurwerra & Tomka (1985) nec Grandi
- ~ *Electrogena quadrilineata* : Zurwerra & Tomka (1985) nec Landa  
incl. *Ecdyonurus samalorum* Landa & Soldán, 1982 (species inquirenda)
- Electrogena quadrilineata* (LANDA, 1969)
- Heptagenia quadrilineata Landa, 1969; (orig.)
- Ecdyonurus quadrilineatus*; (comb) Jacob (1972a); Belfiore (1981)
- Electrogena quadrilineatus*; [sic] (comb.) Zurwerra & Tomka (1985)

*Ecdyonurus* EATON, 1868 in EATON (1868a)

*venosus*-Gruppe

*Ecdyonurus aurantiacus* (BURMEISTER, 1839)

- Baetis aurantiaca Burmeister, 1839; (orig.)
- Ecdyonurus aurantiacus*; (comb.) Jacob (1972a), additional Puthz (1973b)
- Ecdyurus Pazsiczkyi* Pongrácz, 1913; (syn.) Jacob (1972a); cf. also Puthz (1973b)
- [= *Ecdyonurus fluminum* : Grandi (1960) nec Pictet; (syn.) Puthz (1973b); = *E. belfiorei*; Haybach & Thomas (2002)]
- ~ *Ecdyonurus fluminum* : Eaton (1887: "light specimens") nec Pictet, Thomas (1968a)
- ~ *Ecdyonurus fluminum* : Schoenemund (1930a: partim Imago fig. 27) nec Pictet, t. Kimmins (1942b), Haybach (1998)
- ~ *Ecdyonurus fluminum* : Landa (1969) nec Pictet; t. Puthz (1973b)

*Ecdyonurus dispar* (CURTIS, 1834)

- Baetis dispar Curtis, 1834; (orig.)
- Ecdyonurus dispar*; (comb.) Kimmins (1942b)
- Baetis subfusca Stephens, 1836; (syn.) Eaton (1871: via *H. longicauda* : Eaton nec Stephens)
- Ephemera angustipennis Rambur, 1842; (syn.) Eaton (1871: via *fluminum*)
- Baetis fluminum Pictet, 1843; (syn.) Thomas (1968a)
- [= *Heptagenia longicauda* : Eaton (1871) nec Stephens; t. Kimmins (1942b)]
- [= *Ecdyonurus venosus* : Eaton (1887) nec Fabricius, (partim) t. Kimmins (1942b)]

*Ecdyonurus insignis* (EATON, 1870)

- Heptagenia insignis Eaton, 1870; (orig.)
- Ecdyurus insignis*; (comb.) Eaton (1887)
- Ecdyonurus insignis*; (emend.) Ulmer (1920a)
- Ecdyurus rhenanus* Neeracher, 1910; (syn.) Ulmer (1929)
- ~ *Baetis montana* : Hagen (1863) nec Pictet; t. Eaton (1870)

*Ecdyonurus macani* THOMAS & SOWA, 1970

*Ecdyonurus ruffii* GRANDI, 1953

- Ecdyonurus wautieri* FONTAINE, 1964; (syn.) Puthz (1975)
- Ecdyonurus ruffoi* Belfiore & d'Antonio, 1991; (syn.) Bauernfeind (1997)

*Ecdyonurus starmachi* SOWA, 1971 in SOWA (1971a)

*Ecdyonurus submontanus* LANDA, 1969

- Ecdyonurus fluminum* : Bogoescu (1958) nec Pictet; t. Sowa (1971a)
- Ecdyonurus fluminum* : Bogoescu & Tabacaru (1962) nec Pictet; t. Sowa (1971a)

*Ecdyonurus torrentis* KIMMINS, 1942 in KIMMINS (1942b)

*Ecdyonurus venosus* (FABRICIUS, 1775)

- Ephemera venosa Fabricius, 1775; (orig.); (typ. gen.)
- Baetis venosa; (comb.) Stephens (1836)
- Ecdyonurus venosus*; (comb.) Eaton (1868a: Fußnote)
- Heptagenia venosa; (comb.) Eaton (1871)
- Ecdyurus venosus*; (incorr. emend.) Eaton (1887)
- Ecdyonurus venosus*; (emend.) Ulmer (1920a)
- Ephemera berlinensis O.F. Müller, 1776; (syn. ?) Eaton (1871)
- Ephemera nigrimana Dufor, 1841 (syn. ?) Eaton (1883) (nomen dubium)
- Baetis purpurascens Pictet, 1843; (syn.) Eaton (1871); Kimmins (1942b)
- Baetis forcipula Pictet, 1843; (syn.) Ulmer (1921)<sup>14</sup>
- Baetis montana : Hagen, 1863 (partim); (syn.) Eaton, 1887
- Ecdyurus quaesitor* Eaton, 1883; (syn.) Eaton, 1887
- Ecdyonurus forcipula*: Schoenemund (1930a), nec Pictet, p.p. Haybach (1996)
- [= *Ephemera fusco-grisea* Retzius, 1783; (syn.) Eaton (1871), species propria]

<sup>14</sup> The designation of a lectotype from the collection of KOLLAR in the natural history museum of Vienna is still in progress.

[= *Baetis dispar* Curtis, 1834; (syn.) Burmeister (1839) et Eaton (1871), species propria]

#### *helveticus*-Gruppe

*Ecdyonurus alpinus* HEFTI, TOMKA & ZURWERRA, 1987

*Ecdyonurus austriacus* KIMMINS, 1958

[= *Ecdyonurus picteti* Meyer-Dür, 1864; (syn.) Puthz (1975); species propria: Hefti & Tomka (1986)]

*Ecdyonurus austriacus*; (status novus) Hefti, Tomka & Zurwerra (1989)

*Ecdyonurus carpathicus* SOWA, 1973 in SOWA (1973a)

*Ecdyonurus helveticus* EATON, 1883

*Ecdyurus helveticus* Eaton, 1883 (orig.)<sup>15</sup>

*Ecdyonurus helveticus*; (emend.) Ulmer (1920a)

*Ecdyurus italicus* Eaton, 1883; (syn.) Kimmins (1942a)

*Ecdyonurus bollenganus* Navás, 1933; (syn.) Thomas (1968b)

*Ecdyonurus parahelveticus* HEFTI, TOMKA & ZURWERRA, 1986

*Ecdyonurus picteti* (MEYER-DÜR, 1864)

*Baetis Picteti* Meyer-Dür, 1864; (orig.)

*Heptagenia Picteti*; (comb.) Eaton (1871)

*Ecdyonurus picteti*; (comb. et status novus) Puthz (1975)

*Heptagenia nigrescens* Klapálek, 1908; (syn.) Puthz (1975)

[= *Ephemera venosa*; (syn.) Rostock (1878), species propria, Puthz, 1975]

[= *Ecdyonurus austriacus* Kimmins, 1958; (syn.) Puthz (1975), species propria, Hefti & Tomka (1986)]

\**Ecdyonurus silvaegabretae* SOLDÁN & Godunko, 2006 (LF 9)

*Ecdyonurus subalpinus* KLAPÁLEK, 1907<sup>16</sup>

*Ecdyurus subalpinus* Klapálek, 1907; (orig.)

*Ecdyonurus subalpinus*; (emend.) Ulmer (1920a)

[= *Ecdyonurus zelleri* Eaton, 1885; (syn.) Jacob (1972a); species propria]

*Ecdyonurus zelleri* EATON, 1885<sup>17</sup>

*Ecdyurus zelleri* Eaton, 1885; (orig.)

*Ecdyonurus zelleri*; (emend.) Kimmins (1942a)

[= *Ecdyurus forcipula* Pictet, 1843 ex MS Kollar (syn.) Eaton (1885), species propria]

[= *Ecdyurus helveticus* Eaton, 1883; (syn.) Kimmins (1942a), species propria Kimmins (1958)]

[= *Ecdyonurus epeorides* Demoulin, 1955; (syn.) Kimmins (1958), species propria Jacob & Braasch (1984)]

#### Leptophlebiidae BANKS, 1900

*Choroterpes* EATON, 1881 in EATON (1881a)

*Choroterpes picteti* (EATON, 1871)

*Potamanthus marginatus* : Pictet, 1843 nec Linnaeus, t. Eaton (1871)

*Leptophlebia Picteti* Eaton, 1871; (orig.)

*Habrophlebia Picteti*; (comb.) Eaton (1881a)

*Choroterpes Picteti*; (comb.) Eaton (1884)

*Choroterpes lusitanica* Eaton, 1881 in Eaton (1881a); (syn.) Eaton (1883); questionable, cf. Bauernfeind (1998)

*Thraululus* EATON, 1881 in EATON (1881a)

*Thraululus bellus* EATON, 1881 in EATON (1881a); (typ. gen.)

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<sup>15</sup> cf. foot note 1

<sup>16</sup> cf. foot note 1

<sup>17</sup> cf. foot note 1

*Habroleptooides* SCHOENEMUND, 1929

*Habroleptooides auberti* (BIANCHERI, 1954)

*Habrophlebia* (*Habroleptooides*) *auberti* Biancheri, 1954 (orig.)

*Habroleptooides auberti*, (comb.) Illies (1967)

*Habroleptooides confusa* SARTORI & JACOB, 1986

~ *Leptophlebia modesta* : Eaton, 1871, 1884 nec Hagen; t. Sartori & Jacob (1986)

~ *Habroleptooides modesta* : Schoenemund, 1929 auct. nec Hagen; t. Sartori & Jacob (1986)

~ *Habrophlebia fusca* : Klapálek, 1909 nec Curtis; t. Schoenemund (1929)

*Habrophlebia* EATON, 1881 in EATON (1881a)

*Habrophlebia eldae* JACOB & SARTORI, 1984

~ *Habrophlebia fusca* : Ikonomov (1963); t. Jacob & Sartori (1984)

*Habrophlebia fusca* (CURTIS, 1834)

*Ephemera fusca* Curtis, 1834; (orig.)

*Potamanthus fuscus*; (comb.) Pictet (1843)

*Leptophlebia fusca* (comb.) Eaton (1868b)

*Habrophlebia fusca*; (comb.) Eaton (1881a)

*Ephemera minor* Stephens, 1836; (syn.) Eaton (1871)

*Baetis cingulata* Stephens, 1836; (syn.) Eaton (1871)

*Potamanthus brunneus* Pictet, 1843 (syn.) Eaton (1871)

*Habrophlebia konjarensis* Ikonomov, 1963; (syn.) Jacob & Sartori (1984)

nec *Habrophlebia fusca* : Ikonomov (1963), = *H. eldae*, t. Jacob & Sartori (1984)

nec *Habrophlebia fusca* : Klapálek (1909), = *H. confusa*; t. Schoenemund (1929)

*Habrophlebia lauta* EATON, 1884

~ *Potamanthus cinctus* : Pictet (1843: p. 219, 1845 pl. 28, 1-6) : Walker (1853); nec Retzius t. Eaton (1884)

~ *Leptophlebia mesoleuca* : Eaton (1873) : Rostock (1878), nec Brauer; t. Ulmer (1921)

~ *Habrophlebia mesoleuca* : Eaton (1884) : Klapálek (1909), nec Brauer; t. Ulmer (1921)

*Habrophlebia lauta* McLachlan, 1884 (nomen nudum)

*Leptophlebia* WESTWOOD, 1840

*Leptophlebia* s. str.

*Leptophlebia* (*Leptophlebia*) *marginata* (LINNAEUS, 1767)

*Ephemera marginata* Linnaeus, 1767 (orig.)

[*Potamanthus marginatus*; (comb.) Pictet (1843) falsus = *Choroaterpes picteti*]

*Leptophlebia marginata*; (comb.) Eaton (1871)

*Ephemera stigma* Stephens, 1836 nec Gmelin; (syn.) Hagen (1849), Eaton (1871; rev.)

*Ephemera talcosa* Stephens, 1836; (syn.) Hagen (1857), Eaton (1871; rev.)

*Ephemera procellaria* Fueßlin, 1775; (syn.) Schwarz (1830)

*Ephemera viridescens* Fourcroy, 1785; (syn.) Olivier (1791)

*Leptophlebia* (*Leptophlebia*) *vespertina* (LINNAEUS, 1758)

*Ephemera vespertina* Linnaeus, 1758; (orig.); (typ. gen.)

*Leptophlebia vespertina*; (comb.) Westwood (1840)

(?) *Blasturus vespertinus*; (comb.) Eaton (1884)

*Ephemera albipennis* Retzius, 1783; (syn.) Retzius (1783)

*Baetis fusca* Burmeister, 1839; (syn.) Walker (1853)

*Ephemera vitreata* Zetterstedt, 1840; (syn.) Bengtsson (1912b)

*Leptophlebia Meyeri* Eaton, 1884; (syn.) Bengtsson (1912b)

*Euphyurus albitarsis* Bengtsson, 1909; (syn.) Bengtsson (1912b)

sg. *Paraleptophlebia* LESTAGE, 1917<sup>18</sup>

*Leptophlebia* (*Paraleptophlebia*) *cincta* (RETZIUS, 1783)

*Ephémère à ceinture blanche* De Geer, 1771; (nomen invalidum)

*Ephemera cincta* Retzius, 1783 (orig.); (typ. gen./subgen.)

*Leptophlebia cincta*; (comb.) Eaton (1871)

*Paraleptophlebia cincta*; (comb.) Lestage (1917)

*Leptophlebia cincta*; (comb.) Tshernova et al. (1986)

*Leptophlebia* (*Paraleptophlebia*) *cincta*; (comb.) Kluge (1997a)

<sup>18</sup> The subgeneric treatment seems to be necessary in Holarctic view after KLUGE (1997), in Europe however the traditional generic placement of *Paraleptophlebia* seems also to be possible.

*Ephemera nigra* Fourcroy, 1785, nec Linnaeus; (nomen praeoccupatum) (syn.) Eaton (1871)  
*Ephemera inanis* Gmelin, 1789; (syn.) Eaton (1871)  
*Ephemera hyalinata* Zetterstedt, 1840; (syn.) Eaton (1871)  
*Leptophlebia placita* Bengtsson, 1917; (syn.) Puthz (1978)  
*Cloë fuscata* : Pictet (1843) nec Linnaeus; t. Eaton (1871)  
*Cloëon fuscata* : Walker (1853) nec Linnaeus, t. Eaton (1871)  
[*Potamanthus cinctus*; (comb.) Pictet (1843); nomen abusum = *Habrophlebia lauta*; t. Eaton (1884)]  
[= *Ephemera halterata* Fabricius, 1777; (syn.?) Eaton (1871), = *Caenis* sp.; Haybach & Jacob (2006)]  
[= *Ephemera albipennis* Fabricius, 1793; (syn.) Eaton (1871), = *Baetis* sp., Haybach & Jacob (2006)]  
[= *Ephemera vitreata* Zetterstedt, 1840; (syn.) Eaton (1871) sub. *vitreata* (lapsus); = *vespertina* (Bengtsson, 1912b, rev.)]  
[= *Baetis incurvus* Bengtsson, 1912 in Bengtsson (1912a); (syn.) Bengtsson (1912b), falsus t. Haybach & Jacob (2006)]

***Leptophlebia (Paraleptophlebia) submarginata* (STEPHENS, 1836)**

*Ephemera submarginata* Stephens, 1836; (orig.)<sup>19</sup> (rev.)  
*Potamanthus submarginatus* (comb.) Pictet (1843)  
*Leptophlebia submarginata*; (comb.) Eaton (1884)  
*Paraleptophlebia submarginata*; (comb.) Lestage (1917)  
*Leptophlebia (Paraleptophlebia) submarginata*; (comb.) Jacob (1972a), Kluge (1997a)  
*Ephemera dispar* Stephens, 1836; (syn.) Eaton (1871: via *Leptophlebia helvipes*) (rev.)  
*Ephemera helvipes* Stephens, 1836; (syn.) Eaton (1871, 1884) (rev.)  
*Baëtis reticulata* Burmeister, 1839; (syn.?) Eaton (1871: via *Leptophlebia helvipes*)  
*Potamanthus castaneus* Pictet, 1843; (syn.) Puthz (1978)  
*Potamanthus Geerii* Pictet, 1843 (syn.) Eaton (1871)  
*Cloëon culiciformis* : Walker (1853) nec Linnaeus; (syn.) Eaton (1871)  
*Leptophlebia helvipes*; (comb.) Eaton (1871); (syn.) Eaton (1884)

***Leptophlebia (Paraleptophlebia) weneri* ULMER, 1920**

*Paraleptophlebia Weneri* Ulmer, 1920b; (orig.)  
*Leptophlebia (Paraleptophlebia) weneri*; (comb.) Jacob (1972a), Kluge (1997a)  
*Paraleptophlebia tumida* Bengtsson, 1930 in Bengtsson (1930b); (syn.) Landa (1969)

**\*Behningiidae MOTAS & BAČESKO, 1938**

**\**Behningia* LESTAGE, 1929**

**\**Behningia ulmeri* LESTAGE, 1929 (LF 14); (typ. gen.)**  
*Behningia Ulmeri* LESTAGE, 1929 (orig.)  
*Behningia lestagei* MOTAS & BAČESKO, 1938; (syn.) LANDA (1969)

**Potamanthidae ALBARDA, 1888**

***Potamanthus* PICTET, 1843**

***Potamanthus luteus* (LINNAEUS, 1767)**

*Ephemera lutea* Linnaeus, 1767; (orig.); (typ. gen.)  
*Potamanthus luteus*; (comb.) Pictet (1843)  
*Ephemera reticulata* Fourcroy, 1785; (syn.) Olivier 1791  
*Ephemera hyalina* Panzer, 1804; (syn.) Pictet (1843: sub. *hyalinata*)  
*Baetis mellea* Curtis, 1834; (syn.) Eaton (1871)  
*Baetis marginalis* Burmeister, 1839; (syn.) Hagen (1849)  
*Ephemera Flavicans* Rambur, 1842; (syn.) Eaton (1871: rev.)  
*Ephemera Chlorotica* Rambur, 1842; (syn.) Eaton (1871: rev.)  
*Potamanthus Ferreri* Pictet, 1843; (syn.) Bae & McCafferty (1991)  
*Eucharidis Reaumuri* Joly & Joly; 1876 (syn.) Eaton (1884: rev.)  
*Ephemera marginata* : Müller (1776) nec Linnaeus (nomen abusum); t. Eaton (1884)  
[= *Baetis cerea* Pictet, 1843; (syn.) Hagen, 1849 (falsus) = *Heptagenia longicauda*]

<sup>19</sup> EATON (1871) classified *L. helvipes* not *L. submarginata* as the valid name, although *L. submarginata* was listed before by STEPHENS. Primal 1884 EATON gave *L. submarginata* priority.

Ephemeridae LATREILLE, 1810

*Ephemera* LINNAEUS, 1758

*Ephemera* s. str.

*Ephemera (Ephemera) danica* O.F. MÜLLER, 1764

*Ephemera danica* O.F. Müller, 1764 (orig.)

*Ephemera cognata* Stephens, 1836; (syn.) Pictet (1843); Hagen (1857) & Eaton (1871) rev.

*Ephemera Hispanica* Rambur, 1842; (syn.) Hagen (1866); Eaton (1871: rev.)

*Ephemera maculata* de Villers, 1789, nec Poda (nomen praeoccupatum); (syn.) Eaton (1883)

*Ephemera vulgata* : Pictet, 1843 nec Linnaeus; t. Eaton (1871)

[= *Ephemera vulgata* Linnaeus, 1758; (syn.) Šámalová & Šámal (1930); species propria]

[= *Ephemera parnassiana* Demoulin, 1958, (syn.) Jacob (1974a), Puthz (1978) et auct., (species propria) Thomas & Parpet (2005)]

*Ephemera (Ephemera) lineata* EATON, 1870

*Ephemera lineata* Eaton, 1870 (orig.)

*Ephemera hellenica* Demoulin, 1955; (syn.) Bauernfeind (2003)

*Ephemera danica* : Pictet (1843) nec Müller; t. Eaton (1870)

*Ephemera lutea* : Burmeister (1839) nec Linnaeus; t. Jacob et al., (1975)

[= *Ephemera orientalis* McLachlan, 1875; (syn.) Imanishi (1940), species propria t. Tshernova (1973)]

*Ephemera (Ephemera) vulgata* LINNAEUS, 1758; (typ. gen.)

*Ephemera maculata* Linnaeus, 1747; (syn.) Eaton (1871) (nomen invalidum)

*Ephemera vulgata* Linnaeus, 1758; (orig.)

*Ephemera communis* Retzius, 1783; (syn.) Retzius (1783) (nomen abortivum)

*Ephemera hispanica* Navás, 1903 nec Rambur; (syn.) Navás (1906), Alba-Tercedor (1982b)

[= *Ephemera maculata* de Villers, 1789 nec Poda ; (syn.) Olivier (1791), falsus = *danica* t. Eaton (1883)]

\**Ephemera (Ephemera) zettana* KIMMINS, 1937 (LF 4)

*Ephemera paulae* Grandi, 1955; (syn.) Jacob (1972a), Jacob et al. (1975)

sg. *Sinephemera* KLUGE, 2004

*Ephemera (Sinephemera<sup>20</sup>) glaucops* PICTET, 1843

*Ephemera glaucops* Pictet, 1843; (orig.)

*Ephemera (Sinephemera) glaucops*; (comb.) Kluge (2004)

*Ephemera lutea* : Sulzer (1776) nec Linnaeus; t. Pictet (1843)

*Ephemera lutea* : Rambur (1842) nec Linnaeus; t. Eaton (1871)

[= *Ephemera lutea* : Burmeister (1839) nec Linnaeus; Pictet (1843); falsus = *E. lineata* t. Jacob et al. (1975)]

Palingeniidae ALBARDA, 1888

*Palingenia* BURMEISTER, 1839

*Palingenia longicauda* (OLIVIER, 1791)

*Hemerobius Clutius*, 1634 (nomen invalidum)

*Ephemerum Swammerdam*, 1675 (nomen invalidum)

*Ephemera longicauda* Olivier, 1791; (orig.) (typ. gen.)

*Palingenia longicauda*; (comb.) Burmeister (1839)

*Ephemera flos-aquae* Illiger, 1801; (syn.) Burmeister (1839)

*Ephemera swammerdiana* Latreille, 1805; (syn.) Burmeister (1839); Eaton (1871, rev.)

*Ephemera Swammerdamiana* Shaw, 1806; (syn.) Eaton (1871)

~ *Semblis marginata* : Panzer (1804) nec Panzer (1799), t. Eaton (1871)

[= *Ephemera fuliginosa* Boeber [in Georgi], 1802; (syn.) Eaton (1871); species propria]

[= *Palingenia sublongicauda* Tshernova, 1949; (syn.) Jacob (1974), Puthz (1978), Kluge (2004); species propria Jacob (1977), Soldán (1978)]

\**Palingenia fuliginosa* (BOEBER [in GEORGI], 1802) (LF 12)

*Ephemera fuliginosa* Boeber [in Georgi], 1802 (orig.)

*Palingenia fuliginosa*; (comb.) Hagen (1873)

*Ephemera gigantea* Boeber [in Illiger], 1801; (nomen nudum); (syn.) Soldán (1978)

<sup>20</sup> It is not clear today whether all species names in KLUGE (2004) comply with all requirements of the Code.

Polymitarciidae BANKS, 1900

*Ephoron* WILLIAMSON, 1802

*Ephoron virgo* (OLIVIER, 1791)

- Ephemera virgo Olivier, 1791; (orig.)
- Palingenia virgo; (comb.) Pictet (1843)
- Polymitarcys virgo; (comb.) Eaton (1868b)
- Ephoron virgo; (comb.) Spieth (1940)
- Ephemera maroccana Fabricius, 1793; (syn.?) Pictet (1843<sup>21</sup>)
- Palingenia horaria Burmeister, 1839; (syn.) Pictet (1843)
- Ephemera lutea : Panzer (1804) nec Linnaeus; (syn.) Eaton (1871)
- Ephemera Albigennis : Rambur (1842) nec Retzius; t. Pictet (1843)

Ephemerellidae KLAPÁLEK, 1909

*Ephemerella* WALSH, 1863

*Ephemerella ignita* (PODA, 1761)<sup>22</sup>

- Ephemera ignita Poda, 1761; (orig.)
- Ephemerella ignita; (comb.) Eaton (1871)
- Ephemerella (Torleya) ignita; (comb.) Kluge (1997b)
- Serratella ignita; (comb.) Jacob (1993)
- Ephemerella (Serratella) ignita; (comb.) Tshernova et al. (1986)
- Ephemera erythrophthalma von Paula Schrank, 1802; (syn.) Eaton (1871)
- Ephemera apicalis Stephens, 1836; (syn.) Eaton (1871: rev.)
- Ephemera diluta Stephens, 1836; (syn.) Eaton (1871: rev.)
- Ephemera rosea Stephens, 1836; (syn.) Hagen (1857 rev.: via E. fusca : Stephens), Eaton (1871 rev.)
- Ephemera rufescens Stephens, 1836; (syn.) Pictet (1843), Hagen (1857 rev: via E. fusca : Stephens), Eaton (1871: rev.)
- Baetis obscura Stephens, 1836; (syn.) Eaton (1871: rev.)
- Potamanthus aeneus Pictet, 1843; (syn.) Eaton (1884)
- Potamanthus gibbus Pictet, 1843; (syn.) Eaton (1884)
- Ephemerella lactata Bengtsson, 1909; (syn.) Brekke (1965: via torrentium)
- Ephemerella torrentium Bengtsson, 1917; (syn.) Ulmer (1920a); Brekke (1965)
- Ephemerella sibirica Tshernova, 1952; (syn.) Baykova (1972)
- Drunella karasuensis Kustareva, 1976; (syn.) Kluge (1995)
- Ephemerella antuensis Su & You, 1989; (syn.) Kluge (2004)
- Ephemera fusca : Stephens (1836) nec Curtis t. Eaton (1871)

*Ephemerella mesoleuca* (BRAUER, 1857)<sup>23</sup>

- Potamanthus mesoleucus Brauer, 1857; (orig.)
- Ephemerella mesoleuca; (comb.) Ulmer (1921)
- Serratella mesoleuca: (comb.) Jacob (1993)
- ? Ephemerella maculocaudata Ikononov, 1961; (syn.) Studemann & Tomka (1989), (species inquirenda)
- nec Habrophlebia mesoleuca: Rostock, Eaton, Klapálek = H. lauta; t. Ulmer (1921)

*Ephemerella mucronata* (BENGTSSON, 1909)

- Chitonophora mucronata Bengtsson, 1909; (orig.)
- Chitonophora Krieghoffi Ulmer, 1920 in Ulmer (1920b); (syn.) Jacob (1972a)
- Ephemerella mucronata krieghoffi; (comb.) Jacob (1972a)
- Ephemerella unicolorata Ikononov, 1961; (syn.) Jacob (1972a: via E. mucronata krieghoffi)
- Ephemerella mucronata unicolorata; (comb.) Soldán (1982)
- Ephemerella krieghoffi intermedia Keffermüller, 1979; (syn.) Studemann et al. (1992), Jacob (1993)
- Ephemerella aronii Eaton, 1908; (syn., partim Abbildung, nec Beschreibung) t. Ulmer (1943)
- Ephemerella moffatae Allen, 1977; (syn.) Jacobus & McCafferty (2003)

*Ephemerella notata* EATON, 1887

- = Chitonophora sp. ? *sensu* Lestage (1917: p. 363); kontra Allen & Edmunds (1965)<sup>24</sup>
- [= Ephemerella aronii Eaton, 1908; (syn.) Jacob (1972a); species propria]

<sup>21</sup> Synonym is questionable after EATON (1871: p. 60): "The species from Morocco is possibly distinct from *P. virgo*".

<sup>22</sup> The generic concept of the family urgently needs a revision. The Palearctic taxon *Ephemera ignita* has to be placed in *Ephemerella* s. str. not in *Serratella* after the revisions of ALLEN & EDMUNDS (1963, 1965), contra JACOB 1993! Russian authors such as KLUGE or TSHERNOVA combined *E. ignita* first in *Serratella*, then in *Torleya* based on a single character of the larval gills. However, because the phylogenetic meaning of the character is unclear for me, *E. ignita* is here treated conservative in genus *Ephemerella* again.

<sup>23</sup> For the generic concept see foot note 22.

<sup>24</sup> ALLEN & EDMUNDS applies this figure of LESTAGE wrongly to the Nordic circum tundra sibling species *E. aurivillii*, which is naturally missing in Central Europe.



\**Eurylophella* TIENSUU, 1935

\**Eurylophella karelica* TIENSUU, 1935 (LF 14); (typ. gen.)

*Melanameletus brunnescens* Tiensuu, 1935; (syn.) Jacob (1972a)

*Eurylophella lithuanica* Kazlauskas, 1959; (syn.?) Allen & Edmunds (1963), Illies (1967), (syn.) Jacob (1972a)

? *Melanameletus brunnescens* Tiensuu, 1935; (syn.) Allen & Edmunds (1963)

[= *Melanameletus brunnescens* Tiensuu, 1935; (syn.) Illies (1967)]

*Torleya* LESTAGE, 1917

*Torleya major* (KLAPÁLEK, 1905)

*Ephemerella major* Klapálek, 1905 in Klapálek (1905a); (orig.)

*Torleya major*; (comb.) Ulmer (1928)

*Torleya belgica* Lestage, 1917 (typ. gen.); (syn.) Landa (1969)

*Torleya nazarita* Alba-Tercedor & Derka, 2003; (syn.) Jacobus, Zhou & McCafferty (2004)

\**Neoephemeridae* BURKS, 1953

*Neoephemera* MCDUNNOUGH, 1925

\*sg. *Leucorhoenanthus* LESTAGE, 1931

\**Neoephemera (Leucorhoenanthus) maxima* (JOLY, 1870) (LF 13, 15)

*Caenis maxima* Joly, 1870; (orig.)

*Neoephemera maxima*; (comb.) Kazlauskas (1959)

*Neoephemera (Leucorhoenanthus) maximus*; (comb.) Jacob (1972a)

*Leucorhoenanthus maximus*; (comb.) Tshernova et al. (1986)

*Rhoënanthus macedonicus* Ulmer, 1920 in Ulmer (1920b), typ. gen.; (syn.) Illies (1967)

*Leucorhoenanthus macedonicus*; (comb.) Lestage (1931)

*Neoephemera (Leucorhoenanthus) macedonica*; (comb.) Demoulin (1962)

*Oreianthus macedonicus*; (comb.) Ikononov (1962c)

*Caenidae* NEWMAN, 1853

*Brachycercus* CURTIS, 1834<sup>25</sup>

\**Brachycercus europaeus* KLUGE, 1991, (LF 13, 15)

*Brachycercus pallidus* : Kazlauskas (1965: partim larva, non imago), : Kazlauskas (1977); :

Soldán (1986), nec *B. pallidus* Tshernova (1928a) = *harrisellus*; t. Kluge (1991)

*Brachycercus harrisellus* CURTIS, 1834

"Ephemeron" Harris, 1776; (nomen invalidum), zit. nach Arvy (1980)

*Brachycercus Harrisella* Curtis, 1834; (orig.) (typ. gen.)

*Caenis Harrisella*; (comb.) Stephens (1836)

*Brachycercus harrisellus*; (nom. emend.) Stephens (1836)

*Caenis pennata* Stephens, 1836; (syn.) Eaton (1871), Kimmins (1971)

[= *Oxycypha luctuosa* Burmeister, 1839; (syn.) Eaton (1871, 1884); species propria]

*Brachycercus pallidus* Tshernova, 1928 in Tshernova (1928a); (syn.) Illies (1967), Kluge (1991) rev.

*Brachycercus magnus* Tshernova, 1952; (syn.) Kluge (1991)

\**Brachycercus minutus* Tshernova, 1952 (LF 13, 14)

*Cercobrachys minutus*; (comb.) Soldán (1986)

*Brachycercus minutus*; (comb.) Kluge (1991)

*Caenis* STEPHENS, 1836

*Caenis beskidensis* SOWA, 1973 in SOWA (1973b)

*Caenis horaria* (LINNAEUS, 1758)

*Ephemera horaria* Linnaeus, 1758; (orig.)

*Caenis horaria*; (comb.) Bengtsson (1912b)

*Ordella horaria*; (comb.) Tshernova (1952)<sup>26</sup>

*Ephemera minima* Linnaeus, 1747; (syn.?) Eaton (1871: via *dimidiata*); (nomen invalidum)

*Ephemera minima* O.F. Müller, 1776; (syn. ?) Eaton (1871: via *dimidiata*)

<sup>25</sup> This genus is treated sensu lato according to KLUGE (1991, 2004).

<sup>26</sup> Not accepted because *Ordella* CAMPION, 1923 is regarded in general as a younger objective synonym of *Caenis* STEPHENS, 1836.

- Ephemera halterata Fabricius, 1777; (syn.) Bengtsson (1912b)  
 Brachycercus minima Curtis, 1834; (syn. ?) Eaton (1871: via dimidiata)  
 Brachycercus Chironomiformis Curtis, 1834; (syn.) Eaton (1884: via halterata)  
 Caenis dimidiata Stephens, 1836; (syn.?) Eaton (1871), Bengtsson (1912b)  
 Caenis argentata Pictet, 1843; (syn.) Ulmer (1920a, 1921: via halterata)  
 Caenis dimidiata var. fennica Aro, 1928; (syn.) Saaristo (1966)  
 Caenis lactella Eaton, 1884; (syn.) Malzacher (1986)  
 [= Oxycypha lactea Burmeister, 1839; (syn.) Eaton (1884: via dimidiata); species propria]  
 ~ Caenis horaria fennica : Tiensuu (1939); t. Saaristo (1966)  
 ~ Caenis lactea : Pictet, 1843 nec Burmeister; t. Malzacher (1986)
- Caenis lactea** (BURMEISTER, 1839)  
 Oxycypha lactea Burmeister, 1839; (orig.)  
 Caenis lactea; (comb.) Jacob (1974b)  
 Caenis nocturna Bengtsson, 1917; (syn.) Jacob (1974b)  
 Caenis undosa Tiensuu, 1939; (syn.) Saaristo (1966: via nocturna); cf. Jacob (1972a)  
 [= Brachycercus chironomiformis Curtis, 1834; (syn.) Eaton (1871), falsus Eaton (1884)]
- Caenis luctuosa** (BURMEISTER, 1839)  
 Oxycypha luctuosa Burmeister, 1839; (orig.)  
 Caenis luctuosa; (comb.) Pictet (1843)  
 Caenis moesta Bengtsson, 1917; (syn.) Jacob (1974b)  
 Caenis felsinea Grandi, 1951 in Grandi (1951a); (syn.) Jacob (1974b)  
 [=Brachycercus Harrisella Curtis, 1834; (syn.?) Eaton (1871); species propria]
- Caenis macrura** STEPHENS, 1836  
 Ephemera brevicauda Fabricius, 1793; (syn. ?) Eaton (1871)  
 Caenis interrupta Stephens, 1836; (syn.) Eaton (1871) rev.  
 Caenis grisea Pictet, 1843; (syn.) Eaton (1871)  
 Caenis oophora Pictet, 1843; (syn.) Ulmer (1920a, 1921)  
 [= Ephemera halterata Fabricius, 1777; (syn.) Eaton (1884); falsus, t. Bengtsson (1912b = horaria)  
 [= Brachycercus Chironomiformis Curtis, 1834; (syn.) Eaton (1884) via halterata; falsus, t. Bengtsson (1912b) = horaria]  
 Caenis macrura Stephens, 1836; (typ. gen.); (species propria, status nov.) Bengtsson (1917)
- Caenis pseudorivulorum** KEFFERMÜLLER, 1960  
 [= *Caenis beskidensis* Sowa, 1973; (syn.) Kluge (2004); species propria]  
 [= *Caenis pseudorivulorum belfiorei* Malzacher, 1986; (syn.) Kluge (2004); species propria]
- Caenis pusilla** NAVÁS, 1913  
 Caenis rhenicola Malzacher, 1976; (syn.) Alba-Tercedor & Malzacher (1986)
- Caenis rivulorum** EATON, 1884  
 Caenis dimidiata var. rivulorum Eaton, 1884; (orig.)  
 Caenis rivulorum; Eaton (1888, p. 349 Index) (status novus)  
 Caenis nivea Bengtsson, 1917; (syn.) Saaristo (1966)
- Caenis robusta** EATON, 1884  
 Caenis incus Bengtsson, 1912 in Bengtsson (1912a); (syn.) Degrange (1957b)  
 Caenis ulmeri Brodsky, 1930 in Brodsky (1930b); (syn.) Malzacher (1993)  
 [= *Ordella miliaria* Tshernova, 1952; (syn.) Braasch (1982), species propria, Kluge (1997b)]

Prosopistomatidae LAMEERE, 1917

*Prosopistoma* LATREILLE, 1833

*Prosopistoma pennigerum* (O.F. MÜLLER, 1785)

- "Binocle ... queque en plumet" Geoffroy, 1762; (nomen invalidum) Hubbard (1979)  
 Limulus pennigerus O.F. Müller, 1785; (orig.)  
 Binoculus foliaceus Fourcroy, 1785; (syn.) (nomen invalidum) Hubbard (1979)  
 Binoculus pisciforme Duméril, 1816; (syn.) Eaton (1884: via foliaceus)  
 Prosopistoma punctifrons Latreille, 1833; (syn.) Eaton (1884: via foliaceus)

## 5. Nomenclature in the species groups

- Valid species of the systematic listing are printed in *italics*, invalid species are printed normal.
- For the sake of clarity all synonymies refer to the original combination of the species.
- We give the family used in the systematic listing for all nomenclatural valid species. If the genus of the original combination is differing the genus used in the systematic list is also given.
- All species are printed in the original spelling, regardless whether they are correct after modern nomenclatural view or not, e.g. taxa with capitals in the species name or hyphens etc. so called „nomina imperfecta“. They are only corrected if there may be the possibility of a misinterpretation (nomen correctum). However the correct spelling of the generic and specific names is given in the systematic list.
- We give only the first page of the original description, not all pages! If needed or helpful, we give additional numbers of plates, figures or numbers in catalogues etc.
- All species are listed alphabetically after their species name, then after their generic names. When two taxa are identical we indicate at first the older combination because the younger combinations are often only misinterpretations (nomina abusa) of the older ones.

## A

- aeneus, *Potamanthus* PICTET, 1843 (p. 229, 1845: pl. 35)  
is according to EATON (1884) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- æstivalis, *Siphonurus* EATON, 1903 (p. 30) (nomen imperfectum)  
fam. Siphonuridae, genus *Siphonurus*.
- affinis, Cloë RAMBUR, 1842 (p. 298)  
is according to PICTET (1843) and EATON (1871) a subjective junior synonym of *Ephemera diptera*, according to SOWA (1975b), a subjective junior synonym of *Ephemera cognata*, fam. Baetidae, genus *Cloeon*.
- affinis, *Ecdyurus* EATON, 1883 (pl. 24, fig. 46e)  
fam. Heptageniidae, genus *Electrogena*.  
Remark.: Textual descriptions in EATON 1883-88: p. 293-294 were not published before 1887. The nomination of the specific name with a figure on the plate in the year 1883 is however a clear indication in the sense of the article 12.2.7. of the code (ICZN, 1999), particularly because the figure was published long before the due date in 1930. Accordingly already KIMMINS (1965) acts as the first revising author when he designates the lectotype.
- affinis, *Parameletus* BENGTTSSON, 1904 (p. 131)  
is a nomen nudum, which has been declared by BENGTTSSON (1930a) himself a synonym of *Ameletus inopinatus*, fam. Ameletidae.
- albipennis, *Cloëon sensu* STEPHENS (1836: p. 69) nec FABRICIUS (nomen abusum)  
is according to revision by EATON (1871) referring to *Centroptilum luteolum*, fam. Baetidae.
- albipennis, *Ephemera* RETZIUS, 1783 (p. 57) (nomen abortivum)  
is already after specifications of the same author an unnecessary replacement name for *Ephemera vespertina* LINNAEUS, fam. Leptophlebiidae, genus *Leptophlebia*.
- albipennis, *Ephemera* FABRICIUS, 1793 (p. 70) (nomen praeoccupatum)  
is according to my own opinion a primary homonym of *E. albipennis* RETZIUS, 1783. This species has been regarded as a subjective junior synonym of *Ephemera cincta* by EATON (1871). After a revision of the type by HAYBACH & JACOB (2006) it was in fact a female of genus *Baetis*, subgenus *Nigrobaetis*.
- Albipennis, *Ephemera sensu* RAMBUR, (1842: p. 296) nec RETZIUS (nomen abusum)  
is according to PICTET (1843) referring to *Ephemera virgo*, fam. Polymitarciidae, genus *Ephoron*. Remark.: RAMBUR himself already treated *Palingenia horaria* BURMEISTER, 1839 correctly as synonym.
- Albipes, *Ephemera* SCOPOLI, 1763 (p. 264) (nomen imperfectum)  
is according to EATON (1871) under reserve a subjective senior synonym of *Ephemera luteola* O.F. MÜLLER, 1776, genus *Centroptilum*, fam. Baetidae.
- albitarsis, *Euphyurus* BENGTTSSON, 1909 (p. 4)  
is according to BENGTTSSON (1912b) a subjective junior synonym of *Ephemera vespertina*, fam. Leptophlebiidae, genus *Leptophlebia*.
- albrighti, *Ametropus* TRAVER, 1935 (p. 431)  
*In*: NEEDHAM, TRAVER, HSU (1935)  
is according to JACOB (2006) a subjective junior synonym of *Ametropus fragilis*, fam. Ametropodidae.
- allobrogica, *Rhithrogena* SOWA & DEGRANGE, 1987 (p. 484)  
fam. Heptageniidae. Remark.: *R. allobrogica* was taken into synonymy of *R. intermedia* by mistake by TOMKA & RASCH (1993). The latter name is based on a nomen nudum and thus cannot call for priority, cf. BAUERNFEIND & WEICHSELBAUMER (1994).
- alpestris, *Rhithrogena* EATON, 1885 (p. 255)  
fam. Heptageniidae.
- alpestris, *Rhithrogena sensu* LANDA (1969: p. 165, p.p. Imago) (nomen abusum)  
is according to SOWA & SOLDÁN (1984) referring to *Rhithrogena landai*, fam. Heptageniidae.
- alpicola, *Heptagenia* EATON, 1871 (p. 148 pl. 6, fig. 19)  
fam. Heptageniidae, genus *Epeorus* (*Alpiron*). Remark.: BRAASCH (2006) gives good reasons to integrate the European *alpicola*-group to its own subgenus within *Iron* and not within the western nearctic subgenus *Ironopsis* within *Epeorus*. Because *Iron* is systematically critical itself by holarctic view, we tentatively place *Alpiron* as a separate westpalearctic taxon in *Epeorus* s. l.

- alpicola, Rhithrogena NAVÁS, 1935 (p. 40) is according to JACOB (1972a) a subjective junior synonym of *Rhithrogena alpestris*, fam. Heptageniidae, see PUTHZ (1975).
- alpicolus, Epeorus THOMAS, MARIE & BRULIN 2000a (p. 86) is according to THOMAS & BRULIN (2001) an unjustified emendation and thus a younger objective synonym of *Heptagenia alpicola*, fam. Heptageniidae. Authorship according to article 33.2.3, ICZN (1999).
- alpina, Cloë PICTET, 1843 (p. 257, 1845: pl. 40, fig. 5) fam. Baetidae, genus *Baetis*.
- alpinus, Ameletus BENGTTSSON, 1913 (p. 303, foot note) is according to BREKKE (1965) a subjective junior synonym of *Ameletus inopinatus*, fam. Ameletidae.
- alpinus, Iron HUBAULT, 1927 (p. 111) is according to ULMER (1929) a subjective junior synonym of *Heptagenia alpicola*, genus *Epeorus* (*Alpiron*), fam. Heptageniidae.
- alpinus, *Ecdyonurus* HEFTI, TOMKA & ZURWERRA, 1987 (p. 172) fam. Heptageniidae.
- alternata, *Baetes* [sic] SAY, 1824 (p. 304) see *alternatus*, genus *Siphonurus* (*Siphurella*), fam. Siphonuridae.
- amnicus, *Baetis* EATON, 1871 (p. 117, T. 5., figs. 24, 24a) is according to EATON (1885) a subjective junior synonym of *Cloë alpina* PICTET; fam. Baetidae, genus *Baetis*.
- andalusicus, *Baetis* NAVÁS, 1911 (p. 206, pl. 4, fig. 1) is according to ALBA-TERCEDOR (1984) after revision of the type material a subjective junior synonym of *Ephemera fuscata* L.; fam. Baetidae, genus *Baetis*.
- angustipennis, *Ephemera* RAMBUR, 1842 (p. 295) (nomen dubium) Remark.: EATON (1871) places this species within the genus *Heptagenia*, that is the whole family Heptageniidae in terms of today. The type specimen is according to EATON a ♀-Subimago. Then EATON (1885) declares the name *angustipennis* (lat. about the "brachyurous" a "nomen ineptum", lat. about "improper name". He declares it a subjective senior Synonym of *Baetis fluminum* PICTET, 1843, although *angustipennis* has priority.
- anomala, *Oligoneuria sensu* PICTET, 1845 (pl. 46!), nec PICTET, 1843 is referring to *Oligoneuria rhenana*, fam. Oligoneuriidae, genus *Oligoneuriella*. Remark.: PICTET describes in his Monograph on the one hand the Neotropical taxon *Oligoneuria anomala* (p. 291, pl. 47), which is after all a valid taxon and typical species of genus *Oligoneuria*, which is the typical genus of the family Oligoneuriidae. In the same book PICTET figures, according to EATON (1871), on pl. 46 the paleartic taxon *O. rhenana*. ULMER (1924) detects the self-reliance of both taxa and erected for *rhenana* the new genus *Oligoneuriella*.
- annulata, *Baetis* WALKER, 1853 (p. 567) is according to EATON (1885) a subjective senior synonym of *Siphurus linneanus*; and thus a subjective junior synonym of *Siphonurus* (*Siphurella*) *alternatus*, fam. Siphonuridae.
- annulata, *Ephemera* O.F. MÜLLER, 1776 (p. 143) (nomen abortivum) is already according to its original description referring to *Ephemera diptera* L. and thus an unnecessary replacement name, fam. Baetidae, genus *Cloëon*.
- antuensis, *Ephemerella* SU & YOU, 1989 (p. 181) is according to KLUGE (2004) a subjective junior synonym of *Ephemera ignita*; genus *Ephemerella*, fam. Ephemerellidae.
- apicalis, Cloë COSTA, 1882 (p. 34) is according to EATON (1885), a subjective junior synonym of *Ephemera diptera*. According to SOWA, (1975b) it is a subjective junior synonym of *Cloëon cognatum*; fam. Baetidae.
- apicalis, *Ephemera* STEPHENS, 1836 (p. 59) is according to EATON (1871) after revision of the type material a subjective junior synonym of *Ephemera ignita*; genus *Ephemerella*, fam. Ephemerellidae.
- armatus, *Siphonurus* EATON, 1870 (p. 6) fam. Siphonuridae.
- argentata, *Caenis* PICTET, 1843 (p. 279; 1845: pl. 43, fig. 6) is according to ULMER (1921, 1920a) a subjective junior synonym of *Ephemera halterata* and thus of *Caenis macrura*, fam. Caenidae.
- Aronii, *Ephemerella* EATON, 1908 (p. 149) According to ULMER (1943) the figures in the original description refer to

*E. mucronata*, fam. Ephemerellidae, but not the description = *E. aurivillii*.  
arsenjevi, *Heptagenia* TSHERNOVA, 1952 (p. 255)  
is according to BAYKOVA (1972) a subjective junior synonym of *Heptagenia flava*, fam. Heptageniidae.  
*assimilis*, *Epeorus* EATON, 1885 (p. 239) fam. Heptageniidae.  
Remark.: PUTHZ (1973c) took this species into synonymy with *Epeorus sylvicola*, later considered as a species propria again by THOMAS et al. (2000a).  
*Atrebatinus*, *Baetis* EATON, 1870 (p. 4) (nomen imperfectum)  
is the typical species of the subgenus *Labiobaetis*, see fam. Baetidae, genus *Baetis* (*Labiobaetis*).  
*atrebatinus*, *Baetis* sensu GRANDI (1948a); nec EATON (nomen abusum)  
is according to MÜLLER-LIEBENAU (1969) referring to *Acentrella sinaica*, fam. Baetidae, genus *Baetis*.  
*Auberti*, *Habrophlebia* (*Habroleptoides*) BIANCHERI, 1954 (p. 161) (nomen imperfectum)  
fam. Leptophlebiidae.  
*aurantiaca*, *Baetis* BURMEISTER, 1839 (p. 801) is according to JACOB (1972a) not belonging to *Rhithrogena* (see notes there), but *Ecdyonurus*, fam. Heptageniidae.  
*aurantiaca*, *Baetis* sensu ROSTOCK, 1875 nec BURMEISTER (nomen abusum)  
refer with high probability to *Rhithrogena beskidensis*, fam. Heptageniidae, which is currently and historically known from the surroundings of Dresden from where Rostock got his specimens.  
*aurantiaca*, *Rhithrogena* sensu EATON et auct. nec BURMEISTER (nomen abusum)  
EATON (1885) combined *aurantiaca* of BURMEISTER by mistake in *Rhithrogena*, probably following ROSTOCKS' opinion, This interpretation was accepted by subsequent authors e.g. SCHOENEMUND (1930a). JACOB (1972a), when revising the type material of BURMEISTER, detects its affiliation to *Ecdyonurus*. He proposes for *aurantiaca* sensu ROSTOCK et auct. seq. *Rhithrogena diaphana* as the next available name. PUTHZ (1973b) follows Jacobs' interpretation and established under his own authorship *R. diaphana* as nomencla-

torically mandatory. Compare the further remarks to the latter species.  
*austriaca*, *Rhithrogena* SOWA & WEICHSELBAUMER, 1988 (p. 173) fam. Heptageniidae.  
*austriacus*, *Ecdyonurus* KIMMINS, 1958 (p. 226)  
fam. Heptageniidae. There is one subspecies described from the Ukrainian Carpathians, *E. austriacus nataliae* GODUNKO & KLONOWSKA-OLEJNIK (2004).  
*autumnalis*, *Baetis* CURTIS, 1834 (p. 121) is according to EATON (1871) with reservation a subjective junior synonym of *Ephemerella bioculata* and thus in terms of today of *Ephemerella fuscata*, fam. Baetidae, genus *Baetis*.

## B

*balcanicus*, *Metretopus* ULMER, 1920b (p. 68)  
is the typical species of the genus *Metreletus* DEMOULIN. See *Metreletus balcanicus*, fam. Ameletidae.  
*balticus*, *Baetopus* KAZLAUSKAS & SANWAJTITE, 1962 (p. 41 figs. 2-4)  
is according to MÜLLER-LIEBENAU (1978) a subjective junior synonym of *Centroptilum tenellum*, fam. Baetidae, genus *Raptobaetopus*.  
*belgica*, *Torleya* LESTAGE, 1917 (p. 366) is the typical species of the genus *Torleya* LESTAGE. According to LANDA (1969) this species is a subjective junior synonym of *Ephemerella major*; fam. Ephemerellidae, genus *Torleya*.  
*bellus*, *Thraululus* EATON, 1881a (p. 195) is the typical species of the genus *Thraululus*, fam. Leptophlebiidae.  
*Bengtssoni*, *Baetis* MÜLLER-LIEBENAU, 1966 (p. 65) (nomen imperfectum)  
is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë melanonyx*, fam. Baetidae, genus *Baetis*.  
*berolinensis*, *Ephemerella* O.F. MÜLLER, 1776 (p. 146)  
is according to EATON (1871) with reservation presumably a subjective junior synonym of *Ephemerella venosa* sensu EATON. See fam. Heptageniidae genus *Ecdyonurus*.  
*beskidensis*; *Caenis* SOWA, 1973b (p. 351) fam. Caenidae.  
Remark.: KLUGE (2004) regards this species as a subjective junior synonym of *Caenis pseudorivulorum*. After my own opinion,

- judging on biogeographic and ecological reasons both taxa should be considered as self-reliant.
- beskidensis*, *Rhithrogena* ALBA-TERCEDOR & SOWA, 1987 (p. 68)  
fam. Heptageniidae.
- bifidum*, *Cloëon* BENGTTSSON, 1912a (p. 109)  
is the typical species of the genus *Pro-cloëon* BENGTTSSON, fam. Baetidae.
- binoculata auctorum*  
= common accidental misspelling of *bioculata*
- bioculata*, *Ephemera* LINNAEUS, 1758 (p. 547)  
is a subjective senior synonym of *Ephemera fuscata* LINNAEUS, 1761.  
Remark.: The specific name *bioculata* was suppressed by ICZN, 1966 for reasons of priority and was transferred to the index of rejected and invalid specific names. KIMMINS (1964) and BRINCK & MÜLLER-LIEBENAU (1965) give further reasons for its synonymy with *E. fuscata*.
- bipunctata*, *Heptagenia* ESBEN-PETERSEN, 1916 (p. 7)  
is according to KLUGE (1995) a subjective junior synonym of *Heptagenia flava*, fam. Heptageniidae.
- Bocagii*, *Baetis* EATON, 1885 (p. 162) (nomen imperfectum)  
is according to KIMMINS (1960) a subjective junior synonym of *Cloë rhodani*, genus *Baetis* (*Rhodobaetis*), fam. Baetidae
- bollenganus*, *Ecdyonurus* NAVÁS, 1933 (p. 155)  
is according to THOMAS (1968b) a subjective junior synonym of *Ecdyonurus helveticus*; fam. Heptageniidae, genus *Ecdyonurus*.
- borealis*, *Eatonia* BENGTTSSON, 1904 (p. 131)  
is a nomen nudum. BENGTTSSON (1908) himself took it into synonymy with *Remipalpus elegans*, and the latter species was then considered a subjective junior synonym of *Arthroplea congener*, fam. Arthropleidae by BENGTTSSON (1930).
- borealis*, *Heptagenia* EATON, 1871 (p. 137)  
fam. Metretopodidae, genus *Metretopus*.
- borysthenica*, *Oligoneuriella* TSHERNOVA, 1937 (p. 5, figs. 1-9, p. 18 German description)
- is the typical species of the genus *Oligoneurisca*, fam. Oligoneuriidae.
- brenneriana*, *Rhithrogena* [sic] KLAPÁLEK, 1905 (p. 77)  
is according to PUTHZ (1975) a subjective junior synonym of *Rhithrogena alpestris*, fam. Heptageniidae.
- brevicauda*, *Ephemera* FABRICIUS, 1793 (p. 69)  
is according to EATON (1871) with reservation a subjective senior synonym of *Caenis macrura* and HAYBACH & JACOB (2006) couldn't find contradictions after revising the type; fam. Caenidae.
- Brunnea*, *Cloë* RAMBUR, 1842 (p. 298) (nomen imperfectum)  
is according to EATON (1871) after revision of typical material a male subimago of *Baetis lateralis*, fam. Heptageniidae, genus *Electrogena*. Terra typica is according to RAMBUR Spain.
- brunnescens*, *Melanameletus* TIENSUU, 1935 (p. 15)  
is according to ILLIES (1967) a subjective senior synonym of *Eurylophella karelica*, which has been described in the same article (p. 20), fam. Ephemerellidae, see also ALLEN & EDMUNDS (1963).  
Remark.: After JACOB (1972a) the name *karelica* was selected as valid following a recommendation of art. 24A of the ICZN because the taxon *brunnescens* was insufficiently described and wrongly placed into the family Siphonuridae.
- brunneus*, *Potamanthus* PICTET, 1843 (p. 217, 1845: pl. 27)  
is according to EATON (1871) a subjective junior synonym of *Ephemera fusca*, fam. Leptophlebiidae, genus *Habrophlebia*.
- buceratus*, *Baetis* EATON, 1870 (p. 5)  
fam. Baetidae.
- C**
- calcaratus*, *Baetis* KEFFERMÜLLER, 1972 (p. 220)  
fam. Baetidae, genus *Baetis* (*Labio-baetis*). Remark.: The species status is under discussion, maybe it belongs to *B. tricolor*, species inquirenda.
- carnea*, *Baetis* CURTIS, 1834 (p. 121)  
is according to Eaton (1871) "indeterminable" and thus could be regarded as a nomen dubium.
- carpathica*, *Baetis* MORTON, 1910 (p. 321, 1. pl.)

- is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë alpina*; fam. Baetidae, genus *Baetis*.
- carpathicus*, *Ecdyonurus* SOWA, 1973a (p. 285)  
fam. Heptageniidae.  
Remark.: The Balcan endemic species *E. carpathicus vitoshensis* JACOB & BRAASCH, 1984 (p. 54) was given generic rank by BAUERNFEIND (2003) (*E. vitoshensis*) and thus does not fall under synonymy with *carpathicus*.
- carpatoalpina*, *Rhithrogena* KLONOWSKA, OLECHOWSKA, SARTORI & WEICHSELBAUMER, 1987 (p. 446)  
fam. Heptageniidae.
- castaneus*, *Potamanthus* PICTET, 1843 (p. 215, 1845: pl. 26 figs. 4-5)  
is according to PUTHZ (1978) a subjective junior synonym of *Ephemera submarginata*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptohlebia*).  
Remark.: It is peculiar that this synonymy has been detected so late because fig. 4 in PICTET (1845) is showing clearly the characteristic subimago of *submarginata* with its typical white patch in the forewing.
- caudata*, *Ephemera* STRÖM, 1783 (p. 91)  
is according to EATON (1885) a subjective junior synonym of *Ephemera luteola*, fam. Baetidae, genus *Centroptilum*.
- cerea*, *Baetis* PICTET, 1843 (p. 183, 1845: pl. 23, fig. 2)  
is according to EATON (1871) a subjective junior synonym of *Ephemera flavipennis* and for this reason of *Baetis longicauda*; fam. Heptageniidae, genus *Heptagenia*.  
Remarks: EATON (p. 18) indicates by mistake a male imago. The description and the figures of PICTET however are indicating clearly a large female of the genus *Heptagenia*. HAGEN (1849) interprets *cerea* by mistake as a female of *Potamanthus luteus* and that's why he regards it as a synonym of *Baetis marginalis* BURMEISTER.
- Chironomiformis*, *Brachycercus* CURTIS, 1834 (p. 122) (nomen imperfectum)  
is according to EATON (1884) a subjective junior synonym of *Ephemera halterata* for this reason according to BENGTTSSON (1912b) of *Caenis horaria*, fam. Caenidae.
- Chlorotica*, *Ephemera* RAMBUR, 1842 (p. 296) (nomen imperfectum)  
is according to EATON (1871), a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.
- ciliata*, *Ephemera* STRÖM, 1783 (p. 91)  
is according to WALLENGREN (1882) a subjective junior synonym of *Ephemera mutica*, after BENGTTSSON (1912b) also *Baetis wallengreni* (= *rhodani*) comes into question, fam. Baetidae.
- cincta*, *Ephemera* RETZIUS, 1783 (p. 57 Nr. 182)  
fam. Leptophlebiidae, *Leptophlebia* (*Paraleptophlebia*). See HAYBACH & JACOB (2006) for nomenclatural remarks.
- cingulata*, *Baetis* STEPHENS, 1836 (p. 67)  
is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera fusca*, fam. Leptophlebiidae, genus *Habrophlebia*.
- circumtrica*, *Rhithrogena* SOWA & SOLDÁN, 1986 (p. 558)  
fam. Heptageniidae.
- citrina*, *Ephemera* HUMMEL, 1829 (p. 71)  
is according to KLUGE (1988) after a revision of the type a subjective senior synonym of *Heptagenia flava*, fam. Heptageniidae. Remark.: KLUGE declares *H. flava* a nomen protectum. After BAUERNFEIND in lit. 2006 the specification of Kluge did not fulfil all requirements of the code (ICZN, 1985). However he declares: "It is absolutely clear, however, that all conditions of ICZN (1999) art. 23.9.1. are met and *Heptagenia (H.) flava* ROSTOCK [nomen protectum] takes precedence over *Heptagenia citrina* HUMMEL [nomen oblitum] according to ICZN (1999) art. 23.9.2."
- caerulans* auct.  
rare misspelling of *coerulans*, see there.
- coerulans*, *Heptagenia* ROSTOCK, 1878 (p. 89)  
fam. Heptageniidae, *Heptagenia* (*Dacnogenia*). There is one further subspecies, *H. caerulans micracantha* KLUGE, 1989, described from trans Caucasus regions.
- cognata*, *Ephemera* STEPHENS, 1836 (p. 56)  
is according to PICTET (1843) a subjective junior synonym of *Ephemera danica*, fam. Ephemeridae.
- cognatum*, *Cloeon* STEPHENS, 1836 (p. 69)  
fam. Baetidae (species dubium)  
*Cloeon cognatum* is, after several authors, starting with EATON (1871) a subjective junior synonym of *Ephemera diptera*. Sowa (1975) however revises the *Cloeon dip-*



- terum* species group and reinstated *cognatum* as a species propria. This reinstatement has been largely ignored by European workers, or they doubt this result and refused it. RANDOLPH et al. (2003) again took *cognatum* into synonymy with *diptera*, indicating however that the *cognatum*-form has a more southern distribution in the US.
- colmarsensis*, *Rhithrogena* SOWA, 1984 (p. 49) (species inquirenda)  
falls after my own opinion, judging on investigations of the characteristic egg chorion structure, into the variation range of *Rhithrogena drieri*, fam. Heptageniidae.
- communis*, *Ephemera* RETZIUS, 1783 (p. 56) (nomen abortivum)  
is an unnecessary replacement name for *Ephemera vulgata* LINNAEUS, 1758, fam. Ephemeridae.
- Concii*, *Heptagenia* GRANDI, 1953 (p. 363) (nomen imperfectum)  
is according to BELFIORE (1981) a subjective junior synonym of *Baetis lateralis*, fam. Heptageniidae, genus *Electrogena*, according to HAYBACH (2008) it is a subspecies propria.
- confinis*, *Ecdyonurus* TSHERNOVA, 1928b (p. 322)  
is according to TSHERNOVA (1936) a subjective junior synonym of *Ephemera fuscogrisea*, fam. Heptageniidae, genus *Kageronia*.
- congener*, *Arthroplea* BENGTTSSON, 1908 (p. 239; 1909 p. 18)  
fam. Arthropleidae.
- confusa*, *Habroleptoides* SARTORI & JACOB, 1986 (p. 687, figs. 3-4)  
fam. Leptophlebiidae. Remark.: SARTORI & JACOB (1986) introduce this name for *modesta* sensu SCHOENEMUND (1929) et auct. nec HAGEN because *modesta* of HAGEN has been proved as an endemic species of Corsika and Sardinia.
- convergens*, *Echdyurus* [sic] ARO, 1910 (p. 31, fig. 23, 24)  
is according to TIENSUU (1939) a subjective junior synonym of *Ephemera fuscogrisea*, fam. Heptageniidae, genus *Kageronia*.
- corcontica*, *Rhithrogena* SOWA & SOLDÁN, 1986 (p. 563)  
fam. Heptageniidae.
- costalis*, *Baetis* CURTIS, 1834 (p. 120)  
is according to EATON (1871) a subjective junior synonym of *Baetis elegans* and for this reason of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.
- croaticus*, *Siphonurus* ULMER, 1920b (p. 64)  
fam. Siphonuridae.
- culiciformis*, *Ephemera* LINNAEUS, 1758 (p. 547)  
was combined into the genus *Baetis* by STEPHENS (1836) and is already after EATON (1871) a "species dubia". This species name can thus be regarded as a nomen dubium.
- culiciformis*, *Cloeon sensu* WALKER, 1853 (p. 576) nec LINNAEUS (nomen abusum)  
is according to EATON (1871) referring to *Leptophlebia helvipes* and for this reason to *Ephemera submarginata*, genus *Leptophlebia* (*Paraleptophlebia*), fam. Leptophlebiidae.
- cyanops*, *Baetis* PICTET, 1843 (p. 171, 1845: pl. 20, fig. 2)  
is according to EATON (1871) a subjective junior synonym of *Baetis elegans* and for this reason of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.
- ## D
- Danica*, *Ephemera* O.F. MÜLLER, 1776 (p. 63) (nomen imperfectum)  
fam. Ephemeridae.
- danica*, *Ephemera sensu* PICTET, 1843 (p. 130, 1845: pl. 7) nec MÜLLER (nomen abusum)  
is according to EATON (1871) referring to *Ephemera vulgata*, fam. Ephemeridae.
- dacicum*, *Centroptilum* BOGOESCU & TABACARU, 1966 (p. 176, figs. 3c, 4)  
is according to KEFFERMÜLLER & SOWA (1975) a subjective junior synonym of *Centroptilum pulchrum*, fam. Baetidae, genus *Procloeon*.
- delphinensis*, *Rhithrogena* SOWA & DEGRANGE, 1987 (p. 479)  
fam. Heptageniidae.
- degrangei*, *Cloeon* SOWA, 1980 (p. 256)  
is according to BRULIN & MASSELOT (2001) with reservation a subjective junior synonym of *Cloeon simile*, fam. Baetidae.
- degrangei*, *Rhithrogena* SOWA, 1969 (p. 63)  
fam. Heptageniidae.
- diaphana*, *Ephemera* O.F. MÜLLER, 1776 (p. 143)

- is according to EATON (1871) a subjective junior synonym of *Ephemera bioculata* (sub. *binoculata*) and for this reason of *E. fuscata*, fam. Baetidae, genus *Baetis*. According to BENGTTSSON (1912) it is a subjective senior synonym of *Ephemera lutea*, fam. Baetidae, genus *Centroptilum*.
- diaphana*, *Rhithrogena* NAVÁS, 1916 (p. 739)  
is a valid species and an endemic species of the Iberian peninsula. JACOB (1972a) and later PUTHZ (1973b) take *Baetis aurantiaca* sensu ROSTOCK (1875) and subsequent authors into synonymy with *diaphana*. ALBATERCEDOR & SOWA (1987) when revising the whole *diaphana* relatedness have recognized the separate status of *diaphana* as a Spanish species. These authors gave descriptions of two new Central European species, *R. beskidensis* and *R. savoimensis*. Thus it is unclear to which of them the older Central European records sub. *diaphana* or *aurantiaca* are referring to. See also the notes on *aurantiaca*.
- digitatus*, *Baetis* BENGTTSSON, 1912a (p. 114) fam. Baetidae, genus *Baetis* (*Nigrobaetis*)
- digigracilis*, *Baetis* (*Nigrobaetis*) NOVIKOVA  
In: NOVIKOVA & KLUGE, 1987 (p. 10) nomen nudum  
is according to NOVIKOVA & KLUGE (1994) referring to *Baetis* (*Nigrobaetis*) *digitatus*, fam. Baetidae
- dilectus*, *Potamanthus* (*lapsus*) in PICTET (1843) is an accidental misspelling of *diluta*, *Ephemera* STEPHENS (1836: p. 58), a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- diluta*, *Ephemera* STEPHENS, 1836 (p. 58)  
is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- dimidiata*, *Caenis* STEPHENS, 1836 (p. 61)  
is according to BENGTTSSON (1912b) with high probability, types are missing, a subjective junior synonym of *Ephemera horaria*, fam. Caenidae, genus *Caenis*.  
Remark: EATON (1871) already knows this opinion via WALLENGREN. He explicitly forewent this synonymy because of missing material of *horaria* and left it at *dimidiata*, whereof 2 ♂ were left in the collection of STEPHENS.
- dimidiata* var. *rivulorum*, *Caenis* EATON, 1884 (p. 143)  
was listed already by EATON (1888, p. 349) in the index with a separate distinct species name, fam. Caenidae, *Caenis rivulorum*.
- dimidiata* var. *fennica* ARO, 1928 (p. 38)  
falls according to SAARISTO (1966) into the variation range of *Ephemera horaria*, fam. Caenidae, genus *Caenis*.
- dimidiatum*, *Cloeon* CURTIS, 1834 (p. 121)  
is according to HAGEN (1857) a subjective senior synonym of *Cloeon cognatum* STEPHENS, 1836, fam. Baetidae.  
Remarks: This opinion was indirectly shared by SOWA (1975b) who declared the nomen nudum *C. consobrinum* a synonym of *cognatum*. EATON (1871) regarded *C. dimidiatum* as synonymous with *C. russulum* (= *rufula*), which was later regarded as a synonym of *C. dipterum*. If the self reliance of the taxon *cognatum* from *dipterum* is accepted then *Cloeon dimidiatum* should be treated as a nomen oblitum, otherwise as a subjective junior synonym of *E. diptera*.
- diptera*, *Ephemera* LINNAEUS, 1761 (p. 377)  
is according to HUBBARD (1990) the typical species of the genus *Cloeon* LEACH by monotypy. See *dipterum*, fam. Baetidae, genus *Cloeon* s. str.  
Remark: In the original reference of LEACH (1815) *Cloeon pallida* [a nomen nudum] which has been taken into synonymy with *dipterum* by Eaton later is named first.
- dispar*, *Baetis* CURTIS, 1834 (p. 120) fam. Heptageniidae, genus *Ecdyonurus*.
- dispar*, *Ephemera* STEPHENS, 1836 (p. 58)  
is according to EATON (1871) after revision, a subjective senior synonym of *Ephemera helvipes*, which represents after EATON (1884) a subjective junior synonym of *Ephemera submarginata*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).
- Dorieri*, *Baetis* DEGRANGE, 1957 (p. 17) (nomen imperfectum)  
is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë alpina*, fam. Baetidae, genus *Baetis*.
- dorieri*, *Rhithrogena* SOWA, 1971d (p. 907) fam. Heptageniidae.

dubia, Ephemera STEPHENS, 1836 (p. 59)  
is according to EATON (1871) after revision of typical material a subjective senior synonym of *Baetis phaeops* EATON and for this reason a subjective junior synonym of *Baetis vernus*, fam. Baetidae, genus *Baetis*.

## E

eatoni, Ametropus BRODSKY, 1930a (p. 33)  
is according to LANDA (1969) a subjective junior synonym of *Ametropus fragilis*, fam. Ametropodidae.

eldae, *Habrophlebia* JACOB & SARTORI, 1984 (p. 46)  
fam. Leptophlebiidae.

elegans, Baetis CURTIS, 1834 (p. 120)  
is according to EATON (1885) a subjective junior synonym of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.

elegans, Remipalpus BENGTTSSON, 1908 (p. 242)  
is according to BENGTTSSON (1930a) a subjective junior synonym of *Arthroplea congener*, fam. Arthropleidae.

endenensis, Rhithrogena METZLER, TOMKA & ZURWERRA, 1985 (p. 129) (species inquirenda)  
falls according to WEICHSELBAUMER (1997) and according to my own opinion into the variation range of *Rhithrogena puthzi*.

epeorides, *Ecdyonurus* DEMOULIN, 1955 (p. 39)  
was considered to be a synonym of *Ecdyurus zelleri* by KIMMINS (1958), contra JACOB & BRAASCH (1984), species propria.

erythroptalma, Ephemera VON PAULA SCHRANK, 1802 (p. 197)  
is according to EATON (1871) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemere*.

erythrocephalus, Potamanthus *sensu* PICTET (1845: pl. 29) (but not 1843!)  
is an accidental misspelling of erythroptalma; (syn.) EATON (1871).

eugenii, Ameletus SINITSHENKOVA & VARYCHANOVA, 1989 (p. 576)  
is according to KLUGE (1995) a subjective junior synonym of *Ameletus inopinatus*, fam. Ameletidae.

europaeus, *Brachycercus* KLUGE, 1991 (p. 19)  
fam. Caenidae.

## F

familiaris, Ephemera VON PAULA SCHRANK, 1802 (p. 200) (nomen dubium)  
is "indeterminable" according to EATON (1871).

fasciocolatus, *Ecdyonurus* SOWA, 1974 (p. 316)  
is according to BELFIORE et al. (1999) a subjective junior synonym of *Ecdyurus affinis*, fam. Heptageniidae, genus *Electrogena*.

felsinea, Caenis GRANDI, 1951 (p. 121)  
is according to JACOB (1974b) a subjective junior synonym of *Oxycypha luctuosa*, fam. Caenidae, genus *Caenis*. Remark.: JACOB refers in his article to a footnote in GRANDI (1960 p. 266), where KIMMINS diagnosed material of *C. felsinea* as identical with *C. moesta*, based on specimens from the British Museum. JACOB follows the authority of KIMMINS, though GRANDI (l.c.) regards *C. felsinea* as a bona species and accomplished that an examination of type material would be necessary for a definitive decision. However, all subsequent authors have followed the opinion of Jacob.

femorata, Baetis *sensu* PROVANCHER (1876), nec SAY (nomen abusum)  
is according to PROVANCHER (1878 p. 82") referring to *Siphylurus alternans* SAY, thus *Siphonurus alternatus*, fam. Siphonuridae. Remark.: In accordance with EATON (1885: p. 219), the opinion of modern North American authors who derive from PROVANCHER'S description authorship and then in a second step declare this name a homonym of SAYS' species is not accepted.

Ferreri, Potamanthus PICTET, 1843 (p. 203, 1845: pl. 25 fig. 1) (nomen imperfectum)  
is according to BAE & MCCAFFERTY (1991) a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.

ferruginea, Ephemera GMÉLIN, 1789 (p. 2630)  
is according to EATON (1871) with reservation a subjective senior synonym of *Baetis elegans* and for this reason a subjective junior synonym of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.

ferruginea, Isonychia ALBARDA, 1878 (p. 128)

- is according to EATON (1879) a subjective junior synonym of *Baetis ignota*, fam. Isonychiidae, genus *Isonychia*.
- ferruginea*, *Rhithrogena* NAVÁS, 1905 (p. 17) (species inquirenda)  
is an endemic species of the Iberian peninsula that urgently needs a revision. Remark.: SOWA (1971d) mixed in his assumed new description of *R. ferruginea* at least two up to then undescribed Central European species. SOWA & DEGRANGE (1987b) being aware of this mistake, described *R. puytoraci*, as a new Central European species. Later KLONOWSKA et al. (1987) recognized a second cryptic species in SOWA's „*ferruginea*“ and they described *R. carpatoalpina* from material from the Alps and the Carpathian Mountains as new. Parts of the alpine material were then separated again by WEICHSELBAUMER (1995) and described as a separate species *R. rolandi*.
- finitimus*, *Baetis* Eaton, 1871 (p. 113, pl. 5, figs. 18, 18a)  
is after a revision of the type by MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Baetis vernus*, fam. Baetidae.
- flava*, *Ephemera* VON PAULA SCHRANK, 1776 (p. 82)  
is according to EATON (1871) a subjective junior synonym of *Ephemera bioculata* and for this reason of *E. fuscata*, fam. Baetidae, genus *Baetis*.
- flava*, *Heptagenia* ROSTOCK, 1878 (p. 90) fam. Heptageniidae.
- flavescens*, *Baetis* CURTIS, 1834 (p. 121)  
is according to CURTIS a subimago and according to EATON (1871) with reservation a subjective junior synonym of *Baetis binoculatus*, thus *Ephemera bioculata* and for this reason of *Ephemera fuscata*, fam. Baetidae, genus *Baetis*.
- Flavicans*, *Ephemera* RAMBUR, 1842 (p. 296) (nomen imperfectum)  
is according to EATON (1871) a subjective junior synonym of *Ephemera lutea*, fam. *Potamanthidae*, genus *Potamanthus*.
- flavimanus*, *Ecdyurus* KLAPÁLEK, 1905 (p. 78)  
is according to JACOB (1972a) ein nomen dubium et oblitum.
- flavipennis*, *Ephemera* DUFOR, 1841 (p. 580, T. 11, fig. 167)  
is according to KIMMINS (1942a) a subjective junior synonym of *Baetis longicauda*, fam. Heptageniidae, genus *Heptagenia*.
- Flos-Aquae*, *Ephemera* ILLIGER, 1801 (p. 187) (nomen imperfectum)  
is according to BURMEISTER (1839) a subjective junior synonym of *Ephemera longicauda*, fam. Palingeniidae, genus *Palingenia*.
- fluminum*, *Baetis* PICTET, 1843 (p. 164, 1845 pl. 16-19) (nomen ambiguum)  
is according to THOMAS (1968a) a subjective junior synonym of *Baetis dispar*, fam. Heptageniidae, genus *Ecdyonurus*. Remarks. For further interpretations of this taxon see also the synonyms of *Ecdyonurus aurantiacus*. In addition records in older faunistic literature can represent misidentifications of several other congeneric species.
- foliaceus*, *Binoculus* FOURCROY, 1785 (p. 539)  
is according to HUBBARD (1979) following art. 49 of the code (ICZN) an invalid name, because it is based on a misinterpretation of the identity of *Monoculus foliaceus* L. (Crustacea) by FOURCROY. Next available name is *Limulus pennigerus*, fam. Prosopistomatidae, genus *Prosopistoma*.
- forcipula* var., *Baetis* PICTET, 1843 (p. 169 ex. MS. Kollar, in a note on *venosa*.) (nomen ambiguum et imperfectum)  
is according to ULMER (1921) a subjective junior synonym of *Ephemera venosa*, genus *Ecdyonurus*, fam. Heptageniidae.
- forlivense*, *Centroptilum* GRANDI, 1964 (p. 122, figs. 1-3)  
is according to KEFFERMÜLLER & SOWA (1984) with reservation a subjective junior synonym of *Centroptilum pulchrum*, fam. Baetidae, genus *Proclleon*.
- fragilis*, *Ametropus* ALBARDA, 1878 (p. 129) fam. Ametropodidae.
- fradgleyi*, *Rhithrogena* BLAIR, 1929 (p. 253)  
is according to MOSELY (1932) a subjective junior synonym of *Rhithrogena haarupi* and for this reason of *Rhithrogena germanica*, fam. Heptageniidae.
- frankenbergeri* *Arthroplea* BALTHASAR, 1937 (p. 204)

- is according to LANDA (1954) a subjective junior synonym of *Arthroplea congener*, fam. Arthropleidae.
- fuliginosa*, *Ephemera* BOEBER in GEORGI, 1802 (p. 342)  
Fam. Palingeniidae, genus *Palingenia*.  
Remark: GEORGI accomplished in his addenda (p. 331) expressly that BOEBER “alle ihm zukommenden Insecten dieser Sammlungen bestimmte, ordnete und sie mir [GEORGI] ... mittheilte”. (determined, ordered and committed to him [Georgi] all insects that were drawn to him). Therefore, referring to recommendation 51E of the code (ICZN, 1999), Boeber is added to the publishing author. A real original description does not exist at all but only some notes to its ecology. After terms of today this name represents maybe not more than a nomen nudum.
- furcatus*, *Baetis* NAVÁS, 1933 (p. 155)  
is according to Alba-Tercedor (1984) a subjective junior synonym of *Ephemera mutica*; fam. Baetidae, genus *Baetis* (*Nigrobaetis*).
- fusca*, *Ephemera* CURTIS, 1834 (p. 120)  
is the typical species of the genus *Habrophlebia*, fam. Leptophlebiidae.
- fusca*, *Ephemera sensu* STEPHENS (1836: p. 58) nec CURTIS (nomen abusum)  
is according to EATON (1871) after revision of Stephens' specimens referring to *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- fusca*, *Baetis* BURMEISTER, 1839 (p. 800)  
is according to WALKER (1853) sub. *fusa* (lapsus) a subjective senior synonym of *Potamanthus Geeri* and for this reason a subjective junior synonym of *Ephemera vespertina*, fam. Leptophlebiidae, see genus *Leptophlebia*. Remark: Firstly HAGEN (1849) took this species into synonymy with *Potamanthus Geerii*. WALKER probably adopted Hagens' view and took both species into synonymy with *Ephemera vespertina*. At least with respect to *Baetis fusca* this synonymy was accepted at first by EATON (1871), later also by ULMER (1927). Even JACOB (1972a) who revised the BURMEISTER collection doesn't say anything contrary. *P. geerii* however was taken into synonymy with *L. submarginata* by EATON (1871: via *helvipes*).
- fusca*, *Habrophlebia sensu* KLAPÁLEK (1909) et auctorum, nec CURTIS (nomen abusum)
- is according to SCHOENEMUND (1929) referring to *modesta sensu* SCHOENEMUND and thus in terms of today referring to *Habroleptoides confusa*, fam. Leptophlebiidae.
- fusca*, *Habrophlebia sensu* IKONOMOV (1963), nec CURTIS  
is according to JACOB & SARTORI (1984) conspecific with *Habrophlebia eldae*, fam. Leptophlebiidae.
- fuscata*, *Ephemera* LINNAEUS, 1761 (p. 376)  
is by decision of the International Commission of Zoological Nomenclature (ICZN, 1966) based on a proposal by KIMMINS (1964) and BRINK & MÜLLER-LIEBENAU (1965) the typical species of the genus *Baetis*, fam. Baetidae.
- fuscata*, *Cloë sensu* PICTET, 1843 (p. 251, 1845: pl. 40) nec LINNAEUS (nomen abusum)  
is according to EATON (1871) referring to *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*). Remark: After my own opinion this interpretation is clearly wrong because the terminal filament is missing (= *Baetis*).
- fuscata*, *Cloeon sensu* WALKER, 1853 (p. 573) nec LINNAEUS (nomen abusum)  
is according to Eaton (1871) a subjective junior synonym of *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*). Remark: WALKER refers apparently to PICTET, thus compare the annotations to *Cloe fuscata*.
- fusco-grisea*, *Ephemera* RETZIUS, 1783 (p. 57) (nomen imperfectum)  
fam. Heptageniidae, genus *Kageronia*.
- fuscula*, *Ephemera* VON PAULA SCHRANK, 1802 (p. 199) (nomen dubium)  
is according to EATON (1871) presumably a subjective senior synonym of *Baetis semicoloratus*, fam. Heptageniidae, genus *Rhithrogena*. Remark: After my own opinion the author describes a subimago which could represent every species of the genus with a femoral patch.

## G

- gallica*, *Heptagenia* EATON, 1883 (p. 236, 272, pl. 23 fig. 45, pl. 24, fig. 45a)  
is according to ROSTOCK (1888) a subjective junior synonym of *Heptagenia coeruleans*, fam. Heptageniidae. Remark: The year of the description is after my own opinion and interpretation of the nomenclatural rules (ICZN, 1999) 1883 (plates) and

- not 1885 (text), compare the annotations to *affinis*, *Ecdyurus*.
- Garumnica, *Oligoneuria* JOLY, 1873 (p. 3656) (nomen imperfectum)  
 JOLY (1870) firstly listed this name without any description (nomen nudum). EATON (1883: p. 31), however, first accepted a translation of a letter of JOLY into the English language by MÜLLER in "The Zoologist 1873, Ser. 2, Vol. 8. p. 3656-3657" as species description under the authorship of JOLY and then called it a subjective junior synonym of *Oligoneuria rhenana*, fam. Oligoneuriidae, genus *Oligoneuriella*.
- gemellus, *Baetis* EATON, 1885 (p. 163, 1888: pl. 64, fig. 14) (species inquirenda)  
 fam. Baetidae.  
Remark: After KIMMINS (1960) this species is a subjective junior synonym of *Cloë rhodani*. After MÜLLER-LIEBENAU (1969) it is a bona species based on investigations of specimens from the Balkan Peninsula and the Pyrenean Mountains. After THOMAS (1999) the species described by MÜLLER-LIEBENAU belong to a new species (*B. gadeai*). While in Germany e.g. HAYBACH & MALZACHER (2002) are following the point of view of THOMAS by erasing *B. gemellus* from the German Checklist JACOB (2003) published a record from the Black Forest Mountains. In consequence *B. gemellus* should be regarded at least as a species inquirenda and a sufficient clarification is only expectable after a new revision (based on topotypical material).
- Gemmata, *Ephemera* SCOPOLI, 1763 (p. 264) (nomen imperfectum)  
 exhibits after my own opinion an unclear nomenclatural status.  
Remark: According to EATON (1871) this species is a female imago of genus *Heptagenia* (= fam. Heptageniidae in terms of today). Due to its defective description and its missing use in the relevant zoological literature it could be regarded as a nomen dubium et oblitum.
- germanica, *Rhithrogena* EATON, 1885 (p. 260, 1888: pl. 24, fig. 43b)  
 fam. Heptageniidae.
- Geerii, *Potamanthus* PICTET, 1843 (p. 211, 1845: pl. 26, figs. 1-3) (nomen imperfectum)  
 is according to EATON (1871) a subjective junior synonym of *Leptophlebia helvipes* and for this reason of *Ephemera submarginata*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).
- gibbus, *Potamanthus* PICTET, 1843 (p. 226, 1845: pl. 31-32)  
 is according to EATON (1884) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemera*.
- gigantea, *Ephemera* BOEBER in ILLIGER, 1801 (p. 188)  
 is according to EATON (1871) a nomen nudum. SOLDÁN (1978) listed this species as a synonym of *Ephemera fuliginosa*, fam. Palingeniidae, genus *Palingenia*. Remark: We can easily differ on this interpretation because the naming of *E. fuliginosa* by GEORGI was published not till then 1802 and represents not more than a nomen nudum, too.
- glaucops, *Ephemera* PICTET, 1843 (p. 132, 1845: pl. 8, figs. 1-3)  
 fam. Ephemeridae, genus *Ephemera* (*Sinephemera*).
- Goetghebueri, *Metretopus* LESTAGE, 1938 (p. 171)  
 is according to PUTHZ (1977a) a subjective junior synonym of *Metretopus balcanicus*, fam. Ameletidae, genus *Metreletus*.
- Grandii, *Baetis* GRANDI, 1948b (p. 77)  
 is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Baetis buceratus*, fam. Baetidae.
- gratianopolitana, *Rhithrogena* SOWA, DEGRANGE & SARTORI, 1986 (p. 216)  
 fam. Heptageniidae.
- Gridellii, *Heptagenia* GRANDI, 1953 (p. 348)  
 fam. Heptageniidae, genus *Electrogena*.
- gridellii, *Ecdyonurus sensu* JACOB (1972a, 1974) nec. Grandi (nomen abusum)  
 is referring to *Ecdyonurus ujhelyii*, fam. Heptageniidae, genus *Electrogena*.
- gridellii, *Electrogena sensu* ZURWERRA & TOMKA (1985) nec. Grandi (nomen abusum)  
 is based on specimens from Switzerland and is thus with a high probability referring to *Ecdyonurus ujhelyii*, fam. Heptageniidae, genus *Electrogena*.
- grischuna, *Rhithrogena* SARTORI & OSWALD, 1985 (p. 262)  
 fam. Heptageniidae.

grisea, *Caenis* PICTET, 1843 (p. 278; 1845: pl. 45, figs. 1-2)

is according to EATON (1871) a subjective junior synonym of *Caenis macrura*, fam. Caenidae.

grisocolata, *Rhithrogena* BOGOESCU, 1958 (p. 179)

is according to SOWA (1971d) a subjective junior synonym of *Baetis semicoloratus*, fam. Heptageniidae, genus *Rhithrogena*. Remark: This taxon has been introduced by BOGOESCU (1933: p. 70) as *semicolorata* var. *grisocolata*.

## H

Haarupi, *Rhithrogena* ESBEN-PETERSEN, 1909 (p. 555) (nomen imperfectum)

is according to SOWA (1971b) a subjective junior synonym of *Rhithrogena germanica*, fam. Heptageniidae.

hainanensis, *Isonychia* SHE & YOU, 1988 (p. 29)

is according to TIUNOVA, KLUGE & ISHIWATA (2004) a subjective junior synonym of *Baetis ignota*, fam. Isonychiidae, genus *Isonychia*.

halterata, Cloë *sensu* BURMEISTER (1839) (p. 798) nec FABRICIUS (nomen abusum)

is according to EATON (1871) referring to *Ephemera luteola* O.F. MÜLLER, 1776, fam. Baetidae, genus *Centroptilum*.

halterata, *Ephemera* FABRICIUS, 1777 (p. 244)

is according to BENGTTSSON (1912b) a subjective junior synonym of *Ephemera horaria*, fam. Caenidae, genus *Caenis*. Remark: FABRICIUS (1793) himself recovers his species in the fig. 17 of DE GEER, 1771 (= *cincta* RETZIUS). In consequence, EATON (1871) regards it as a subjective senior synonym of *Leptophlebia cincta*, later, EATON (1884) regards it as conspecific with *Caenis macrura*. It was BENGTTSSON (1917) who erected *macrura* as a species propria again.

Halterata, *Ephemera sensu* SHAW (1806) (pl. 81, p. 253), nec FABRICIUS (nomen abusum)

is after my own opinion based on the typical colouration pattern probably referring to *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia*, and this pattern may have affected EATON (1871) to his opinion in the case of *E. halterata* FABRICIUS.

*Harrisella*, *Brachycercus* CURTIS, 1834 (p. 122) (nomen imperfectum)

is the typical species of the genus *Brachycercus*, fam. Caenidae.

hellenica, *Ephemera* DEMOULIN, 1955 (p. 42)

is according to BAUERNFEIND (2003) a subjective junior synonym of *Ephemera lineata*, fam. Ephemeridae.

helveticus, *Ecdyurus* EATON, 1883 (p. 282, pl. 24, fig. 46a)

fam. Heptageniidae, genus *Ecdyurus*. Remark: See the annotations to *Ecdyurus affinis* for reasons for the choice of the year of description.

helvipes, *Ephemera* STEPHENS, 1836 (p. 59)

is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera submarginata*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).

Helvola, *Ephemera* SULZER, 1776 (p. 171, pl. IV, fig. 7)

is according to EATON (1871) with reservation a subjective senior synonym of *Baetis elegans*, and thus would be for this reason a subjective synonym (older/younger?) of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.

Henschii, *Rhithrogena* [sic] KLAPÁLEK, 1906 (p. XVI „5“) (nomen imperfectum)

PUTHZ (1975) revised the type specimen which should originate from the vicinity of the High Tatra Mountains. He considered it as closely related to *R. loyolaea*, however he still regards *henschii* as a species propria. Larval stages are still unknown and there are, so far as I know, no younger records in the literature. After SOLDÁN & LANDA (1999: p. 28 in a footnote) this species is not a central European faunal element at all but belongs to southeast Europe.

*hercynia*, *Rhithrogena* LANDA, 1969

(p. 157, pl. 12 figs. 4H, 5H, p. 210 ff.)  
fam. Heptageniidae.

Hessei, *Ameletus* FIZAINE, 1931 (p. 25) (nomen imperfectum)

is according to PUTHZ (1977) a subjective junior synonym of *Metretopus balcanicus*, fam. Ameletidae, genus *Metreletus*.

Hispanica, *Ephemera* RAMBUR, 1842 (p. 294) (nomen imperfectum)

- is according to HAGEN (1866), a subjective junior synonym of *Ephemera danica*, fam. Ephemeridae, and this interpretation was confirmed by EATON (1871) after revision of the typical material.
- hispanica, *Ephemera* NAVÁS, 1903, (p. 100) (nomen praeoccupatum) is a primary junior homonym of *E. hispanica* RAMBUR and according to NAVÁS (1906) a subjective junior synonym of *Ephemera vulgata*, fam. Ephemeridae, see also ALBA-TERCEDOR (1982b).
- hispanus, *Baetis* Navás, 1915 (p. 41) is according to ALBA-TERCEDOR (1984) a subjective junior synonym of *Baetis scambus*, fam. Baetidae.
- horaria, *Ephemera* LINNAEUS, 1758 (p. 547) fam. Caenidae, genus *Caenis*.  
Remark: BENGTSOON (1912b) combined this species in the genus *Caenis*. JACOB (1972a) follows the interpretation of Bengtsson only by reasons of the stability of the nomenclature. Based on its original description Jacob interprets *Ephemera horaria* L. as a subimago of the family Baetidae with an unclear generic position. MALZACHER (1986) regards this synonym as questionable, too. He refers to the lectotype fixation by KIMMINS (1971) which is nomenclatorial authoritative.
- horaria, *Ephemera* FOURCROY, 1785 (p. 353) nec. Linnaeus (nomen abusum) is in my own opinion referring to its original description "*E alis albis, margine crassiore, nigricantibus, cauda biseta. Loc. Habitat domos.*" probably a female subimago of *Cloeon dipterum*.
- horaria, *Palingenia* BURMEISTER, 1839 (p. 802) is according to PICTET (1843) a subjective junior synonym of *Ephemera virgo*, fam. Polymitarcyidae, genus *Ephoron*.
- horaria fennica, *Caenis* TIENSUU, 1939 (p. 122) falls according to SAARISTO (1966) into the range of variation of *Ephemera horaria*, fam. Caenidae, genus *Caenis*.
- Hovassei, *Proclæon* VERRIER, 1949a (p. 58) (nomen imperfectum) is according to ILLIES (1967) a subjective junior synonym of *Cloeon simile*, fam. Baetidae, see SOWA (1980).
- hungaricus, *Metreletus* UJHELYI, 1960 (p. 199) is according to JACOB (1972a) a subjective junior synonym of *Metreletus Goetghebueri* and thus according to PUTHZ (1977) also of *Metretopus balcanicus*, fam. Ameletidae, genus *Metreletus*.
- hyalina, *Ephemera* PANZER, 1804 (p. 60) is according to PICTET (1843: sub. *hyalinata*) a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.
- hyalinata, *Ephemera* ZETTERSTEDT, 1840 (p. 1044) is according to EATON (1871) a subjective junior synonym of *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).
- hyalinatum, *Cloëon* STEPHENS, 1836 (p. 68) is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera luteola*, fam. Baetidae, genus *Centroptilum*.
- hyalopterum, *Pseudocloëon* BOGOESCU, 1951 (p. 783) is according to JACOB (1972a) a subjective junior synonym of *Pseudocloëon inexpectatum*, fam. Baetidae, genus *Baetis* (*Acentrella*). Remark: PUTHZ (1978) proposes the same synonymy, though by reference on an annotation of SOWA in one of his biogeographical works.
- hybrida, *Rhithrogena* EATON, 1885 (p. 256) fam. Heptageniidae.
- hybrida, *Rhithrogena sensu* Ulmer (1927) (nomen abusum) is according to PUTHZ (1975) referring to *Rhithrogena degrangei*, fam. Heptageniidae.
- hybrida, *Rhithrogena sensu* ULMER (1929) et SCHOENEMUND (1930a ?) nec EATON (nomen abusum) is according to SOWA (1969) referring to *Rhithrogena degrangei*, fam. Heptageniidae.
- hybrida, *Rhithrogena sensu* SOWA (1975c) nec EATON (nomen abusum) refers after SOWA & SOLDÁN (1986) to *Rhithrogena circumtatica*, fam. Heptageniidae.
- iberi, *Baetis* Navás, 1913 (p. 63) is according to ALBA-TERCEDOR (1984) after revision of the type a subjective junior synonym of *Cloë rhodani*, fam. Baetidae, genus *Baetis* (*Rhodobaetis*).
- Ignita*, *Ephemera* PODA, 1761 (p. 97)



fam. Ephemerellidae, genus *Ephemerella*.  
*ignota*, *Baetis* WALKER, 1853 (p. 571)  
 fam. Isonychiidae, genus *Isonychia*.  
*inanis*, *Ephemera* GMÉLIN, 1789 (p. 2629)  
 is according to EATON (1871) a subjective junior synonym of *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).  
*incurvus*, *Baëtis* BENGTTSSON, 1912a (p. 115)  
 is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Ephemera nigra*, fam. Baetidae. Some years earlier the same authoress describes it as a species propria (MÜLLER-LIEBENAU 1965).  
*incus*, *Caenis* BENGTTSSON, 1912a (p. 107)  
 is according to DEGRANGE (1957b) a subjective junior synonym of *Caenis robusta*, fam. Caenidae.  
*inexpectatum*, *Pseudocloeon* TSHERNOVA, 1928b (p. 320)  
 fam. Baetidae, genus *Baetis* (*Acen-trella*).  
*infrequens*, *Centroptilum* MCDUNNOUGH, 1924 (p. 98)  
 is according to LOWEN & FLANNAGAN (1990) presumably a subjective junior synonym of *Centroptilum pennulatum*, fam. Baetidae, genus *Procloeon*.  
*inopinatus*, *Ameletus* EATON, 1887 (p. 307, pl. 65 fig. 14)  
 fam. Ameletidae.  
*inscriptum*, *Cloeon* BENGTTSSON, 1914 (p. 215)  
 fam. Baetidae. Remark: *Cloeon inscriptum* is frequently treated as a subjective junior synonym of *Ephemera diptera* L.  
*insignis*, *Heptagenia* EATON, 1870 (p. 6)  
 fam. Heptageniidae, genus *Ecdyonurus*.  
*intermedia*, *Rhithrogena* METZLER TOMKA & ZURWERRA, 1987 (nomen nudum)  
 has never been published but is only cited in ZURWERRA et al. (1987). Compare the notes on *allobrogica* and BAUERNFEIND & WEICHSELBAUMER (1994).  
*interrupta*, *Caenis* STEPHENS, 1836 (p. 62)  
 is according to EATON (1871) after revision of typical material a subjective junior synonym of *Caenis macrura*, fam. Caenidae.  
*iridana*, *Heptagenia* (lapsus)  
 is a typing error of *iridina* that dates most probably from ROSTOCK (1881),

and which was transferred by EATON (1885). See *Baetis iridina*, fam. Heptageniidae, genus *Rhithrogena*.  
*iridina*, *Baetis* KOLENATI, 1859 (p. 31)  
 fam. Heptageniidae, genus *Rhithrogena*.  
*iridina picteti*, *Rhithrogena* SOWA, 1971 (sensu PUTHZ, 1975 et auct.)  
 see also the notes on *Rhithrogena picteti*.  
*italicus*, *Ecdyurus* EATON, 1883 (pl. 24, fig 46c)  
 is according to KIMMINS (1942a) a subjective junior synonym of *Ecdyurus helveticus*, fam. Heptageniidae, genus *Ecdyonurus*.

## K

*karasuensis*, *Drunella* KUSTAREVA, 1976 (p. 58)  
 is according to KLUGE (1995) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.  
*karelica*, *Eurylophella* TIENSUU, 1935 (p. 20)  
 is the typical species of the genus *Eurylophella* TIENSUU, fam. Ephemerellidae.  
 see also the notes on *brunescens*.  
*keffermuelleriae*, *Oligoneuriella* SOWA, 1973c (p. 657)  
 fam. Oligoneuriidae. Remark: SOWA describes this species based on material of KEFFERMÜLLER from the River Varta, see also *mikulskii* sensu Keffermüller.  
*konjarensis*, *Habrophlebia* sp. nympha IKONOMOV, 1963 (p. 175) (nomen imperfectum)  
 is according to JACOB & SARTORI (1984) a subjective junior synonym of *Ephemera fusca*, fam. Leptophlebiidae, genus *Habrophlebia*.  
*Krieghoffi*, *Chitonophora* ULMER, 1920 (p. 41) (nomen imperfectum)  
 as far as I know JACOB (1972a) firstly regarded this species as a subspecies of *Ephemerella mucronata*, fam. Ephemerellidae. Remark: However, this subspecific treatment has not been generally accepted and ULMER's *krieghoffi* is now in general considered to be a subjective junior synonym of *mucronata*, e.g. SOWA (1990), STUDEMANN et al. (1992) or KLUGE (2004).  
*krieghoffi intermedia*, *Ephemerella* KEFFERMÜLLER, 1979 (p. 67-71)  
 is a subjective junior synonym of *Ephemerella mucronata*, fam. Ephemerellidae. Remark: It is difficult to decide

- which author pronounced the synonymy at first because even at the time of description the species *C. krieghoffi* was regarded at most as a subspecies of *mucronata* itself. Therefore *intermedia* would have only rank of a variety. SOWA (1990) in the Polish checklist considered *krieghoffi* as a synonym of *mucronata* and for this reason automatically also *krieghoffi intermedia*.
- kulindrophthalmus, *Baetis* BOGOESCU, 1933 (p. 71)  
is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë melanonyx*, fam. Baetidae, genus *Baetis*.
- L**
- lactata*, *Ephemerella* BENGTTSSON, 1909 (p. 6)  
is according to BREKKE (1965: via *E. torrentium*) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*. Remark: *E. lactata* was unjustifiably renamed by BENGTTSSON (1917) into *E. torrentium* BENGTTSSON, see ULMER (1920a).
- lactea*, *Oxycypha* BURMEISTER, 1839 (p. 796)  
fam. Caenidae, genus *Caenis*. Remark: BURMEISTER based his description on *Ephemera lactea* of HOFFMANNSEGG in the Zoological Museum of Berlin.
- lactea*, *Caenis sensu* PICTET (1843: p. 276; 1845: pl. 43 figs. 1-4, pl. 44) nec BURMEISTER (nomen abusum)  
is according to MALZACHER (1986) referring to *Ephemera horaria*, fam. Caenidae, genus *Caenis*.
- lactella*, *Caenis* EATON, 1884 (p. 144)  
is according to MALZACHER (1986) a subjective junior synonym of *Ephemera horaria*, fam. Caenidae, genus *Caenis*. Remark: EATON introduces this name for *lactea sensu* PICTET, nec BURMEISTER, regarding the latter by mistake as a synonym of *Caenis dimidiata* STEPHENS (now *C. horaria*).
- lacustre*, *Centroptilum* EATON, 1885 (p. 176) (species inquirenda)  
fam. Baetidae, genus *Procloeon*. Remark: Only known from its locus typi "Lago Maggiore" needing urgently a revision.
- lacustris*, *Siphonurus* EATON, 1870 (p. 7)  
fam. Siphonuridae.
- landai*, *Rhithrogena* SOWA & SOLDÁN, 1984 (p. 76)  
fam. Heptageniidae.
- lateralis*, *Baetis* CURTIS, 1834 (p. 121)  
is the typical species of the genus *Electrogena* ZURWERRA & TOMKA, fam. Heptageniidae, there is one subspecies, *E. lateralis concii*, in southern Europe.
- latus*, *Siphonurus* BENGTTSSON, 1909 (p. 10)  
is according to ULMER (1927) a subjective junior synonym of *Siphonurus armatus*, fam. Siphonuridae.
- lauta*, *Habrophlebia* EATON, 1884 (p. 120)  
genus *Habrophlebia*, fam. Leptophlebiidae.
- lestagei*, *Behningia* MOTAS & BAČESKO, 1938 (p. 26)  
is according to LANDA (1969) a subjective junior synonym of *Behningia ulmeri*, fam. Behningiidae.
- leucophthalma*, *Ephemera* STRÖM, 1783 (p. 90)  
is according to EATON (1885) a subjective junior synonym of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.
- liebenauae*, *Baetis* KEFFERMÜLLER, 1974 (p. 183)  
Fam Baetidae.
- lineata*, *Ephemera* EATON, 1870 (p. 1)  
fam. Ephemeridae.
- Linnaeanus, *Siphonurus* EATON (1871) (p. 127, pl. 6 figs. 3, 3a ) (nomen imperfectum)  
is according to JACOB (1972a) a subjective junior synonym of *Baetis alternata*, fam. Siphonuridae, genus *Siphonurus*.
- lithuanica*, *Eurylophella* KAZLAUSKAS, 1959 (p. 168, pl. 1)  
is according to JACOB (1972a) a subjective junior synonym of *Eurylophella karelica*, fam. Ephemerellidae.
- litura*, *Cloë* PICTET, 1843 (p. 260, 1845: pl. 41, figs. 1-3) (species inquirenda)  
is an uncertain species, which was attributed by EATON (1871) to the genus *Centroptilum*, after JACOB (1972a) a nomen dubium probably belonging to *Baetis*. As far as I know this species is known by sure only from its locus typi "Mont Salève" in France near Geneva.
- longicauda*, *Baetis* STEPHENS, 1836 (p. 63)  
fam. Heptageniidae, genus *Heptagenia*.
- longicauda*, *Ephemera* OLIVIER, 1791 (p. 418)  
is the typical species of the genus *Palingenia* BURMEISTER, fam. Palingeniidae.
- longicauda*, *Heptagenia sensu* EATON (1871) et auct. nec STEPHENS (nomen abusum)

- is according to KIMMINS (1942a) referring to *Ecdyonurus dispar*, fam. Heptageniidae.
- loyolaea*, *Rhithrogena* NAVÁS, 1922 (p. 62) fam. Heptageniidae.
- luctuosa*, *Oxycypha* BURMEISTER, 1839 (p. 797) fam. Caenidae, genus *Caenis*.
- lusitanica* *Choroterpes* EATON, 1881 (p. 194) is according to EATON (1883) a subjective junior synonym of *Leptophlebia picteti*, fam. Leptophlebiidae, genus *Choroterpes*. Remark: There are several new congeneric species inhabiting the Iberian Peninsula. Thus this synonymy is somewhat questionable, cf. BAUERNFEIND, 1998.
- lutea*, *Ephemera* LINNAEUS, 1767 (p. 906) is the typical species of the genus *Potamanthus*, fam. Potamanthidae. A very similar subspecies, *Potamanthus luteus oriens* BAE & MCCAFFERTY, 1991, was described from the lower Amur river.
- lutea*, *Ephemera sensu* SULZER, 1776 (p. 171, pl. IV fig. 6) nec LINNAEUS (nomen abusum) is according to PICTET (1843) referring to *Ephemera glaucops*, fam. Ephemeridae.
- lutea*, *Ephemera* FOURCROY, 1785 (p. 352) (nomen praeoccupatum) is according to OLIVIER (1791) and subsequent authors as PICTET (1843) or EATON (1871, 1884) a subjective junior synonym of *Ephemera bioculata* LINNAEUS and for this reason of *Baetis fuscatus*, fam. Baetidae. Remark: After my own opinion, judging from the original description: "*L' Ephemère jaune à deux filets & ailes réticulées*" "*Long 4 lig.*" FOURCROY describes a large yellow species with reticulated wings and two tails, thus rather a *Heptagenia* than a *Baetis*!
- lutea*, *Ephemera sensu* PANZER, 1804 (p. 158) nec LINNAEUS, 1767 (nomen abusum) is according to EATON (1871) referring to *Ephemera virgo*, fam. Polymitarciidae, genus *Ephoron*.
- lutea*, *Ephemera sensu* STEPHENS, 1836 (p. 57) nec LINNAEUS (nomen abusum) is according to EATON (1871) after revision of typical material referring to *Baetis elegans* and for this reason with *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.
- Lutea*, *Ephemera sensu* BURMEISTER, 1839 (p. 804) (nomen abusum) is according to PICTET (1843) a *E. glaucops*, after revision of the collection of BURMEISTER by JACOB it represents however *Ephemera lineata*, fam. Ephemeridae, JACOB et al. (1975).
- Lutea*, *Ephemera sensu* RAMBUR, 1842 (p. 294) (nomen abusum) is according to EATON (1871) after revision of typical material a female imago of *Ephemera glaucops*, fam. Ephemeridae.
- luteola*, *Ephemera* O.F. MÜLLER, 1776 (p. 143) is the typical species of the genus *Centroptilum* EATON, fam. Baetidae.
- lutheri*, *Baetis* MÜLLER-LIEBENAU, 1967 (p. 48) fam. Baetidae. There is a subspecies described from Georgia, *Baetis lutheri georgiensis* ZIMMERMANN, 1981.
- lychnidense*, *Proclleon* IKONOMOV, 1962a (p. 131) is according to JACOB (1972a) and SOWA (1975a) a subjective junior synonym of *Cloeon bifidum*, fam. Baetidae, genus *Proclleon*.
- ## M
- macani*, *Ecdyonurus* THOMAS & SOWA, 1970 (p. 75) fam. Heptageniidae.
- macedonicus*, *Rhoënanthus* ULMER, 1920 (p. 14) is the typical species of the genus *Leucorhoënanthus* LESTAGE, fam. Neophemeridae. After ILLIES (1967) this taxon is insufficiently separated from *Caenis maxima* and after younger authors like KLUGE (1997) it represents a subjective junior synonym of the latter species.
- macronyx*, *Cloeon (Proclleon)* KLUGE & NOVIKOVA, 1992 (p. 46) fam. Baetidae, genus *Proclleon*. Notice the frequent misinterpretations of this taxon in the systematical list!
- macrura*, *Caenis* STEPHENS, 1836 (p. 60) is the typical species of the genus *Caenis*, fam. Caenidae.
- maculata*, *Ephemera* LINNAEUS, 1747 (p. 62) (nomen invalidum) is according to EATON (1871) an older (objectiveobjective?) synonym of *Ephemera vulgata* LINNAEUS, 1758. Because this name was published before

- 1758 it is not available in terms of § 8 of the Code (ICZN, 1999).
- Maculata, Ephemera PODA, 1761 (p. 97) (nomen dubium et imperfectum) is according to EATON (1871) possibly referring to *Heptagenia* (? venosa Subim.).
- maculata, Ephemera DE VILLERS, 1789 (p. 22) (nomen praeoccupatum) is a primary homonym of *E. maculata* PODA, 1761, but not of *E. maculata* LINNAEUS, 1747, because this name is not available. According to OLIVIER (1791) it represents a subjective junior synonym of *Ephemera vulgata*, fam. Ephemeridae. PICTET (1843) however took it into synonymy with *E. danica*, confusing both species himself. EATON (1883) took it into synonymy with *E. danica* and this opinion is accepted here.
- maculocaudata, Ephemerella IKONOMOV, 1961 (p. 56) is according to STUDEMANN & TOMKA (1989) a subjective junior synonym of *Potamanthus mesoleucus*, fam. Ephemerellidae, genus *Ephemerella*. Remark: This synonymy is not generally accepted (species inquirenda).
- maderensis, Cloe HAGEN, 1865 (p. 25) is according to EATON (1871) after revision of typical material a subjective junior synonym of *Cloe rhodani*, fam. Baetidae, genus *Baetis*.
- magnus, Brachycercus TSHERNOVA, 1952 (p. 284) is according to KLUGE (1991) a subjective junior synonym of *Brachycercus harrisellus*, fam. Caenidae.
- major, Ephemerella KLAPÁLEK, 1905 (p. 75) fam. Ephemerellidae, genus *Torleya*.
- marginalis, Baetis BURMEISTER, 1839 (p. 801) is according to HAGEN (1849) a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.
- marginata, Ephemera LINNAEUS, 1767 (p. 906) fam. Leptophlebiidae, genus *Leptophlebia*.
- marginata, Ephemera sensu Müller 1776 (nomen abusum?) is according to EATON (1871) presumably referring to *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*. Remark: After my own opinion the original description represents likely a Leptophlebiidae, moreover *P. luteus* is not known from Denmark at all.
- marginata, Semblis sensu PANZER (1804: SCHÄFFER, 1766: Tabula CCIV, fig.3) nec PANZER, 1799 (nomen abusum) is according to EATON (1871) referring to *Ephemera longicauda*, fam. Palingeniidae, genus *Palingenia*.
- marginatus, Potamanthus sensu PICTET, 1843 (p. 208, 1845: pl. 25 figs. 4-5) nec LINNAEUS (nomen abusum) EATON (1871) established the new name *Leptophlebia picteti*, fam. Leptophlebiidae, genus *Choroaterpes* for this misinterpretation of PICTET.
- marmoratum, Cloeon CURTIS, 1834 (p. 121) (nomen nudum et abortivum) is an unnecessary replacement name for *Ephemera diptera*, fam. Baetidae, genus *Cloeon*. According to EATON (1871) it actually represents a female of the latter species.
- maroccana, Ephemera FABRICIUS, 1793 (p. 69) is according to PICTET (1843) a subjective junior synonym of *Ephemera virgo*, fam. Polymitarciidae, genus *Ephoron*. Remark: According to EATON (1871), p. 60 the synonymy is questionable: "The species from Morocco is possibly distinct from *P. virgo*".
- maxima, Caenis JOLY, 1870 (p. 148, pl. 3) fam. Neoephemeridae, genus *Neoephemera* (*Leucorhoenanthus*).
- melanonyx, Cloë PICTET, 1843 (p. 258, 1845: pl. 40, fig. 6) fam. Baetidae, genus *Baetis*.
- mellea, Baetis CURTIS, 1834 (p. 121) The description is based on a subimago, according to EATON (1871) it represents a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.
- mesoleucus, Potamanthus BRAUER, 1857 (p. 75) fam. Ephemerellidae, genus *Ephemerella*. Remark: BRAUER describes this taxon in the addenda of his Neuroptera austriaca without figures and placed it in relationship with *Leptophlebia cincta* (sub. *Potamanthus*). Consequently ROSTOCK, EATON and KLAPÁLEK interpret this taxon as a Leptophlebiidae and the corresponding entries in the literature sub. *Leptophlebia mesoleuca* or *Habrophlebia mesoleuca* ref-

- ered indeed (erroneously) on a Leptophlebiid, namely *Habrophlebia lauta*! ULMER (1921) revised the type and identified firstly its relation to the family Ephemerellidae.
- Meyeri, *Leptophlebia* EATON, 1884 (p. 95) (nomen imperfectum)  
is according to BENGTTSSON (1912b) a subjective junior synonym of *Ephemera vespertina*, fam. Leptophlebiidae, genus *Leptophlebia*.
- mikulskii, *Oligoneuriella* SOWA, 1961 (p. 287)  
is according to SOWA (1973c) a subjective junior synonym of *Oligoneuria pallida*, fam. Oligoneuriidae, genus *Oligoneuriella*.
- mikulskii, *Oligoneuriella sensu* KEFFER-MÜLLER (1964) nec SOWA  
is according to SOWA (1973c) a separate species, namely *Oligoneuriella keffermuelleriae*, fam. Oligoneuriidae.
- miliaria, *Ordella* TSHERNOVA, 1952 (p. 286)  
is according to BRAASCH (1982) a subjective junior synonym of *Caenis robusta*, fam. Caenidae but after KLUGE (1997b) a species propria.
- minima, *Ephemera* LINNAEUS, 1747 (p. 62) (nomen invalidum)  
is according to EATON (1871) under reserve an older synonym of *Ephemera horaria* LINNAEUS, 1758. Remark: Following art. 11.1 of the code (ICZN, 1999) all zoological names published before 1758 are in general not available.
- minima, *Ephemera* O.F. MÜLLER, 1776 (p. 142)  
is according to EATON (1871) under reserve identical with *Caenis dimidiata*, and for this reason a subjective junior synonym of *Ephemera horaria*, fam. Caenidae, genus *Caenis*. Remark: The homonymous species of LINNAEUS, 1747 is a nomen invalidum and thus cannot claim for priority.
- minima, *Brachycercus* CURTIS, 1834 (p. 122)  
is according to EATON (1871) under reserve a subjective junior synonym of *Ephemera minima* LINNAEUS (nom. invalidum) and for this reason of *E. horaria*, fam. Caenidae, genus *Caenis*.
- minor, *Ephemera* STEPHENS, 1836 (p. 60)  
is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera fusca*, fam. Leptophlebiidae, genus *Habrophlebia*.
- minutus*, *Brachycercus* TSHERNOVA, 1952 (p. 285)  
fam. Caenidae.
- mirabilis, *Cinygma* ARO, 1910 (p. 30, fig. 22)  
is according to BENGTTSSON (1930a) a subjective junior synonym of *Arthroplea congener*, fam. Arthropleidae.
- modesta, *Habroleptoides sensu* SCHOENEMUND, 1929 et auct., nec HAGEN (nomen abusum)  
is according to SARTORI & JACOB (1986) a separate taxon, namely *Habroleptoides confusa*, fam. Leptophlebiidae.
- Modestus*, *Potamanthus* HAGEN, 1864 (p. 39) (nomen imperfectum)  
is not a Central European species at all, but an endemic species of Sardegna and Corsica. All Records in the Central European literature refer to *modesta sensu* SCHOENEMUND et auct. and for this reason to *Habroleptoides confusa*, fam. Leptophlebiidae.
- moesta, *Caenis* BENGTTSSON, 1917 (p. 181)  
is according to JACOB (1974b) a subjective junior synonym of *Oxycypha luctuosa*, fam. Caenidae, genus *Caenis*.
- moffatae, *Ephemerella* ALLEN, 1977 (p. 286)  
is according to JACOBUS & MCCAFFERTY (2003) a subjective junior synonym of *Ephemerella mucronata*, fam. Ephemerellidae.
- mongolica, *Oligoneuriella* SOLDÁN & LANDA, 1977 (p. 13)  
is according to KLUGE (2004) a subjective junior synonym of *Oligoneuria pallida*, fam. Oligoneuriidae, genus *Oligoneuriella*.
- montana, *Baetis* Pictet, 1843 (p. 172, 1845: pl. 20 fig. 3) (nomen dubium).  
Locus typi is according to Pictet Chamounix (F). The figure is showing a true *Ecdyonurus*, most probably judging from the colouration a member of the so called *venosus*-group.
- montana, *Baetis sensu* HAGEN (1863) nec PICTET (nomen abusum et ambiguum)  
refers according to EATON (1870, 1871) in part to *Heptagenia insignis* in part to *Ephemera venosa*, fam. Heptageniidae, genus *Ecdyonurus*.
- mucronata*, *Chitonophora* BENGTTSSON, 1909 (p. 8)

fam. Ephemerellidae, genus *Ephemerella*.

*mutica*, *Ephemera* LINNAEUS, 1758

(p. 547)

fam. Baetidae, genus *Baetis* (*Nigrobaetis*).

*muticus intermedius*, *Baetis* ALBA-TERCEDOR, 1982a (p. 9)

falls according to SARTORI & THOMAS (1991) into the variation range of the nominal species and is for this reason a subjective junior synonym of *Ephemera mutica*, fam. Baetidae, genus *Baetis*.

## N

*nana*, *Centroptilum* BOGOESCU, 1951

(p. 781) (nomen ambiguum)

fam. Baetidae, genus *Pseudocentroptiloides*. Remark: A very often misinterpreted species. Notice to the synonym of *Cloeon macronyx* as well as to the annotation to its nomenclature by KLUGE & NOVIKOVA (1992).

*nana*, *Centroptilum sensu* KAZLAUSKAS (1964) (partim larva) nec BOGOESCU (nomen abusum)

is according to KLUGE & NOVIKOVA (1992) referring to *Cloeon (Procloeon) macronyx*, fam. Baetidae, genus *Procloeon*.

*nanum*, *Cloeoptilum sensu* KAZLAUSKAS (1977) nec BOGOESCU (nomen abusum)

is according to KLUGE & NOVIKOVA (1992) referring to *Cloeon (Procloeon) macronyx*, fam. Baetidae, genus *Procloeon*.

*nanum*, *Centroptilum sensu*

KEFFERMÜLLER & SOWA (1984) (partim larva) nec BOGOESCU (nomen abusum) is according to KLUGE & NOVIKOVA (1992) referring to *Cloeon (Procloeon) macronyx*, fam. Baetidae, genus *Procloeon*.

*nazarita*, *Torleya* ALBA-TERCEDOR & DERKA, 2003 (p. 24)

is according to JACOBUS et al. (2004) a subjective junior synonym of *Ephemerella major*, fam. Ephemerellidae, genus *Torleya*.

*nervosa*, *Ephemera* DE VILLERS, 1789 (p. 22, Nr. 14) (nomen abortivum)

is an unnecessary replacement name for the species no. 183 of RETZIUS (1783) *Ephemera fusco-grisea*, fam. Heptageniidae, genus *Kageronia*.

*nexus*, *Baetis* NAVÁS, 1918 (p. 38)

fam. Baetidae. Remark: see notes on *pentaphlebodes* for reasons why *nexus* has precedence over *pentaphlebodes*.

*niger* (?), *Baetis sensu* LESTAGE, 1919

(p. 151) nec LINNAEUS (nomen abusum) is according to MÜLLER-LIEBENAU (1978) referring to *Raptobaetopus tenellus*, fam. Baetidae, genus *Baetopus*.

*nigra*, *Ephemera* LINNAEUS, 1761 (p. 377)

fam. Baetidae, genus *Baetis* (*Nigrobaetis*)

is the typical species of the subgenus or resp. genus *Nigrobaetis* NOVIKOVA & KLUGE, 1987.

*nigra*, *Ephemera* FOURCROY, 1785 (p. 352) (nomen praeoccupatum)

is according to EATON (1871) a subjective junior synonym of *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia*. Remark: The original description of FOURCROY "*L'Ephémère noire à trois filtes. Long. 1 lig. Larg. 1/3 lig.*" is a description of a conspicuous small but broad and black species with three tails, thus most probably a species of genus *Caenis*. *Cloeon* sp. sub. *E. horaria* has after FOURCROY "3 lig." and is apparently bigger. Modern true *Ephemera* have „8-9 lig“. A Leptophlebiid can thus be excluded in general by its larger size.

*nigrescens*, *Heptagenia* KLAPÁLEK, 1908 (p. 24)

is according to PUTHZ (1975) a subjective junior synonym of *Baetis picteti*, fam. Heptageniidae, genus *Ecdyonurus*, compare also GODUNKO (2000).

*nigrimana*, *Ephemera* DUFOR, 1841

(p. 580) (nomen dubium)

This species has been combined into the genus *Heptagenia* by EATON (1871) (i.e. fam. Heptageniidae in terms of today). Its description is based on a female imago and EATON declares it a species dubia. Later EATON (1883) calls this species a doubtful synonym of *Ephemera venosa sensu* EATON, fam. Heptageniidae, genus *Ecdyonurus*.

*nivata*, *Heptagenia* EATON (1871) (p. 137, pl. 6, fig. 10)

fam. Heptageniidae, genus *Rhithrogena*. Remark: nec *R. ? nivata sensu* GRANDI (1960) = *loyolaea*, teste THOMAS (1970).

*nivea*, *Caenis* BENGTTSSON, 1917 (p. 181)

is according to SAARISTO (1966) a subjective junior synonym of *Caenis rivulorum*, fam. Caenidae.  
 nocturna, *Caenis* BENGTTSSON, 1917 (p. 185)  
 is according to JACOB (1974b) a subjective junior synonym of *Oxycypha lactea*, fam. Caenidae, genus *Caenis*.  
*norvegicus*, *Metretopus* EATON, 1901 (p. 254)  
 is the typical species of the genus *Metretopus* EATON, 1901. According to BREKKE (1940) it is a subjective junior synonym of *Heptagenia borealis*, fam. Metretopodidae, genus *Metretopus*.  
*notata*, *Ephemera* GMÉLIN, 1790 (p. 2630)  
 is according to EATON (1871) a subjective junior synonym of *Ephemera bioculata* (sub. *binoculatus*, lapsus), and thus *Ephemera fuscata*, fam. Baetidae, genus *Baetis*.  
*notata*, *Ephemerella* EATON, 1887 (p. 305, pl. 65, fig. 9)  
 fam. Ephemerellidae.  
*nubecularis*, *Baëtis* EATON, 1898 (p. 265)  
 fam. Baetidae.  
*nuessleri*, *Siphonurus* JACOB, 1972b (p. 144)  
 is according to PUTHZ (1977b) a subjective junior synonym of *Siphonurus lacustris*, fam. Siphonuridae.

## O

*oblita*, *Siphurella* BENGTTSSON, 1909 (p. 13)  
 is according to BENGTTSSON (1930a) a subjective junior synonym of *Siphurus linnaeanus* and for this reason of *Baetis alternata*, fam. Siphonuridae, genus *Siphonurus* (*Siphurella*).  
*obscura*, *Baëtis* STEPHENS, 1836 (p. 65)  
 is after revision by HAGEN (1857) and EATON (1871) a female imago of *Ephemera rosea* and for this reason a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.  
*obscura*, *Baetis sensu* PICTET, 1843 (p. 182, 1845: pl. 23, fig. 1) nec STEPHENS (nomen abusum)  
 is according to EATON (1871) under reserve referring to *Baetis lateralis*, fam. Heptageniidae, genus *Electrogena*.  
*obscurum*, *Cloeon* CURTIS, 1834 (p. 121)  
 is already after Curtis himself probably a subimago of *Cloeon dipterum*. PICTET (1843) listed this species consequently as a subjective junior synonym of

*Ephemera diptera*, fam. Baetidae, genus *Cloeon*.

*obscura*, *Cloe* RAMBUR, 1842 (p. 297) (nomen praeoccupatum)  
 is according to EATON (1871) a female subimago of the genus *Cloeon*, fam. Baetidae.  
*ochraceum*, *Cloëon* STEPHENS, 1836 (p. 68)  
 is according to EATON (1871) after revision of typical material a subjective junior synonym of *Ephemera luteola*, fam. Baetidae, genus *Centroptilum*.  
*oophora*, *Caenis* PICTET, 1843 (p. 284, 1845: pl. 45, fig. 4 )  
 is according to ULMER (1921, 1920a) a subjective junior synonym of *Caenis macrura*, fam.: Caenidae. Remark: After terms of today this species could easily refer to the similar *Caenis martae* BELFIORE, 1984, described from Sardegna as *C. oophora*.  
*orientalis*, *Baetis atrebatinus* ssp. KLUGE, 1983 (p. 74)  
 falls according to KLUGE (1995) into the variation range of the nominal species and has been subsequently treated as a subjective junior synonym of *Baetis atrebatinus*, fam. Baetidae e.g. by KLUGE (1997).  
*orientalis*, *Ephemera* MCLACHLAN, 1875 (p. 168)  
 was erroneously taken into synonymy with *Ephemera lineata* by IMANISHI (1940: p176), see TSHERNOVA (1973), fam. Ephemeridae.  
*ornatum*, *Procloeon* TSHERNOVA, 1928 (p. 319)  
 is according to ILLIES (1967) a subjective junior synonym of *Procloeon pseudorufulum* and for this reason of *Cloeon bifidum*, fam. Baetidae, genus *Procloeon*. Remark: SOWA (1975a) considered *Procloeon ornatum* a separate taxon, KLUGE (1997) however calls *ornatum* a synonym of *bifidum*.

## P

*pallida*, *Cloeon* LEACH, 1815 (p. 137)  
 is according to EATON (1885) a subjective junior synonym of *Ephemera diptera*, fam. Baetidae, genus *Cloeon*.  
*pallida*, rhenana var., *Oligoneuria* HAGEN, 1855 (p. 268 pl. 1) (nomen imperfectum) fam. Oligoneuriidae, genus *Oligoneuriella*.  
*pallida*, *Oligoneuriella sensu* SOWA (1973c) nec HAGEN (nomen abusum)

- is according to MOL (1984) a separate species, namely *Oligoneuriella polonica*, fam. Oligoneuriidae.
- pallidus, *Brachycercus* TSHERNOVA, 1928a (p. 114)  
is according to ILLIES (1967) and KLUGE (1991) (rev.) a subjective junior synonym of *Brachycercus harrisellus*, fam. Caenidae. Remark: Compare the synonymy of *B. europaeus* for misinterpretations of *B. pallidus*!
- parahelveticus, *Ecdyonurus* HEFTI, TOMKA & ZURWERRA, 1986 (p. 370)  
fam. Heptageniidae.
- parapulchrum, *Centroptilum* KEFFERMÜLLER & SOWA, 1975 (p. 482) (species inquirenda)  
differs from *Centroptilum pulchrum* after its original description only in details of the egg chorion structure, here the number of rows of papills. After my own opinion it is falling into the variation range of this species because this character show a high variability in *Procloeon* and related species. Compare the discussion of KLUGE & NOVIKOVA (1992: p. 51 of *P. nana*). Fam. Baetidae, genus *Procloeon*.
- parnassiana, *Ephemera* DEMOULIN, 1958 (p. 226)  
has been regarded as a presumed subjective junior synonym of *Ephemera danica*, fam. Ephemeridae by JACOB et al. (1975a) or PUTHZ (1978) and subsequent authors. According to THOMAS & PARPET (2005) however, it is representing a separate distinct species which is distributed entirely mediterranean.
- parva, *Baetis* GRANDI, 1949 (p. 287) (nomen praeoccupatum)  
is a primary homonym of the nearctic *Baetis parvus* DODDS, 1923 and was renamed by GRANDI (1951b) as *Baetis pavidus*, fam. Baetidae.
- Parvula, *Ephemera* SCOPOLI, 1763 (p. 264) (nomen dubium et imperfectum)  
is according to PICTET (1843) with reservations a subjective senior synonym of *Cloë pumila*, according to EATON (1871) however also under reserve a subjective junior synonym of *Centroptilum luteolum*.
- Paulae, *Ephemera* GRANDI, 1955 (p. 202) (nomen imperfectum)  
is according to JACOB (1972a) and JACOB et al. (1975) a subjective junior synonym of *Ephemera zettana*, fam. Ephemeridae.
- pavidus, *Baetis* GRANDI, 1951b (p. 181)  
is an objective replacement name for the primary homonym *Baetis parva* GRANDI, 1949, nec DODDS, 1923, fam. Baetidae. Remark: Following art. 60.3 of the code (ICZN, 1999) GRANDI, 1951 obtained authorship replacing GRANDI, 1949.
- Pazsiczkyi, *Ecdyurus* PONGRÁCZ, 1913 (p. 179) (nomen imperfectum)  
is according to JACOB (1972a) a subjective junior synonym of *Baetis aurantiaca*, fam. Heptageniidae, genus *Ecdyonurus*, see also PUTHZ (1973b).
- pennata, *Caenis* STEPHENS, 1836 (p. 61)  
is according to EATON (1871) after revision of typical material a subjective junior synonym of *Brachycercus harrisellus*, fam. Caenidae.
- pennigerus, *Limulus* O.F. MÜLLER, 1785 (p. 127)  
fam. Prosopistomatidae, genus *Prosopistoma*.
- pennulatum, *Centroptilum* EATON, 1870 (p. 2)  
fam. Baetidae, genus *Procloeon*.
- pentaplebodes, *Baetis* UJHELYI, 1966 (p. 206)  
is according to ALBA-TERCEDOR (2002) a subjective junior synonym of *Baetis nexus*, fam. Baetidae. Remark: The formal objection of SARTORI & SOLDÁN (2004: Case 3322) against this synonymy has been rejected by the International Commission of Zoological Nomenclature (ICZN, 2007).
- phaeopa, *Baetis* STEPHENS Cat. 306., No. 3394  
is only a catalogue species without description and for this reason a nomen nudum. Remark: STEPHENS (1836) took *Baetis lateralis* CURTIS, 1834 by mistake into synonymy with his species and gives Curtis' description of *Baetis lateralis*. EATON (1870) gives a new own description after revision of Stephens' material emending the spelling to *Baetis phaeops*.
- phaeops, *Baetis* EATON, 1870 (p. 4.)  
is according to EATON (1885, 1871) a subjective junior synonym of *Baetis vernus*, fam. Baetidae.
- Picteti, *Baetis* MEYER-DÜR, 1864 (p. 221) (nomen imperfectum)  
fam. Heptageniidae, genus *Ecdyonurus*. Remark: ROSTOCK (1878) regards this species as a subjective junior synonym of *Ephemera venosa* by mistake and in



- consequence *Baetis picteti* disappeared for nearly a century in this synonymy until PUTHZ (1975) reerected it after reexamination of the type specimen.
- Picteti*, *Leptophlebia* EATON (1871) (p. 87) (nomen imperfectum)  
 formal new name for *Potamanthus marginatus* PICTET, 1843. fam. Leptophlebiidae, genus *Choroterpes*. Remark: EATON considered PICTET's name as preoccupied (by *Ephemera marginata* LINNAEUS). After terms of today PICTET's name was available.
- picteti*, *Rhithrogena* SOWA, 1971d (p. 903) fam. Heptageniidae. Remark: SOWA described this species at first as a subspecies, *R. picteti picteti*, with the sibling species *R. picteti carpatica*. A few years later PUTHZ (1975) discovers the synonymy of *R. carpatica* and *R. iridina*, consequently *R. picteti picteti* became *R. iridina picteti*. However the subspecific concept did not prove itself and since SOWA & DEGRANGE (1987) both taxa are generally considered as valid separate species, namely *R. picteti* and *R. iridina*.
- picteti carpathica*, *Rhithrogena* SOWA, 1971d (p. 905)  
 is according to PUTHZ (1975) a subjective junior synonym of *Baetis iridina*, fam. Heptageniidae, genus *Rhithrogena*.
- pisciforme*, *Binoculus* DUMERIL, 1816 (p. 106)  
 is according to EATON (1884) a subjective junior synonym of *Binoculus foliaceus* and for this reason of *Limulus pennigerus*, fam. Prosopistomatidae, genus *Prosopistoma*.
- placita*, *Leptophlebia* BENGTTSSON, 1917 (p. 176)  
 is according to PUTHZ (1978) a subjective junior synonym of *Ephemera cincta*, fam. Leptophlebiidae, genus *Leptophlebia*, see also HAYBACH & JACOB (2006).
- plumosa*, *Ephemera* O.F. MÜLLER, 1776 (p. 142) (nomen dubium)  
 is according to EATON (1871) under reserve a not further identified representative of the genus *Caenis*.
- podhalensis*, *Rhithrogena* SOWA & SOLDÁN, 1986 (p. 565)  
 fam. Heptageniidae.
- poecile*, *Oligoneuriella* IKONOMOV, 1962b (p. 69)  
 is according to JACOB (1972a) and SOWA (1973c) a subjective junior synonym of *Oligoneuriella mikulskii* and for this reason of *Oligoneuria pallida*, fam. Oligoneuriidae, genus *Oligoneuriella*.
- polonica*, *Oligoneuriella* MOL, 1984 (p. 127)  
 fam. Oligoneuriidae.
- potamonensis*, *Centroptilum* JACOB, 1973 (p. 169, figs. 1-4)  
 is according to KEFFERMÜLLER & SOWA (1975) a subjective junior synonym of *Centroptilum pulchrum*, fam. Baetidae, genus *Procloeon*, see also KLUGE & NOVIKOVA (1992).
- praetextum*, *Cloeon* BENGTTSSON, 1914 (p. 217) (nomen imperfectum)  
 is according to KIMMINS (1957b) and ILLIES (1967) a subjective junior synonym of *Cloeon simile*, fam. Baetidae. Remark: SOWA (1980) gives some diagnostic features to distinguish both species. They are falling after my own opinion into the range of variation of *C. simile*, see also GLAZACZOW (1994); but contra ENGBLOM (1996).
- Principii*, *Baetis* GRANDI, 1949 (p. 295) (nomen imperfectum)  
 is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë melanonyx*, fam. Baetidae, genus *Baetis*.
- procellaria*, *Ephemera* FUEßLIN, 1775 (p. 45)  
 is according to SCHWARZ (1830) a subjective junior synonym of *Ephemera marginata*, fam. Leptophlebiidae, genus *Leptophlebia* s. str. Rem: After Fueßlin this species has its flightperiod in august and it occurs in masses in the evening after sunset. So it cannot be identical with the spring species *E. marginata*, probably it belongs to the genus *Caenis* or *Ephoron*.
- propinqua*, *Cloe* WALSH, 1863 (p. 207)  
 is a Nearctic taxon that has been suggested to be a subjective senior synonym of *B. tricolor* by NOVIKOVA & KLUGE (1987), see notes to the latter species.
- pseudatrebatinus*, *Baetis* GRANDI, 1960 (p. 155, 353) (nomen abortivum).  
 is according to MÜLLER-LIEBENAU (1969) an erroneously introduced name by GRANDI (1960) for *Baetis subatrebatinus*, fam. Baetidae.
- pseudorivulorum*, *Caenis* KEFFERMÜLLER, 1960 (p. 42, pl. 9)  
 fam. Caenidae. There is one subspecies of MALZACHER (1986: p. 24) from Italy *C. pseudorivulorum belfiorei* which represents after BUFFAGNI (1999) a species propria (*C. belfiorei*). KLUGE

(2004) however calls this species a subjective junior synonym of *Caenis pseudorivulorum*.

pseudorufulum, Procloëon KIMMINS, 1957b (p. 29)  
is according to JACOB (1972a) and SOWA (1975a) a subjective junior synonym of *Cloeon bifidum*, fam. Baetidae, genus *Procloëon*.

pulchrum, *Centroptilum* EATON, 1885 (p. 177)  
fam. Baetidae, genus *Procloëon*.

pulchrum, *Centroptilum* CRASS, 1947 (p. 84) (nomen praeoccupatum)  
DEMOULIN (1970) assigned the formal new name *Centroptilum crassi* for this African taxon.

pumila, Cloe BURMEISTER, 1839 (p. 799)  
was considered firstly by EATON (1871) under reserve and later by BENGTTSSON (1912b) mandatory a subjective junior synonym of *Ephemera mutica*, fam. Baetidae, genus *Baetis* (*Nigrobaetis*). Rem.: This assesment was widely accepted by subsequent revising authors like MÜLLER-LIEBENAU (1969) or LANDA (1969). However the synonymy remains unproven. According to JACOB (1972a) only 1 subimago of the original material (2 ♂. and 1 Subimago), persists the centuries in the collection of Burmeister (museum Halle/ Germany). This specimen bears a label in the authors own writing "pumila Br., Halle", and was consequently designated as the lectotype by JACOB. This lectotype was in fact a *Choroterpes picteti*. For reasons of nomenclatural stability this name is protected (~nomen conservandum), and because the original description by BURMEISTERS was founded on the imaginal stages, we follow the recommendation of JACOB to avoid to use the name *pumila* Burmeister.

pumila, Cloe *sensu* RAMBUR, 1842 (p. 298) nec BURMEISTER (nomen abusum)  
is accordind to EATON (1871) after revision of the collection of Rambur a *Cloeon russulum*, and thus *Ephemera diptera*, fam. Baetidae, genus *Cloeon*.

punctifrons, *Prosopistoma* LATREILLE, M., 1833 (p. 34)  
is according to EATON (1884) a subjective junior synonym of *Binoculus foliaceus* and thus of *Limulus pennigerus*, fam. Prosopistomatidae, genus *Prosopistoma*.

purpurascens, *Baetis* PICTET, 1843 (p. 174, 1845: pl. 20 fig. 4

is according to EATON (1871) and KIMMINS (1942) a subjective junior synonym of *Ephemera venosa*, fam. Heptageniidae, genus *Ecdyonurus*.

*pusilla*, *Caenis* NAVÁS, 1913 (p. 63, pl. 5)  
fam. Caenidae.

pusillus, *Baetis* BENGTTSSON, 1912a (p. 113)  
is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Cloë rhodani*, fam. Baetidae, genus *Baetis* (*Rhodobaetis*).

*putzsi*, *Rhithrogena* SOWA, 1984 (p. 47)  
fam. Heptageniidae.

*puytoraci*, *Rhithrogena* SOWA & DEGRANGE, 1987 (p. 524)  
fam. Heptageniidae.

pyrenaicus, *Siphonurus* NAVÁS, 1930 (p. 53)  
is according to PUTHZ (1977b) a subjective junior synonym of *Siphonurus lacustris*, fam. Siphonuridae.

## Q

quadrilineata, *Heptagenia* LANDA, 1969 (p. 179, pl. 15 fig. 4Q, p. 194ff.)  
fam. Heptageniidae, genus *Electrogena*.  
Remark: German records refer as a rule to *E. ujhelyii*. Attend to the revision of KLONOWSKA-OLEJNIK (2004).

quadrilineata, *Electrogena sensu* ZURWERRA & TOMKA (1985) not Landa  
is by reason of the personally checked collection point „Bohnenbach bei Sipplingen“ in southern Baden-Württemberg refering to *Ecdyonurus ujhelyii*, fam. Heptageniidae, genus *Electrogena*.

quaesitor, *Ecdyurus* EATON, 1883 (pl. 24, fig. 46b)  
is according to EATON (1887, p. 286) only a variation and thus a subjective junior synonym of *Ephemera venosa*, fam. Heptageniidae, genus *Ecdyonurus*.

## R

Rabaudi, *Procloëon* VERRIER, 1949b (p. 184) (nomen imperfectum)  
is according to SOWA (1980) under reserve a subjective junior synonym of *Cloeon simile*, fam. Baetidae.

Reaumuri, *Eucharides* JOLY & JOLY, 1876 (p. 314) (nomen imperfectum)  
is according to EATON (1884) a subjective junior synonym of *Ephemera lutea* LINNAEUS, fam. Potamanthidae, genus *Potamanthus*.

- reticulata, Baetis BURMEISTER, 1839 (p. 801)  
is according to EATON (1871) a subjective junior synonym of *Leptophlebia helvipes* and thus of *Ephemera submarginata*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).
- reticulata, Ephemera FOURCROY, 1785 (p. 350)  
is according to OLIVIER (1791) a subjective junior synonym of *Ephemera lutea*, fam. Potamanthidae, genus *Potamanthus*.
- rhenana var. pallida HAGEN, 1855 (p. 268, pl. 3, figs. 1-3)  
see *pallida*, *Oligoneuria*.
- rhenana, *Oligoneuria* IMHOFF, 1852 (p. 180)  
is the typical species of the genus *Oligoneuriella*, fam. Oligoneuriidae.
- rhenanus, Ecdyurus NEERACHER, 1910 (p. 566)  
is according to ULMER (1929) a subjective junior synonym of *Heptagenia insignis*, fam. Heptageniidae, genus *Ecdyonurus*.
- rhenicola, Caenis MALZACHER, 1976 (p. 130)  
is according to ALBA-TERCEDOR & MALZACHER (1986) a subjective junior synonym of *Caenis pusilla*, fam. Caenidae.
- rhithralis, Baetis SOLDÁN & THOMAS, 1983 (p. 356)  
is according to NOVIKOVA & KLUGE (1994) a subjective junior synonym of *Baetis digitatus*, fam. Baetidae, genus *Baetis* (*Nigrobaetis*). Remark: This synonymy is not generally accepted.
- rhodani, Cloé PICTET, 1843 (p. 248; 1845: pl. 36-39)  
fam. Baetidae, genus *Baetis* (*Rhodo-baetis*). There are two subspecies *Baetis rhodani sinespinosus* SOLDÁN & THOMAS, 1983 from Algeria and *Baetis rhodani tauricus* GODUNKO & PROKOPOV, 2003 from the Crim peninsula.
- rivulorum, Caenis EATON, 1884 (p. 143)  
original as *dimidiata* var. *rivulorum*, fam. Caenidae.
- rivulorum, Ecdyonurus NAVÁS, 1928 (p. 46)  
is according to THOMAS (1968b) with reservations a subjective junior synonym of *Baetis lateralis*, fam. Heptageniidae, genus *Electrogena*.
- rivuscellana*, *Electrogena* SARTORI & LANDOLT, 1991 (p. 460) *In*: LANDOLT et al. (1991)  
is according to BELFIORE & DESIO (1995) a subjective junior synonym of *Ecdyonurus ujhelyii*, fam. Heptageniidae, genus *Electrogena*.
- robusta, Caenis EATON, 1884 (p. 145)  
fam. Caenidae.
- robustum, Cloeon BOGOESCU, 1933 (p. 75)  
is according to BOGOESCU (1958) a subjective junior synonym of *Ephemera diptera*, fam. Baetidae, genus *Cloeon*.
- Roeselii, Palingenia JOLY, 1872 (p. 67, T. 16, pl. 1) (nomen imperfectum)  
is according to LESTAGE (1917, 1924a) a subjective junior synonym of *Baetis ignota*, fam. Isonychiidae, genus *Isonychia*.
- rolandi, *Rhithrogena* WEICHSELBAUMER, 1995 (p. 158)  
fam. Heptageniidae. Remark: This species is in my own opinion neither conspecific with *R. puytoraci* nor with *R. taurisca*. Egg chorion structures of these three species differ significantly. Differences of penis structure in ♂-imagoes however are inconspicuous, nevertheless it is a bona species. Attend to the notes on *R. ferruginea*.
- rosea, Ephemera STEPHENS, 1836 (p. 59)  
is after revision of typical material by HAGEN (1857) and EATON (1871) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- rossicus, Ecdyonurus TSHERNOVA, 1928b (p. 321)  
is according to JACOB (1972a) a subjective junior synonym of *Ephemera fuscogrisea*, fam. Heptageniidae, genus *Kageronia*, see also PUTHZ (1977b).
- Rufa, Ephemera RAMBUR, 1842 (p. 296) (nomen dubium et imperfectum)  
Rem.: After its original description this species possesses 3 tails and is about as large as *Ephemera Flavicans* RAMBUR (= *Potamanthus luteus*). Despite this information PICTET (1843) considered it conspecific with his considerable smaller *Potamanthus erythroptalmus* (= *Ephemerella ignita*), while EATON (1871) considered it after revision in spite of its 3 tails a *Heptagenia* (*venosa*?) ♀-Imago (= *Kageronia fuscogrisea*?).
- rufescens, Ephemera STEPHENS, 1836 (p. 59)  
is according to PICTET (1843) and after revision of typical material also according to HAGEN (1857) and EATON

- (1871) a subjective junior synonym of *Ephemera ignita*, fam. Ephemerellidae, genus *Ephemerella*.
- ruffoi*, *Ecdyonurus* BELFIORE & D'ANTONIO, 1991 (p. 255)  
is according to BAUERNFEIND (1997) an unjustified emendation and therefore an objective younger synonym of *Ecdyonurus ruffii*, fam. Heptageniidae. Authorship according to article 33.2.3, ICZN (1999).
- Ruffii*, *Ecdyonurus* GRANDI, 1953 (p. 335) (nomen imperfectum)  
fam. Heptageniidae.
- rufula*, *Ephemera* O.F. MÜLLER, 1776 (p. 143)  
is according to SOWA, (1975b) a subjective junior synonym of *Ephemera dip-tera*, fam. Baetidae, genus *Cloeon*. Remark: KIMMINS (1957b) and JACOB (1972a) regard *rufula* a synonym of *Cloeon inscriptum* synonym. Attend to the notes on *Cloeon rufulum*.
- rufulum*, *Cloeon* sensu EATON, ULMER, SCHOENEMUND et auct. (nomen ab-  
usum)  
is according to KIMMINS (1957b) and JACOB (1972a) referring to *Cloeon bifidum*, fam. Baetidae, genus *Procloeon*.
- russula*, *Ephemera* auct.  
is according to EATON (1871) an acci-  
dental misspelling of *Ephemera rufula*,  
see there.
- russulum*, *Cloeon* auct.  
is according to EATON (1871) an acci-  
dental misspelling of *Cloeon rufulum*,  
see there.
- S**
- samalorum*, *Ecdyonurus* LANDA & SOLDÁN,  
1982 (p. 31) (species inquirenda)  
fam. Heptageniidae, genus *Electro-  
gena*. Remark: This species needs a revi-  
sion. It falls probably into the variation  
range of *Ecdyonurus ujhelyii*.
- savoienensis*, *Rhithrogena* ALBA-TERCEDOR  
& SOWA, 1987 (p. 76)  
fam. Heptageniidae.
- scambus*, *Baetis* EATON, 1870 (p. 3)  
fam. Baetidae.
- scanicus*, *Baëtis* BENGTTSSON, 1917  
(p. 188)  
is according to MÜLLER-LIEBENAU  
(1964) a subjective junior synonym of  
*Baetis buceratus*, fam. Baetidae.
- Schoenemundi*, *Cloëon* BENGTTSSON, 1936  
(p. 3) (nomen dubium et imperfectum)
- falls after my own opinion into the varia-  
tion range of *Cloeon simile*, fam. Baeti-  
dae. Remark: I'm following here the opinion  
of ILLIES (1967). SOWA (1980) gives some  
distinguishing characters based on french  
specimens (locus typi: Denmark!) but they  
are not really convincing me as do the  
characters introduced by ENGBLOM (1996).
- semicolorata*, *Baetis sensu* PICTET, 1843  
nec CURTIS (nomen abusum)  
is according to SOWA (1971d) referring to  
*Rhithrogena picteti*, fam. Heptageniidae.
- semicolorata picteti*, *Rhithrogena* SOWA,  
1971 (sensu ZURWERRA et al. 1987)  
is an inmotivated and generally not ac-  
cepted downgrading of *Rhithrogena pic-  
teti*, fam. Heptageniidae ZURWERRA,  
METZLER & TOMKA (1987) to a subspecies  
of *B. semicoloratus*, fam. Heptageniidae.
- semicoloratus*, *Baetis* CURTIS, 1834  
(p. 121)  
is the typical species of the genus  
*Rhithrogena*, fam. Heptageniidae.  
Remark: Records in old literature may rep-  
resent any species of the genus.
- semitincta*, *Baetis* PICTET, 1843 (p. 180,  
1845: pl. 22, figs. 1-3)  
is according to EATON (1871) and SOWA  
(1971d) a subjective junior synonym of  
*Baetis semicoloratus*, fam. Heptagenii-  
dae, genus *Rhithrogena*.
- semitincta*, *Rhithrogena sensu* KIMMINS  
(1936), nec PICTET (nomen abusum)  
is according to SOWA (1971d) referring to  
*Rhithrogena picteti*, fam. Heptageniidae.
- shadini*, *Pseudocentropilum* ? KAZLAUS-  
KAS, 1964 (p. 170) (nomen imperfectum)  
is according to KLUGE & NOVIKOVA  
(1992) a subjective junior synonym of  
*Centropilum nana*, fam. Baetidae, ge-  
nus *Pseudocentropiloides*.
- sibirica*, *Ephemerella* TSHERNOVA, 1952  
(p. 278)  
is according to BAYKOVA (1972) a sub-  
jective junior synonym of *Ephemera ig-  
nita*, fam. Ephemerellidae, genus  
*Ephemerella*.
- silvaegabretae*, *Ecdyonurus* SOLDÁN &  
GODUNKO, 2006 (p. 161)  
fam. Heptageniidae.
- simile*, *Cloeon* EATON, 1870 (p. 2)  
is the typical species of the subgenus  
*Similecloeon*. fam. Baetidae.
- sinaïca*, *Acentrella* BOGOESCU, 1931  
(p. 197) (nomen imperfectum)  
fam. Baetidae, genus *Baetis* (*Acentrella*).

- sinensis, *Caenis* WALKER, 1853 (p. 584)  
is after a revision of typical specimens by EATON (1871) with reservations a subjective junior synonym of *Cloeon russulum* and for this reason of *Ephemera diptera*, fam. Baetidae, genus *Cloeon*, and this diagnosis was confirmed by KIMMINS (1960) after re-examination of the type.
- soldatovi, *Heptagenia* TSHERNOVA, 1952 (p. 253)  
is according to KLUGE (1987) a subjective junior synonym of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*. Remark: When accepting *Heptagenia dalecarlica* BENGTSSON, 1912, as a species propria, this synonym is referring to *dalecarlica* and not to *sulphurea*.
- southi, *Haplogenia* BLAIR, 1929 (p. 255)  
is according to BENGTSSON (1930a) a subjective junior synonym of *Arthroplea congener*, fam. Arthropleidae.
- Speciosa, *Ephemera* PODA, 1761 (p. 98) (nomen dubium et imperfectum)  
was transferred by EATON (1871) into the genus *Baetis* and declared as *species incerta*.
- spinus, *Siphylurus* BENGTSSON, 1904 (p. 131)  
is a nomen nudum.
- spinus, *Siphylurus* BENGTSSON, 1909 (p. 10)  
is according to BENGTSSON (1917) a subjective junior synonym of *Siphylurus aestivalis*, fam. Siphonuridae.
- starmachi*, *Ecdyonurus* SOWA, 1971a (p. 407)  
fam. Heptageniidae.
- Steinmanni, *Iron* LEGER, 1926 (p. 339) (nomen imperfectum)  
is according to ULMER (1929) a subjective junior synonym of *Heptagenia alpicola*, fam. Heptageniidae, genus *Iron* (*Alpiron*).
- stenopteryx, *Centroptilum* EATON (1871) (p. 110, pl. 5. figs. 15, 15a, Kärnten) (species inquirenda)  
fam. Baetidae, genus *Procloeon*. Remark: JACOB (1973) considered this species as close related to the *pennulatum*-species group of *Centroptilum* so that this species falls after the extended genus definition of KLUGE & NOVIKOVA (1992) in *Procloeon* but I don't know exactly which author first combined it into this genus.
- stigma, *Ephemera* GMÉLIN, 1789 (p. 2630) (nomen dubium)  
is according to EATON (1871) a subimago presumably of *Heptagenia lateralis* or *H. semicolorata*.
- stigma, *Ephemera* STEPHENS, 1836 (p. 56) (nomen praeoccupatum)  
is according to EATON (1871) a subjective junior synonym of *Ephemera marginata*, fam. Leptophlebiidae, genus *Leptophlebia*.
- straminea, *Baetis* CURTIS, 1834 (p. 121)  
is a subimago and is according to PICTET (1843) under reserve a subjective junior synonym of *Ephemera sulphurea*, fam. Heptageniidae, genus *Heptagenia*.
- striata, *Ephemera* LINNAEUS, 1767 (p. 907) (nomen abortivum)  
is already after Linnaeus (1767) himself an unnecessary replacement name and probably also an objective younger synonym of *Ephemera mutica*, fam. Baetidae, genus *Baetis* (*Nigrobaetis*).
- striata, *Baetis sensu* STEPHENS, 1836 nec LINNAEUS (nomen abusum)  
is according to EATON (1871) after revision of Stephens' collection referring to *Baetis phaeops* and thus in terms of today to *Baetis vernus*, fam. Baetidae.
- striatum, *Centroptilum* BENGTSSON, 1904 (p. 131)  
ist ein nomen nudum.
- subalpinus, *Baetis sensu* MÜLLER-LIEBENAU, 1960 nec BENGTSSON (nomen abusum)  
is according to MÜLLER-LIEBENAU (1967) referring to *Baetis lutheri*, fam. Baetidae.
- subalpinus*, *Ecdyurus* KLAPÁLEK, 1907 (p. 33) fam. Heptageniidae, genus *Ecdyonurus*.
- subatreatinus, *Baetis* GRANDI, 1957 (p. 119)  
is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Acentrella sinaica*, fam. Baetidae, genus *Baetis* (*Acentrella*). A further accidental introduced name for this species is *pseudatreatinus*.
- subfusca, *Baetis* STEPHENS, 1836 (p. 64)  
is according to EATON (1871) referring to *H. longicauda sensu* EATON nec STEPHENS, and is thus a subjective junior synonym of *Baetis dispar*, fam. Heptageniidae, genus *Ecdyonurus*, cf. KIMMINS (1942a).

subinfuscata, Cloë RAMBUR, 1842 (p. 298) (nomen dubium)  
 is according to EATON (1871) a female subimago of the genus *Cloeon*, fam. Baetidae.

*sublongicauda*, *Palingenia* TSHERNOVA, 1949 (p. 303)  
 is the eastern sibling species of *Ephemera longicauda*. This species is frequently regarded as a subjective junior synonym of *Ephemera longicauda*, the latter showing a Centraleuropean and Danubian distribution.

*submarginata*, *Ephemera* STEPHENS, 1836 (p. 58)  
 fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).

*submontanus*, *Ecdyonurus* LANDA, 1969 (p. 199 pl. 17 fig. 3 SM, p. 210 ff.)  
 fam. Heptageniidae.

*sulphurea*, *Ephemera* O.F. MÜLLER, 1776 (p. 142 )  
 fam. Heptageniidae, genus *Heptagenia*.

*swammerdiana*, *Ephemera* LATREILLE, P. A., 1805 (p. 96)  
 is according to BURMEISTER (1839), based on an indication to SWAMMERDAM' Biblia natura 2: pl. 13, a subjective junior synonym of *Ephemera longicauda*, fam. Palingeniidae, genus *Palingenia*.

*Swammerdamiana*, *Ephemera* SHAW, 1806 (p. 82) (nomen imperfectum)  
 Is again based on the figures of SWAMMERDAM and his descriptions in the Biblia natura (l. c.) and is thus according to EATON (1871) a subjective junior synonym of *Ephemera longicauda*, fam. Palingeniidae, genus *Palingenia*.

*sylvicola*, *Baetis* PICTET, 1865 (p. 24, pl. 3 figs. 7-12)  
 is a valid but endemic species of the Iberian peninsula. Meanwhile it was erroneously taken into synonymy with *Epeorus assimilis* by PUTHZ (1973c), see THOMAS et al. (2000a).

*sylvicolus*, *Epeorus* THOMAS, MARIE & BRULIN, 2000a (p. 86)  
 is according to THOMAS & BRULIN (2001) an unjustified emendation and for this reason an objective younger synonym of *Baetis sylvicola*, fam. Heptageniidae. Authorship according to article 33.2.3 of the code (ICZN, 1999).

*szegedi*, *Cloeon* JACOB, 1969 (p. 167)

is according to SOWA (1975b) under reserve and after PUTHZ (1978) authoritative a subjective junior synonym of *Ephemera diptera*, fam. Baetidae, genus *Cloeon*. Remark: JACOB (1972a) calls it a well separable "Kleinart" (minor species) within the *Cloeon diptera* relatedness.

## T

*talcosa*, *Ephemera* STEPHENS, 1836 (p. 57)  
 is according to EATON (1871) a subjective junior synonym of *Ephemera marginata*, fam. Leptophlebiidae, genus *Leptophlebia*.

*tatrica*, *Rhithrogena* ZELINKA, 1953 (p. 157)  
 is according to THOMAS (1970) a subjective junior synonym of *Rhithrogena loyolaea*, fam. Heptageniidae. Remark: See KLONOWSKA-OLEJNIK & GODUNKO (2003) for a second opinion.

*taurisca*, *Rhithrogena* BAUERNFEIND, 1992 (p. 140)  
 fam. Heptageniidae.

*tenax*, *Baetis* EATON, 1870 (p. 5)  
 is according to MÜLLER-LIEBENAU (1969) a subjective junior synonym of *Baetis vernus*, fam. Baetidae.

*tenellum*, *Centroptilum* ALBARDA, 1878 (p. 128)  
 fam. Baetidae, genus *Raptobaetopus*.

*testacea*, *Ephemera* GMÉLIN, 1789 (p. 2630)  
 is according to EATON (1871) under reserve a subjective senior synonym of *Baetis phaeops* and for this reason of *Baetis vernus*, fam. Baetidae.

*Thomsoni*, *Siphurella* BENGTTSSON, 1909 (p. 11) (nomen imperfectum)  
 is according to LESTAGE (1924) and ULMER (1927) a subjective junior synonym of *Siphurus linnaeanus* and for this reason of *Baetis alternata*, fam. Siphonuridae, genus *Siphonurus* (*Siphurella*).

*torrentis*, *Ecdyonurus* KIMMINS, 1942 (p. 492)  
 fam. Heptageniidae.

*torrentium*, *Epeorus* EATON, 1881 (p. 26) is an endemic species of the Iberian peninsula and the Pyrenean mountains and is the typical species of the genus *Epeorus*, fam. Heptageniidae.

*torrentium*, *Ephemerella* BENGTTSSON, 1917 (p. 178)

- is according to ULMER (1920a) an unjustified emendation of *Ephemerella lactata* BENGTTSSON, 1909 and for this reason an objective younger synonym of *E. lactata* according to article 33.2.3, of the code (ICZN, 1999). It represents in addition according to BREKKE (1965) a subjective junior synonym of *Ephemerella ignita*, fam. Ephemerellidae, genus *Ephemerella*. This species includes 2 forms with 4 varieties which are all synonyms: *torrentium* var. *typica* BENGTTSSON, 1917 (p. 179), *torrentium* var. *obscura* BENGTTSSON, 1917 (p. 179), *torrentium* var. *rufescens* BENGTTSSON, 1917 (p. 179), *torrentium* var. *variegata* BENGTTSSON, 1917 (p. 180) and *torrentium* forma *lactata* BENGTTSSON, 1917 (p. 180).
- tracheatus*, *Baetis* KEFFERMÜLLER & MACHEL, 1967 (p. 7)  
fam. Baetidae.
- translucida*, Cloë PICTET, 1843 (p. 255, 1845: pl. 40, figs. 3-4)  
is according to EATON (1871) a subjective junior synonym of *Ephemerella luteola*, fam. Baetidae, genus *Centroptilum*.
- tricolor*, *Baetis* TSHERNOVA, 1928b (p. 320)  
fam. Baetidae, genus *Baetis* (*Labio-baetis*). Remark: *B. tricolor* has been taken meanwhile into synonymy with the nearctic species *Cloe propinqua* WALSH, 1863 by NOVIKOVA & KLUGE (1987). This opinion was however not accepted by MCCAFFERTY & WALTZ (1995) and auct. seq.
- tumida*, *Caenis* BENGTTSSON, 1912a (p. 108)  
is according to KLUGE (1997) a subjective junior synonym of *Oxycypha lactea*, fam. Caenidae, genus *Caenis*. Remark: SAARISTO (1966) already stresses its probable synonymy with *Caenis nocturna*, whereas JACOB (1974b) and MALZACHER (1986) didn't mention this species at all.
- tumida*, *Paraleptophlebia* BENGTTSSON, 1930b (p. 8)  
is according to LANDA (1969), a subjective junior synonym of *Paraleptophlebia wernerii*, fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).
- U**
- ujhelyii*, *Ecdyonurus* SOWA, 1981 (p. 376)  
fam. Heptageniidae, genus *Electrogena*.
- Ulmeri*, *Behningia* LESTAGE, 1929 (p. 436)  
(nomen imperfectum)
- is the typical species of the genus *Behningia*, fam. Behningiidae.
- ulmeri*, *Caenis* BRODSKY, 1930b (p. 686)  
is according to MALZACHER (1993) a subjective junior synonym of *Caenis robusta*, fam. Caenidae.
- undosa*, *Caenis* TIENSUU, 1939 (p. 122)  
is according to SAARISTO (1966) a subjective junior synonym of *Oxycypha lactea*, fam. Caenidae, genus *Caenis*.
- unicolorata*, *nympha* sp., *Chitonophora* IKONOMOV, 1961 (p. 67) (nomen imperfectum)  
was, so far as I could see, firstly considered by JACOB (1972a) to be a subjective junior synonym of *Chitonophora krieghoffii* and for this reason it was considered only as subspecific diverse from *Chitonophora mucronata*. SOLDÁN (1982), in his revision of the Balcan species of the Ephemerellidae lists *unicolorata* likewise as a subspecies of *C. mucronata*. However, the subspecies concept within *C. mucronata* has not been widely accepted because of high variability of many features so that all subspecies are listed at the latest since STUDEMANN et al. (1992) as synonyms of *C. mucronata*, e.g. currently by KLUGE (2004).
- unicolore*, *Cloeon* CURTIS, 1834 (p. 121)  
(nomen dubium)  
is according to EATON (1871: p. 24) a species dubia.
- Ussingi*, *Rhithrogena* ESBEN-PETERSEN, 1910 (p. 313) (nomen imperfectum)  
is according to MOSELY (1932) a subjective junior synonym of *Rhithrogena haarupi* and for this reason of *Rhithrogena germanica*, fam. Heptageniidae.
- V**
- vallanti*, *Rhithrogena* SOWA & DEGRANGE, 1987a (p. 487)  
fam. Heptageniidae.
- vardarensis*, *Baetis* sp. *nympha* IKONOMOV, 1962a (p. 108) (nomen imperfectum)  
fam. Baetidae.
- venosa*, *Ephemerella* FABRICIUS, 1775 (p. 243)  
is the typical species of the genus *Ecdyonurus* EATON, fam. Heptageniidae.  
Remark: Note that older records in the literature may also represent several other congeneric species. See HAYBACH & JACOB (2006) for the identity of the type.
- venosus*, *Ecdyonurus* EATON, 1887, nec FABRICIUS (nomen abusum)

is, according to Kimmins (1942), at least in part referring to *Baetis dispar*, fam. Heptageniidae, genus *Ecdyonurus*.  
*venustus*, *Baetis* EATON, 1885 (p. 160)  
 is according to MÜLLER-LIEBENAU (1967) a subjective junior synonym of *Ephemera fuscata*, fam. Baetidae, genus *Baetis*.  
*verna*, *Baetis* STEPHENS, 1836 (p. 66)  
 could be interpreted as an erroneously misspelling of *Baetis vernus* or as an unjustified emendation and for this reason a younger objective synonym of *Baetis vernus*, fam. Baetidae, according to article 33.2.3 of the code (ICZN 1999).  
*vernalis*, *Siphonurus* TSHERNOVA, 1928a (p. 115)  
 is according to PUTHZ (1977b) a subjective junior synonym of *Siphurus aestivalis*, fam. Siphonuridae, genus *Siphonurus*; cf. JACOB (1972a: p. 33).  
*vernus*, *Baetis* CURTIS, 1834 (p. 121)  
 fam. Baetidae.  
*vespertina*, *Ephemera* LINNAEUS, 1758 (p. 547)  
 is the typical species of the genus *Leptophlebia*, fam. Leptophlebiidae.  
*virgo*, *Ephemera* OLIVIER, 1791 (p. 419)  
 is the typical species of the genus *Polymitarcys* EATON, which represents a younger subjective Synonym of *Ephoron* WILLIAMSON, fam. Polymitarciidae.  
*Virgo*, *Cloeon sensu* STEPHENS, 1836 (p. 70) nec OLIVIER (nomen abusum)  
 is according to EATON (1871) referring to *Ephemera diptera*, after SOWA (1975b) however it is referring to *Cloeon cognatum*, fam. Baetidae.  
*viride*, *Cloeon* SCHNEIDER, 1885 (p. 29)  
 is according to KEFFERMÜLLER (1972b) probably a colour variety of *Cloeon simile*, fam. Baetidae. After ULMER (1927) this species is dubious, and its type has been lost.  
*viridescens*, *Ephemera* FOURCROY, 1785 (p. 351)  
 is according to OLIVIER (1791) a subjective junior synonym of *Ephemera marginata*, fam. Leptophlebiidae, genus *Leptophlebia*.  
*vitreata*, *Ephemera* ZETTERSTEDT, 1840 (p. 1045)  
 is according to EATON (1871) a subjective junior synonym of *Ephemera cincta*, but after BENGTTSSON (1912b) af-

ter revision of Zetterstedt' collection a subjective junior synonym of *Ephemera vespertina*, fam. Leptophlebiidae, genus *Leptophlebia*.  
*volitans*, *Heptagenia* EATON, 1870 (p. 7)  
 is according to BENGTTSSON (1912b) a subjective junior synonym of *Ephemera fuscogrisea*, fam. Heptageniidae, genus *Kageronia*.  
*vulgata*, *Ephemera* LINNAEUS, 1758 (p. 906)  
 is the typical species of the genus *Ephemera*, fam. Ephemeridae.  
*vulpecula*, *Rhithrogena* [sic] KLAPÁLEK, 1905b (p. 76)  
 is according to SOWA (1971d) a subjective junior synonym of *Baetis semicoloratus*, fam. Heptageniidae, genus *Rhithrogena*.

## W

*Wallengreni*, *Baetis* BENGTTSSON, 1912a (p. 112) (nomen imperfectum)  
 is according to MÜLLER-LIEBENAU (1964) a subjective junior synonym of *Cloe rhodani*, fam. Baetidae, genus *Baetis* (*Rhodobaetis*).  
*wartensis*, *Baëtopus* KEFFERMÜLLER, 1960 (p. 425)  
 is the typical species of the genus *Baetopus*, fam. Baetidae.  
*wautieri*, *Ecdyonurus* FONTAINE, 1964 (p. 84)  
 is according to PUTHZ (1975) a subjective junior synonym of *Ecdyonurus ruffii*, fam. Heptageniidae.  
*Werner*, *Paraleptophlebia* ULMER, 1920b (p. 25) (nomen imperfectum)  
 fam. Leptophlebiidae, genus *Leptophlebia* (*Paraleptophlebia*).

## Z

*zelinkai*, *Rhithrogena* SOWA & SOLDÁN, 1984 (p. 81) (species inquirenda)  
 is after my own opinion falling in the range of variety of the expansive high mountain species *Rhithrogena loyolaea*, fam. Heptageniidae. Imaginal stages are unknown. See KLONOWSKA-OLEJNIK & GODUNKO (2003) for a differing opinion (bona species).  
*zelleri*, *Ecdyurus* EATON, 1885 (p. 239)  
 The original „description“ is more than poor. It consists only of an indication to a figure of a male genital that has been wrongly misapplied to „*alpicola*“ in EATON (1871) (pl. 6, fig. 19). In the same script, EATON (1885: p. 286),



*zelleri* was taken into synonymy with *forcipula*. Firstly the careful revision by KIMMINS (1958) gives *zelleri* a separate status of a valid species again. Fam. Heptageniidae, genus *Ecdyonurus*.  
*zettana*, *Ephemera* KIMMINS, 1937 (p. 431)  
fam. Ephemeridae.  
Zetterstedti, *Siphlorus* BENGTTSSON, 1904  
(p. 131) (nomen imperfectum)  
is a nomen nudum.

Zetterstedti, *Siphlorus* BENGTTSSON, 1909  
(p. 9) (nomen imperfectum)  
is according to ESBEN-PETERSEN (1916)  
a subjective junior synonym of *Siphlorus lacustris*, fam. Siphonuridae.  
zimini, *Cloeon* TSHERNOVA, 1931 (p. 214)  
is according to KLUGE (1995) a subjective junior synonym of *Ephemera dip-  
tera*, fam. Baetidae, genus *Cloeon*.

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\* = not seen in original

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Extensive glossary on: <http://www.lepidopterology.com/lepsglossary/>

## 8. Terms and Abbreviations

♀ female

♂ male

**auct.** auctorum [lat.]: Of (subsequent) authors, often given to indicate that a name is used in the sense of a number of subsequent authors and not in its (different) sense as established by the original author.

**cf.** conferre [lat.] compare!

**comb.** Short for nov. comb. nova combinatio [lat.]: A new combination of genus and species validly published for the first time.

**falsus** [lat.]: False. Often used if a synonymy took place falsely after modern view.

**incl.:** Short for inclusive. A species is interpreted in a wide sense, including another younger species, which represents presumably a younger subjective ((⇒) synonym).

**junior synonym:** The later published of two or more different names applied to one and the same taxon. ⇒ Synonym.

**LF** Limnofaunistic region after ILLIES (1978): LF 4: Alps, LF 8: Western Mountains, LF 9: Central Mountains, LF 10: The Carpathians, LF 11: Hungarian Plains, LF 12: Pontic Province, LF 13: Western Lowlands, LF 14: Central Lowlands, LF 15: Baltic Province, LF 16: Eastern Lowlands, LF 17: Ireland, LF 18: England.

**locus typi** [lat.] 'place of the type'; the geographical place from where the type specimen of a taxon of a species group is from. Often, but not totally correct named 'locus typicus'.

**nec** [lat.]: And not (of), nor (of).not; e.g. in combination with a species name between two author names: *lutea* Fourcroy nec Linnaeus, supposed is the species 'lutea' described from F., and not from L..

**nomen abortivum** [lat.]: unauthorized newly introduced name, here including unnecessary replacement also.

**nomen abusum** [lat.]: Misinterpretation. An author describes or figures a species under an already existing species name. These misinterpretations are not relevant for nomenclatural reasons. However, their knowledge facilitates the interpretation of older faunistic or taxonomic literature much.

**nomen ambiguum** [lat.]: Ambiguous name, one which has been used so long by different authors in different senses that it has become a persistent cause of error and confusion.

**nomen dubium** [lat.]: Doubtful or dubious names, names which are not certainly applicable to any known taxon or for which

the evidence is insufficient to permit recognition of the taxon to which they belong. May possess availability conducive to uncertainty and instability.

**nomen imperfectum** [lat.]: Imperfect names, available names which when originally published met all mandatory requirements of the Code (i.e. met all criteria of availability - Articles 10-20 (ICodeZN)) but which contained some defect needing correction after Art. 32.5, such as names incorporating hyphens, diacritical marks (e.g. ë), double letters (e.g. œ or æ) or apostrophes, higher taxon names using an incorrectly formed stem or species names with a capital first letter.

**nomen invalidum** [lat.]: Invalid name. As a rule species names published before 1758, the year of the 10<sup>th</sup> edition of the 'Systema Natura' of LINNAEUS, or, when published after 1758 not consistent with the binominal nomenclature.

**nomen novum** [lat.]: New name which is expressly proposed as a replacement name for a preoccupied name, automatically takes the same type and type locality.

**nomen nudum** [lat.]: 'Naked name', always an invalid name, e.g. a species name which was published without a description, A name that, if published before 1931, fails to conform to Article 12 (ICodeZN); or, if published after 1930, fails to conform to Article 13 (ICodeZN). A nomen nudum is not an available name, and therefore the same name may be made available later for the same or a different concept; in such a case it would take authorship and date [Articles 50, 21 (ICodeZN)] from that act of establishment, not from any earlier publication as a nomen nudum.

**nomen oblitum** [lat.]: Forgotten names, senior synonyms which have remained unused in the literature for many years (more than 50). Have been treated differently by different editions of the Code, and remain unavailable names.

**nomen praeoccupatum** [lat.]: Preoccupied name of the genus or species group. A preoccupied name must be replaced by a formal new name (⇒ nomen novum).

**nomen protectum** [lat.]: 'Protected name' applied to a name which has been given precedence over its unused senior synonym or senior homonym relegated to the status of nomen oblitum (see Article 23.9.2 (ICodeZN)).

**objective synonym:** Each of two or more different names applied to one and the same taxon based on the same type. ⇒ Synonym.

**orig.** originalis [lat.] original, pristine. Designates the original combination of a genus and species name. Only mentioned if the species name was transferred to another genus later or if the spelling of species name was changed.

**rev.** reviso [lat.]: revise. It is used in the text to designate the authors who revised the original material. This author may be therefore more reliable than another (maybe older) author who decides after the descriptions only.

**senior synonym:** The earlier published of two or more different names applied to one and the same taxon. ⇒ Synonym.

**sensu** [lat.]: in the sense of. Often used to refer to the usage of a name by a (cited) author in a sense different from that of the original author or some other previous author.

**sequus** [lat.] subsequent; the subsequent (authors).

**sg.** [lat.]: Short for subgenus

**Si.** Subimago. The subimago is the stage of development in an insect in which the insect is winged and capable of flight but (usually) not yet sexually mature. With sexual maturity, after another moulting, the insect reaches its full adult (imago) stage. This stage is restricted to extant mayflies.

**species dubium** [lat.]: dubious species.

**species inquirenda** [lat.]: A species to be queried, a doubtfully identified species requiring further investigation.

**species propria** [lat.]: about 'discrete species'. Often used to label an unjustified synonym.

**s. str.** sensu stricto or sensu strictiore [lat.]: in the narrow or in the narrower sense.

**subjektives Synonym:** Each of two or more different names applied to one and the same taxon based on different types, but regarded as referring to the same taxon by those who hold them to be synonyms. See ⇒ Synonym.

**syn.** Synonym [gr.]: *synónymos*. Each of two or more different names applied to one and the same taxon. ⇒ Younger synonym, ⇒ Older synonym, ⇒ Objective synonym and ⇒ Subjective synonym.

**syn. ?:** A ⇒ synonym that is designated as probable but not certain by the revising author, the synonym is under reserve.

**tr.** *transgrediens* [lat.] to transgress.

**via** [lat.] Way, Street. Used only in context with a synonym. One species was regarded as a synonym of another, what was then treated as a synonym of a third species itself, quasi making a detour, e.g. JACOB (1972a) proposed the synonym of *Oligoneuriella poecile* and *O. mikulskii*, which was regarded as a synonym of *O. pallida* by SOWA (1973c). In consequence *O. poecile* becomes a synonym of *O. pallida* via *O. mikulskii*.

**t., teste** [lat.]: "investigated by ...", mostly in combination with an authorname.

**typ. subgen.** [lat.] *typus subgeneris*: Type of the subgenus.

**typ. gen.** [lat.] *typus generis*: Type of the genus.

\* in chapter 4. This Taxon has not been recorded in Germany, Austria or Switzerland yet, but in a neighbouring limnofaunistic region and so may have been overlooked or could be expected.

\* in chapter 7. This reference has not been studied in original form.

: in combination with an authorname, in the sense of (= sensu).

? prefixing a synonymy means that the synonym is questionable after current knowledge.

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