

## Stoneflies (Plecoptera) of the Czech Republic: species checklist, distribution and protection status

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**Abstract.** A new checklist of Plecoptera of the Czech Republic was prepared based on the compilation of published faunistic data from 1420 sites (143 references) and unpublished data from 775 sites collected during the past 20 years. The history of Plecoptera research in the Czech Republic is briefly summarized. Altogether 95 species are recorded from the Czech Republic (85 species from Bohemia, 81 species from Moravia). In comparison with the previous checklist of Plecoptera, 13 species were added, 8 previously mentioned species were not confirmed, and some misidentifications are discussed. The distribution of species in eight districts based on main river basins, and species frequencies of occurrence and ranges of altitude and stream order of their localities are presented. Evaluation of data on species distribution from the past century enabled re-evaluation of threatened species. The new red list includes 5 regionally extinct, 6 critically endangered, 3 endangered, 10 vulnerable and 12 near threatened species. A special attention is paid to 8 species described from the present territory of the Czech Republic. Their type material, type localities and nomenclature are given and discussed. *Nemoura monticola* Raušer, 1965, syn. nov., is placed as a junior synonym of *Nemoura fusca* Kis, 1963.

**Key words.** Plecoptera, stoneflies, history of research, bibliography, check-list, red list, species distribution, frequency of occurrence, Bohemia, Moravia, Czech Republic

### Introduction

Stoneflies (Plecoptera) belong to relatively well-known insect groups in the Czech Republic due to a long history of their research and numerous publications dealing with their distribution and ecology. However, a contemporary species check-list does not exist, and there is

only a rough estimate of the actual number of Czech species (SOLDÁN et al. 1998, HELEŠIČ et al. 2005). The only published list of Plecoptera dates back to the end of the 1970s and deals with the fauna of former Czechoslovakia (RAUŠER 1977). It enumerated 89 species known in Bohemia and Moravia; 80 species in Bohemia and 74 species in Moravia. The list contained several species whose occurrence in particular regions of Czechoslovakia was apparently tentative, supposed by the author. Not all of these assumptions were later confirmed by real findings. Naturally, several species new to the Czech Republic, which were not expected by the author, have been found since then. The Red List of Plecoptera (HELEŠIČ et al. 2005) was mostly based on this out-of-date list and many unrevised data. Recently, sufficient data describing major changes of taxocenoses in the past hundred years have been acquired (BOJKOVÁ et al. 2012b, 2013) and a large amount of valuable historical material has been revised (BOJKOVÁ 2009). Therefore, the Red List has to be revised.

The main objectives of this study are to (i) summarize all published and available unpublished data on Plecoptera of the Czech Republic, (ii) evaluate the distribution and frequency of individual species in the Czech Republic, (iii) propose a new Red list based on the comparison of historical and contemporary data on species distribution and species range changes, and (iv) review all information on species described from the present territory of the Czech Republic with regards to possible nomenclatoric and taxonomical changes.

### History of Plecoptera research in the Czech Republic

The first published information on Plecoptera from the present territory of the Czech Republic dates back to the middle 19th century. GLÜCKSELIG (1843) and DALLA-TORRE (1878) studied the fauna of Western Bohemia, in the regions of Cheb (= Eger) and Loket (= Elbogen). KOLENATI (1859, 1860) studied the fauna of the Praděd (= Altvater) Mt. in the Hrubý Jeseník Mts. in the boundary of northern Moravia and Silesia. ANDERS (1898) mentioned two species of stoneflies from the Ploučnice (= Polzen) and Labe (= Elbe) rivers in Northern Bohemia. The turn of the 20th century was an apparent milestone in Plecoptera research due to F. Klapálek who laid the groundwork for modern plecopterology. Besides his worldwide works on Plecoptera taxonomy, he studied the Plecoptera fauna of Bohemia (KLAPÁLEK 1901, 1903, 1905, 1906a,b). Plecoptera were also mentioned in the first complex hydrobiological studies ever conducted in the present territory of the Czech Republic (FRIČ & VÁVRA 1897, 1903). Later, ŠÁMAL (1920a,b) published new data on stoneflies of the Bohemian Forest and Doupovské hory Mts. PAX & MASCHKE (1935) recorded some stoneflies in springs in the Králický Sněžník Mts., and NOWAK et al. (1937) and NOWAK (1940) found several species in the upper Vltava river and Balinka stream, respectively.

The period of the 1950s and 1960s represents another milestone in research of Plecoptera (and aquatic insects in general) in the Czech Republic. The extensive faunistic research of aquatic insects was carried out at 765 sites throughout the Czech Republic in 1955–1960. The majority of Plecoptera data were left unpublished in the Ph.D. thesis of E. Křelinová (KŘELINOVÁ 1962). Some data were published as a simple record on species new to the Czechoslovak fauna (NOVÁKOVÁ 1958) or became a partial component of other more comprehensive contributions (RAUŠER 1956a, 1962a, 1963, 1964). This valuable material is still the major

source of fully reliable data on the distribution of Plecoptera because the vast majority of material has been preserved and recently revised by BOJKOVÁ (2009). In this study, the data by KŘELINOVÁ (1962) are considered being formally published, because they have been listed and discussed in numerous current publications (SOLDÁN 1996, 2004; LANDA et al. 1997; SOLDÁN et al. 1998, 2001, 2012; SOLDÁN & ŠPAČEK 2002; BOJKOVÁ et al. 2010, 2011, 2012a,b). In the 1950s and 1960s, J. Raušer studied stoneflies of Moravia and the Czech part of Silesia (RAUŠER 1956a,b,c, 1957, 1963, 1965). He was mostly interested in larval morphology (keys by RAUŠER 1959, 1980) and zoogeography (RAUŠER 1962a,b, 1964, 1965a, 1971). Several detailed investigations of aquatic communities of rivers planned to be flooded by newly constructed reservoirs were carried out in this period as well (STRAŠKRABA & RAUŠER 1954; STRAŠKRABA 1966; HRABĚ et al. 1954, 1958; ŠTĚRBA 1959; WINKLER 1963). These studies provided unique Plecoptera data from nowadays lost stream sections. Further hydrobiological investigations were conducted in the Opava and Moravice river basins (ZELINKA 1951, KOCIAN & ŠPAČEK 1953, LOSOS & MARVAN 1957), Ostravice and Vsetínská Bečva river basins (ZELINKA 1950, ŠVEC 1960), and some other streams (Dalejský brook – ŘÍHA 1952; Svitava river – TENORA 1955; Hamerský brook and its tributaries – WINKLER 1956b; Želivka river and its tributaries – VONDREJS 1958, PETR 1961; Svratka river – HRABĚ 1962).

Many hydrobiological studies dealing with the composition of running water assemblages have been conducted using hydrobiological sampling methods since 1970. The majority of studies of macroinvertebrate assemblages, including stonefly larvae, were conducted in Moravia (i.e. Morava and Odra river basins), particularly because of the active research groups of hydrobiologists in Brno (Masaryk University – the former University of J. E. Purkyně, Mendel University – the former University of Agriculture, and Water Research Institute). In the Morava river basin, there were several studies of karst streams in the Moravian Karst (RAUŠER 1970, ADÁMEK 1977, ADÁMEK & RAUŠER 1977, KUBÍČKOVÁ 1977, TRNKOVÁ 1989, ADÁMEK & SUKOP 1996, POŘÍZKOVÁ 2001), and studies dealing with the impacts of impoundments on macroinvertebrates in the Dyje and Jihlava rivers (HELEŠIČ & SEDLÁK 1995, KUBÍČEK et al. 1999, NĚMCOVÁ 2001) and secondary production of macroinvertebrates (HELAN et al. 1973; ZELINKA et al. 1977, 1984; TUŠA 1987). Composition and biomass of macroinvertebrate assemblages were studied in the Bečva river and its tributaries (KOMÍNEK et al. 1980, SUKOP & IMANPOOR NAMIN 2003, MACKOVÍK et al. 2010), the Bobrava brook (SUKOP 1970, 1976, 2008; KUBÍČEK et al. 1971), Oslava river (ADÁMEK 1972, OBRDLÍK 1980, SUKOP & SPURNÝ 2003), Svratka river (SUKOP & VRBICA 1998), Loučka river (SEDLÁK 1969, SUKOP & KOCOUR 2000), and some brooks (OBRDLÍK 1972, WOHLGEMUTH 1997, HELEŠIČ 1999, JEZBEROVÁ 2003, SUKOP 2006, STRAKA et al. 2012) and springs (BOJKOVÁ & HELEŠIČ 2009, KŘOUPALOVÁ et al. 2011). In the Odra river basin, macroinvertebrates of mountainous brooks and gravel rivers were investigated by OBRDLÍK (1979), KOMÍNEK et al. (1982), and SIMANOV & KANTOREK (1985). In contrast, there have been only few studies on macroinvertebrate larval assemblages in the Labe river basin after 1970. The majority of them dealt with the impact of acidification (WINKLER 1979; RŮŽIČKOVÁ & BENEŠOVÁ 1996; RŮŽIČKOVÁ 1998; RŮŽIČKOVÁ & KOTRBOVÁ 2000; HORECKÝ et al. 2002; VRBA et al. 2003; RŮŽIČKOVÁ et al. 2004a,b; NEDBALOVÁ et al. 2006; FRICOVÁ et al. 2007; SVOBODOVÁ et al. 2012), pollution and stream morphology degradation (RŮŽIČKOVÁ & BENEŠOVÁ 1996, STEHNO 2000, SOLDÁN et al. 2001, ADÁMEK et al. 2010, MARADOVÁ & SOLDÁN

2012, ORENDT et al. 2012), and aerial spraying of insecticides (TONNER et al. 1983) on macro-invertebrates. Remaining studies described the assemblages of mountain springs and rivers (SUKOP & ŠTASTNÝ 2009, SUKOP et al. 2010, KUBÍKOVÁ et al. 2012).

Further studies focused solely on Plecoptera based on both imagines and larvae have been published in the last fifteen years. There were several records on remarkable species or species new to the Czech fauna (ŠPAČEK 1998, SOLDÁN & HELEŠIC 1999, ŠPAČEK et al. 1999, TUŠA 2000, BOJKOVÁ & ŠPAČEK 2006). Many new data were collected during a detailed faunistic investigation of several regions and protected areas: the Krkonoše Mts. (ŠPAČEK 1999, 2001), Jizerské hory Mts. (PREISLER & ŠPAČEK 2001), Novohradské hory Mts. (SOLDÁN & ŠPAČEK 2002), Kokořínsko Protected Landscape Area (SOLDÁN 2006), Bohemian Switzerland National Park (BOJKOVÁ et al. 2010), Moravskoslezské Beskydy Mts. (KROČA 2010a,b,c, 2011), Bílé Karpaty Protected Landscape Area and Biosphere Reserve (BOJKOVÁ et al. 2012a), and Bohemian Forest lakes (SOLDÁN et al. 2012). Three studies were focused on the distribution of particular taxa in the Czech Republic: *Leuctra geniculata* Stephens, 1836 (PAŘIL et al. 2008), *Perla grandis* Rambur, 1842 (BOJKOVÁ & KROČA 2011), and the family Taeniopterygidae (BOJKOVÁ et al. 2011). At present, historical faunistic data on Plecoptera collected in the Czech Republic are used for evaluation of long-term changes of diversity and distribution and the impacts of anthropogenic activities on running water habitats (BOJKOVÁ et al. 2012b, 2013).

## Material and methods

### Evaluation of faunistic data

Three sources of species data were used for evaluation of species distribution in the Czech Republic: (i) published data or individual records based on material not available at present, (ii) revised published (or partly published) data based on available collections, and (iii) unpublished data based mainly on imagines collected in the last two decades.

The literature data (i) were excerpted from 143 references (see Table 1 and the chapter History of Plecoptera research) which listed Plecoptera species of 1420 sites (Fig. 1). Naturally, many sites were repeatedly investigated in several studies. We omitted all grey literature (diploma theses, manuscripts and research reports), with the exception of the dissertation thesis by KŘELINOVÁ (1962) and research reports by HRABĚ et al. (1954, 1958) the material of which is available and revised (see the section (ii) below). Many records of species in hydrobiological studies, which were based on samples of larvae, are confusing because of a very problematic determination of small larvae or due to use of obsolete determination literature. Nevertheless, these studies should be taken into a consideration and their data must be critically evaluated to eliminate misidentifications. Unreliable records of species in the Czech Republic, i.e. records based only on finding of larvae, not confirmed by imagines, were not included in the checklist. Unreliable species records in particular river basins are shown in Table 2. The most important misidentifications are summarized in a special chapter (p. 464).

Data based on available historical collections (ii) comprised E. Křelinová collection, a part of F. Klapálek collection (both deposited at the Department of Entomology, National Museum, Prague) and J. Raušer collection (deposited at the Department of Botany and Zoology, Faculty

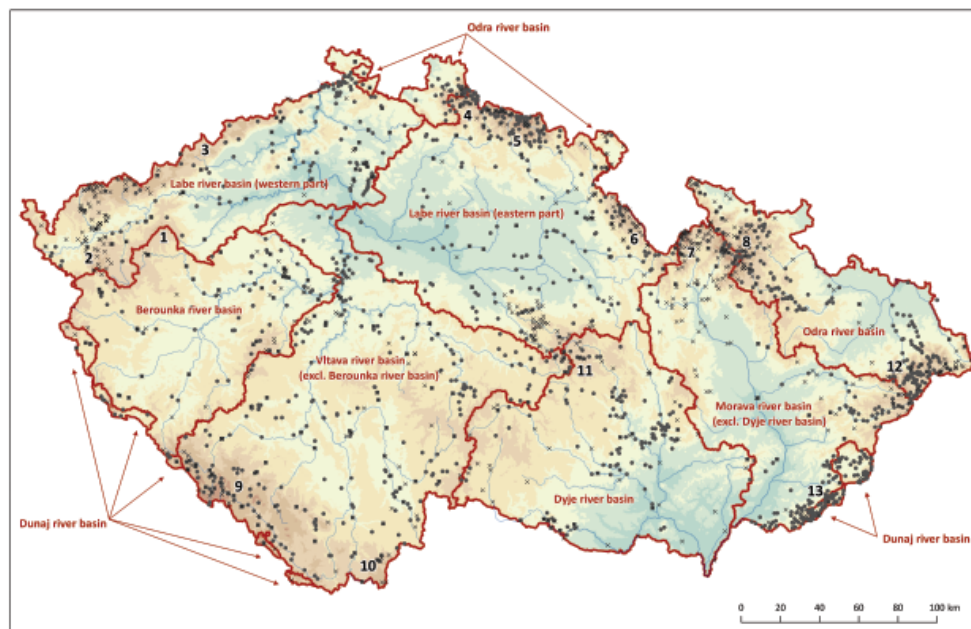


Figure 1. Map of the Czech Republic showing 8 districts based on main river basins. Published data are marked by circle, new unpublished data by  $\times$  mark. Main mountains are marked by numbers, their Czech, English and German names are listed: 1 – Doupovské hory (Duppauer Gebirge) Mts., 2 – Slavkovský les Mts., 3 – Krušné hory (Ore/Erzgebirge) Mts., 4 – Jizerské hory (Isergebirge) Mts., 5 – Krkonoše (Giant/Riesengebirge) Mts., 6 – Orlické hory (Adlergebirge) Mts., 7 – Kralický Sněžník Mt., 8 – Hrubý Jeseník (Altwatergebirge/Hohes Gesenke) Mts., 9 – Šumava (Bohemian Forest/Böhmerwald) Mts., 10 – Novohradské hory Mts., 11 – Českomoravská vrchovina (Böhmisoh-Mährische Höhe), 12 – Moravskoslezské Beskydy Mts., 13 – Bílé Karpaty Mts.

of Sciences, Masaryk University, Brno). These data included more than 35 thousand specimens from about 600 sites. All material has been revised (for more details see BOJKOVÁ 2009).

Furthermore, unpublished data on Plecoptera imagines (iii) collected at 775 sites (Fig. 1) were gathered. The majority of material was collected by J. Bojková, T. Soldán and S. Zahrádková in 2005–2012 (deposited in J. Bojková's collection at the Department of Botany and Zoology, Faculty of Sciences, Masaryk University, Brno) and P. Chvojka in 1990–2009 (deposited in the collection of the Department of Entomology, National Museum, Prague). Valuable material was gifted by J. Helešic (collected in 1993–1996), M. Straka (2006–2007) and P. Komzák (2000–2011) and it is deposited in J. Bojková's collection. All material was examined by J. Bojková. In addition, I. Sivec kindly provided the data from 121 sites collected in 2000; the material was collected and determined by I. Sivec and is deposited in the collection of the Slovenian Museum of Natural History, Ljubljana, Slovenia. The last source of unpublished data is the report by TUŠA (2001) which summarizes all his records of stoneflies in Northern Moravia; the material and the respective report are deposited in the Vlastivědné muzeum in Šumperk, Czech Republic.

To classify the distribution of stonefly species within the Czech Republic, we divided the country into eight districts based on the main river basins (Fig. 1), which principally followed faunistic districts by LANDA & SOLDÁN (1989). The Labe (Elbe) river basin was divided into three districts based on the important hydrological profile, the mouth of the Vltava river into

**Table 1.** List of references on species occurrences in the river basins.

Vltava river basin (excl. Berounka river basin)	BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011); BOUKAL et al. (2006); FRICOVÁ et al. (2007); FRIČ & VÁVRA (1897); KĽAPÁLEK (1900, 1901, 1903, 1904, 1905, 1906a, 1907); KŘELINOVÁ (1962); KUBÍKOVÁ et al. (2012); LANDA et al. (1997); MARADOVÁ & SOLDÁN (2012); NEDBALOVÁ et al. (2006); NOVÁKOVÁ (1958); NOWAK et al. (1937); PAPÁČEK & SOLDÁN (1995); PAŘIL et al. (2008); PETR (1961); ŘIHA (1952); RŮŽIČKOVÁ & KOTRBOVÁ (2000); RŮŽIČKOVÁ et al. (2004a,b); RŮŽIČKOVÁ (1998); RŮŽIČKOVÁ & BENEŠOVÁ (1996); ŠÁMAL (1920b); SOLDÁN (1996, 2004); SOLDÁN & ŠPAČEK (2002); SOLDÁN et al. (1998, 2001, 2012); ŠPAČEK et al. (1999); STEHNO (2000); SUKOP & ŠŤASTNÝ (2009); SVOBODOVÁ et al. (2012); VONDREJS (1958); VRBA et al. (2003); WINKLER (1956b, 1963)
Berounka river basin	BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011); FRIČ & VÁVRA (1897); HORECKÝ et al. (2002); KĽAPÁLEK (1903, 1905, 1906a); KŘELINOVÁ (1962); NEDBALOVÁ et al. (2006); PAPÁČEK & SOLDÁN (1995); PAŘIL et al. (2008); RŮŽIČKOVÁ & BENEŠOVÁ (1996); SOLDÁN (1996, 2004); SOLDÁN et al. (1998, 2012); VRBA et al. (2003)
Labe river basin (eastern part)	BOJKOVÁ & KROČA (2011); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011); FRIČ & VÁVRA (1903); KĽAPÁLEK (1901, 1903, 1904a, 1905, 1906a, 1906b, 1907, 1909); KŘELINOVÁ (1962); PREISLER & ŠPAČEK (2001); SOLDÁN & HELEŠIČ (1999); SOLDÁN et al. (1998); ŠPAČEK (1997, 1998); ŠPAČEK (1999, 2001); TONNER et al. (1983); WINKLER (1977)
Labe river basin (western part)	ADÁMEK et al. (2010); ANDERS (1898); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2010, 2011); DALLA-TORRE (1878); GLŮCKSELIG (1843); KĽAPÁLEK (1900, 1903, 1905, 1906a, 1906b, 1907, 1909); KŘELINOVÁ (1962); ORENDT et al. (2012); PAŘIL et al. (2008); ŠÁMAL (1920a); SOLDÁN (2006); SOLDÁN et al. (1998); WINKLER (1979)
Dunaj river basin (Bohemian part)	FRIČ & VÁVRA (1897); KĽAPÁLEK (1903, 1905); NEDBALOVÁ et al. (2006); PAPÁČEK & SOLDÁN (1995); SOLDÁN (1996, 2004); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012); VRBA et al. (2003)
Morava river basin (excl. Dyje river basin)	BOJKOVÁ & KROČA (2011); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011, 2012a); BOJKOVÁ & HELEŠIČ (2009); HELAN et al. (1973); JURAJDA et al. (2000); KOLENATI (1859, 1860); KOMÍNEK et al. (1980); KROČA (2010a, 2011); MACKOVÍK et al. (2010); OBRDLÍK (1972, 1980); PAX & MASCHKE (1935); RAUŠER (1956a,c, 1957, 1992); SOLDÁN et al. (1998); SUKOP & SPURNÝ (2003); SUKOP & IMANPOOR NAMIN (2003); ŠVEC (1960); TUŠA (1987, 2000); WOHLGEMUTH (1997)
Dyje river basin	ADÁMEK (1972, 1977); ADÁMEK & RAUŠER (1977); ADÁMEK & SUKOP (1996); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011); HELEŠIČ (1999); HELEŠIČ & SEDLÁK (1995); HRABĚ (1962); JEZBEROVÁ (2003); KUBÍČEK et al. (1971, 1999); KUBÍČKOVÁ (1977); NĚMCOVÁ (2001); NOWAK (1940); POŘÍZKOVÁ (2001); RAUŠER (1956a, 1964, 1970); SEDLÁK (1969); SOLDÁN et al. (1998); ŠTĚRBA (1959); STRAKA et al. (2012); SUKOP (1970, 1976, 2008, 2010); SUKOP et al. (2010); SUKOP & KOCOUR (2000); SUKOP & VRBICA (1998); TENORA (1955); TRNKOVÁ (1989); WOHLGEMUTH (1997); ZELINKA et al. (1977, 1984)
Odra river basin	BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ & KROČA (2011); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2011); HRABĚ et al. (1954, 1958); KĽAPÁLEK (1904b); KOCIAN & ŠPAČEK (1953); KOMÍNEK et al. (1982); KŘELINOVÁ (1962); KROČA (2010a,b,c); KRŮPALOVÁ et al. (2011); LOSOS & MARVAN (1957); OBRDLÍK (1979, 1981); RAUŠER (1956a,b,c, 1957, 1963, 1964); SIMANOV & KANTOREK (1985); SOLDÁN & HELEŠIČ (1999); SOLDÁN et al. (1998); STRAŠKRABA & RAUŠER (1954); STRAŠKRABA (1966); SUKOP (2006); TUŠA (2000); VINCON & MURÁNYI (2006); WINKLER (1956a); ZELINKA (1950, 1951)

Labe river. The eastern part of the Labe river basin was formed by streams flowing into the Labe river above the mouth of the Vltava river and the western part of the Labe river basin was formed by streams flowing into this river below the mouth of the Vltava river. The large basin of the Vltava river was further split in the Berounka river basin and the remaining part of the basin (Fig. 1). In a similar way, the Morava river basin was split in the Dyje (Thaya) river basin and the remaining part of the basin. The latter included the Czech part of the Váh river basin draining a small part of the Czech Republic-Slovakia borderland, because both the Morava and Váh rivers flow into the Dunaj (Danube) river basin. A small part of the Dunaj river basin in the borderland between the Czech Republic and Austria and the Czech Republic and Germany was left separately (Fig. 1). The last district of the Odra (Oder) river basin includes the upper parts of this large river basin. The eastern border of the Labe river and Vltava river basins roughly corresponds to the border between the historical territories of Bohemia and Moravia. The Odra river basin includes the historical territory of the Czech part of Silesia, which has been usually included in the territory of Moravia in faunistic studies (see KMENT 2009).

### Red List assessment

The Red list assesment was based on largely accepted Red List categories and criteria by IUCN (FARKAČ et al. 2005; IUCN 2012a,b). Species were categorised mostly according to changes in their geographic ranges and their current distribution in the Czech Republic, because information on changes in species population sizes and probabilities of extinction are limited. Changes in geographic ranges of species were evaluated by a comparison of species occurrences at 221 sites representatively covering the river network in the Czech Republic in two time periods, 1955–1960 and 2006–2012. Limited data on Plecoptera from Bohemian streams, especially lowland rivers, collected in 1890–1911 were used for evaluation of truly long-term changes in species occurrences. Historical data on Plecoptera of Moravia are very fragmentary. More details about statistic methods and results are available in BOJKOVÁ & KROČA (2011), BOJKOVÁ et al. (2011, 2012b, 2013) and SOLDÁN et al. (2012). The current distribution of species was evaluated using faunistic data from approximately 1400 sites.

The following categories accepted for Red List assessment of invertebrates on the national scale (FARKAČ et al. 2005) have been applied: Regionally extinct in the Czech Republic (RE) – species has not been recorded for the past 50 years. Critically endangered (CR) – species occurs at severely fragmented or only at a single site, and a strong decline in the extent of occurrence was observed comparing 1955–1960 and 2006–2012, i.e. species disappeared from more than 90 % of sites and/or from some river basin(s) in the Czech Republic without simultaneous colonisation of new sites. It is therefore considered to be facing an extremely high risk of extinction. Endangered (EN) – species occurs at severely fragmented or at no more than five sites, and a noticeable decline in the extent of occurrence was observed, i.e. a species disappeared from more than 70 % of sites and/or from some river basin(s) in the Czech Republic without simultaneous colonisation of new sites. It is therefore considered to be facing a very high risk of extinction. Vulnerable (VU) – species occurs at severely fragmented or at no more than 10 sites, or a significant decline in the extent of occurrence was observed, i.e. a species disappeared from more than 50 % of sites without simultaneous colonisation of new

sites. It is therefore considered to be facing a high risk of extinction. Near threatened (NT) – species does not qualify for critically endangered, endangered or vulnerable now, but is close to qualifying or is likely to qualify for a threatened category in the future. A species is distributed only in one region or mountain range in the Czech Republic, where it has restricted distribution (known to occur at fewer than 15 sites).

### List of Plecoptera of the Czech Republic

Altogether, 95 species of 22 genera and seven families of the order Plecoptera have been recorded in the Czech Republic (Table 2). This list is substantially different from the previous check-list by RAUŠER (1977). He listed 89 species known in the Czech Republic, including seven species expected or doubtful which were marked by a question mark. *Agnentina elegantula* Klapálek, 1907 recorded by KLAPÁLEK (1905) and *Protonemura brevistyla* (Ris, 1902) recorded by KŘELINOVÁ (1962) were omitted from Raušer's check-list. Since then, 11 species have been newly recorded: *Capnopsis schilleri* (Rostock, 1892) (ŠPAČEK et al. 1999), *Leuctra dalmoni* Vinçon & Murányi, 2006 (VINČON & MURÁNYI 2006), *Isoperla buresi* Raušer, 1962, *Nemoura fusca* Kis, 1963, *N. carpathica* Illies, 1963, *Protonemura aestiva* Kis, 1965, *Leuctra geniculata* Stephens, 1836, *L. quadrimaculata* Kis, 1963 (BOJKOVÁ & ŠPAČEK 2006), and *Brachyptera starmachi* Sowa, 1966, *Leuctra cingulata* Kempny, 1899, *L. pusilla* Krno, 1985 (BOJKOVÁ 2009). Three species, *Taeniopteryx auberti* Kis & Sowa, 1964, *Chloroperla susemicheli* Zwick, 1967 and *Leuctra bronislawi* Sowa, 1970, expected in the Czech Republic by RAUŠER (1977) were confirmed by BOJKOVÁ (2009), KROČA (2010b) and BOJKOVÁ et al. (2011). In contrast, four species (*Isoperla pawlowskii* Wojtas, 1961, *Taeniopteryx araneoides* Klapálek, 1902, *Oemopteryx loewii* (Albarda, 1889), and *Capnioneura mitis* (Despax, 1932)) expected by RAUŠER (1977) have been confirmed neither by literature nor by new material (see p. 464).

Six species included in Raušer's checklist have not been sufficiently documented. *Perla bipunctata* Pictet, 1833, *Taeniopteryx kuehtreiberi* Aubert, 1950, *Brachyptera trifasciata* (Pictet, 1832) and *Leuctra leptogaster* Aubert, 1949 have been recorded only in larval stage (see p. 464 for details). This is definitely not sufficient in the case of these species because they are not easily distinguishable and only the last instars can be reliably identified. Generally, early spring species of the genera *Taeniopteryx* and *Brachyptera* have usually been recorded based on small instar larvae from autumn samples in majority of hydrobiological studies, which has led to misidentifications (BOJKOVÁ et al. 2011). Likewise, young larvae of *L. leptogaster* have often been confused with those of *L. pseudocingulata* Mendl, 1968 or *L. pseudosignifera* Aubert, 1954. The larva of *Perla bipunctata* is not sufficiently known due to recent substantial changes and many uncertainties in the taxonomy of *Perla* species (see SIVĚC & STARK 2002). Therefore, these species cannot be included in the check-list without confirmation by imagines. The remaining two species, *Leuctra handlirschi* Kempny, 1898 and *L. teriolensis* Kempny, 1900, have often been recorded based on larval material as well. Identification of larvae of *Leuctra inermis* species-group is very complicated and not reliable at all (cf. ZWICK 2004). A large series of imagines collected by J. Raušer and E. Křelinová was revised (BOJKOVÁ 2009) and compared to imagines of *Leuctra handlirschi* and *L. teriolensis*



**Table 2.** List of species recorded in the Czech Republic, and their distribution and frequency. Presence of a species in a river basin based only on larval material, which was not confirmed by imagines, is marked by a number of a reference: 1 – LOSOS & MARVAN (1957); 2 – ŠVEC (1960); 3 – SEDLÁK (1969); 4 – KUBÍČEK et al. (1971); 5 – SUKOP (1976, 2008, 2010), SUKOP et al. (2010); 6 – ADÁMEK & RAUŠER (1977); 7 – ZELINKA et al. (1977); 8 – WINKLER (1979); 9 – HELEŠIČ & SEDLÁK (1995); 10 – SOLDÁN (1996); 11 – KUBÍČEK et al. (1999); 12 – SOLDÁN & HELEŠIČ (1999); 13 – ŠPAČEK (1999, 2001); 14 – SUKOP & KOCOUR (2000); 15 – STEHNO (2000); 16 – PREISLER & ŠPAČEK (2001); 17 – SOLDÁN et al. (2001); 18 – HORECKÝ et al. (2002); 19 – JEZBEROVÁ (2003). Records based only on historical unrevised material of imagines are marked by a question mark with a number of reference: ?1 – KOLENATI (1859); ?2 – DALLA-TORRE (1878); ?3 – KLAPÁLEK (1905); ?4 – ŠAMAL (1920a); ?5 – ŠAMAL (1920b). Other remarks: \* – recorded only on the Bohemian part of the basin. Species frequency: 1 – rare species (occurs at ≤ 5 % of the localities), 2 – medium frequent species (6–15 %), 3 – frequent species (16–30 %), 4 – common species (31–50 %), 5 – widespread species (> 51 %).

	Labe (eastern part)	Labe (western part)	Berounka	Vltava	Dyje	Morava	Odra	Dunaj	Altitude	Stream order	Standing water	Frequency
<i>Agetina elegantula</i>	+	+	+	+					230–450	5–8	–	1
<i>Dinocras cephalotes</i>	+	+	+	+		+	+	+	300–1040	3–6	–	3
<i>Marthamea vitripennis</i>	+			+	+				150–410	5–8	–	–
<i>Perla abdominalis</i>	+	+	+	+	+	+	+		170–760	3–8	–	3
<i>Perla grandis</i>	+	?2		?3		+	+		500–850	1–5	–	1
<i>Perla marginata</i>	+	+	+	+		+	+		300–1040	3–6	–	3
<i>Arcynopteryx dichroa</i>	+					+	+		590–1000	1–3	–	1
<i>Diura bicaudata</i>	+	+	+	+	+	+	+		350–1200	1–6	–	4
<i>Perlodes dispar</i>	+	+	+	+	+	+	+		180–450	5–8	–	1
<i>Perlodes intricatus</i>		+		+	7, 14		+		600–990	4–5	–	1
<i>Perlodes microcephalus</i>	+	+	+	+	+	+	+	+	200–830	3–7	–	3
<i>Isogenus nubecula</i>	+	+		+		?1	1		140–400	5–8	–	–
<i>Isoperla buresi</i>							+		640	2	–	1
<i>Isoperla difformis</i>	+	+	+	+	+	+	+*	+	210–730	2–6	–	2
<i>Isoperla goertzi</i>				+					690–1040	4–5	–	1
<i>Isoperla grammatica</i>	+	+	+	+	+	+	+	+	160–730	2–8	–	4
<i>Isoperla obscura</i>	+		+	+	4, 5, 7, 9, 11				190–290	5–8	–	–
<i>Isoperla oxylepis</i>	+	+	+	+	+	+	+	+	200–990	1–6	–	4
<i>Isoperla rivulorum</i>	+	+	?5	+	11	?1	+	?3	720–1130	1–6	–	1
<i>Isoperla silesica</i>	+			+		+	+	+	630–1080	1–5	–	1
<i>Isoperla sudetica</i>	+	+		17		+	+	?3	600–1410	1–5	–	2
<i>Isoperla tripartita</i>			+	+	+	+			200–640	1–6	–	2
<i>Chloroperla susemicheli</i>				+					730–820	4–5	–	1
<i>Chloroperla tripunctata</i>	+	+		+	6	+	+	+	400–830	3–6	–	1
<i>Isoptena serricornis</i>	+	+							150–280	5–8	–	1
<i>Siphonoperla cf. burmeisteri</i>	+	+	+						150–230	7–9	–	–
<i>Siphonoperla montana</i>				+					760–800	2–4	–	1

Table 2. Continued from previous page.

	Labe (eastern part)	Labe (western part)	Berounka	Vltava	Dyje	Morava	Odra	Dunaj	Altitude	Stream order	Standing water	Frequency
<i>Siphonoperla neglecta</i>	+	+		+	+	+	+	+	350–1330	1–5	–	3
<i>Siphonoperla taurica</i>	+	+	+	+		+		+	220–730	4–8	–	2
<i>Siphonoperla torrentium</i>	+	+	+	+	+	+	+	+	200–1140	1–6	–	5
<i>Xanthoperla apicalis</i>	+			+		?1	1		150–200	8	–	–
<i>Brachyptera braueri</i>	+	+	+	+	+	+			190–380	6–9	–	1
<i>Brachyptera monilicornis</i>	+			+			1		380–760	5–6	–	1
<i>Brachyptera risi</i>	+	+	+	+	+	+	+		195–860	1–6	–	3
<i>Brachyptera seticornis</i>	+	+	+	+	+	+	+	+	300–1330	1–6	–	4
<i>Brachyptera starmachi</i>	+			+		+	+		620–1330	3–6	–	1
<i>Taeniopteryx auberti</i>						+	+		390–800	2–5	–	1
<i>Taeniopteryx hubaulti</i>	+		+	+		+	+		400–880	3–6	–	1
<i>Taeniopteryx nebulosa</i>	+	+	+	+	+				180–730	3–7	–	1
<i>Amphinemura borealis</i>	+	+	+	+	+	2	+		200–730	4–8	–	3
<i>Amphinemura standfussi</i>	+	+	+	+	+	+	+	+	145–1410	1–9	wetlands	4
<i>Amphinemura sulcicollis</i>	+	+	+	+	+	+	+	+	250–1330	2–6	–	4
<i>Amphinemura triangularis</i>	+	+	+	+	+	+	+		340–800	2–5	–	1
<i>Nemoura avicularis</i>	+	+	+	+			+	+	300–1020	1–5	wetlands, lakes	2
<i>Nemoura cambrica</i>	+	+	+	+	+	+	+	+	160–1250	1–6	–	4
<i>Nemoura carpathica</i>						+	+		640–850	1–3	–	1
<i>Nemoura cinerea</i>	+	+	+	+	+	+	+	+	150–1100	1–8	wetlands, lakes, ponds	5
<i>Nemoura dubitans</i>	+	+		+	+	+	+	+	230–730	1–4	wetlands	1
<i>Nemoura flexuosa</i>	+	+	+	+	+	+	+	+	200–890	1–6	–	3
<i>Nemoura fusca</i>							+		430–670	1–2	–	1
<i>Nemoura marginata</i>	+	+	+	+	+		+	+	250–1250	1–3	–	3
<i>Nemoura mortoni</i>	+	10		+			+		600–1080	3–6	–	1
<i>Nemoura sciurus</i>		+	+	+	+	+	+		160–700	1–4	–	2
<i>Nemoura uncinata</i>	+	+	+	+	+	+	+		300–1020	2–5	–	2
<i>Nemurella pictetii</i>	+	+	+	+	+	+	+	+	200–1330	1–6	wetlands, lakes, ponds	5
<i>Protonemura aestiva</i>					+	+	+		450–700	1–3	–	2
<i>Protonemura auberti</i>	+	+	+	+	+	+	+	+	160–1280	1–6	lakes	3
<i>Protonemura autumnalis</i>						+	+		500–700	3–5	–	1
<i>Protonemura brevistyla</i>	+	?4		?5					650–1410	2–5	–	1

	Labe (eastern part)	Labe (western part)	Berounka	Vltava	Dyje	Morava	Odra	Dunaj	Altitude	Stream order	Standing water	Frequency
<i>Protonemura hrabei</i>	+	+		+	+	+	+		300–1410	1–6	–	3
<i>Protonemura intricata</i>	+	+	+	+	+	+	+	+	150–1200	1–7	–	5
<i>Protonemura lateralis</i>	+	8, ?4		+	19	+	+		740–1270	2–4	–	1
<i>Protonemura meyeri</i>	+	+	+	+	+	+	+	+	300–1150	2–6	–	3
<i>Protonemura montana</i>	+	+		+		+	+	+	600–1100	3–6	–	2
<i>Protonemura nimborum</i>	+			+		+	+		500–1330	1–5	–	1
<i>Protonemura nitida</i>	+	+	+	+	+	+	+	+	250–1160	2–6	–	3
<i>Protonemura praecox</i>	+	+	+	+	+	+	+		200–990	1–5	–	3
<i>Capnia bifrons</i>		+	+	+	+	+			160–660	1–6	–	2
<i>Capnia nigra</i>				+					460–760	4–7	–	1
<i>Capnia vidua vidua</i>	+	+	+	+	+	+	+		500–1330	1–5	–	2
<i>Capnopsis schilleri</i>				+					650–760	4–6	–	1
<i>Leuctra albida</i>	+	+	+	+	+	+	+	+	250–1070	1–6	–	4
<i>Leuctra alpina</i>	+			+				+	650–1090	3–6	–	1
<i>Leuctra armata</i>	12			12, 15	12	+	+		530–850	1–3	–	1
<i>Leuctra aurita</i>	+	+	+	+	+	+	+	+	300–1100	1–6	–	4
<i>Leuctra autumnalis</i>	+	+	+	+	+	+	+		300–1410	1–5	–	2
<i>Leuctra braueri</i>	+	+	+	+	+	+	+	+	160–1160	1–5	–	3
<i>Leuctra bronislawi</i>							+		570–720	1–3	–	1
<i>Leuctra cingulata</i>				+					690	2	–	1
<i>Leuctra dalmoni</i>	+	+		+	+	+	+		500–1200	1–4	–	2
<i>Leuctra digitata</i>	+	+	+	+	+	+	+	+	140–1090	1–6	wetlands	5
<i>Leuctra fusca</i>	+	+	+	+	+	+	+	+	140–1150	1–8	–	5
<i>Leuctra geniculata</i>		+	+	+					180–455	4–8	–	1
<i>Leuctra hippopus</i>	+	+	+	+	+	+	+	+	200–1020	1–6	–	5
<i>Leuctra inermis</i>	+	+	+	+	+	+	+	+	300–1410	1–6	–	4
<i>Leuctra major</i>	+		+	+			+	+	300–1040	4–6	–	1
<i>Leuctra mortoni</i>	13					+	+		480–810	3–5	–	1
<i>Leuctra nigra</i>	+	+	+	+	+	+	+	+	300–1270	1–6	lakes	5
<i>Leuctra prima</i>	+	+	+	+	+	+	+		230–990	1–5	–	2
<i>Leuctra pseudocingulata</i>	+	+	+	+	+	+	+	+	550–1410	1–5	–	3
<i>Leuctra pseudosignifera</i>	+	+	+	+	+	+	+		450–1330	1–5	–	3
<i>Leuctra pusilla</i>	+		+	+		+	+	+	630–1100	1–3	–	2
<i>Leuctra quadrimaculata</i>						+			550–720	1–3	–	1
<i>Leuctra rauscheri</i>	+	+	18	+	19	+	+		500–1250	1–5	–	3
<i>Leuctra rosinae</i>	+						+		560–1250	1–3	–	1

collected in the Alps and Jura Massif. All specimens previously identified as *L. teriolensis* were in fact *L. rauscheri* and all the material of *L. handlirschi* turned out to be either *L. inermis* or *L. pusilla*. Based on this revision, we suppose that also unrevised literature records of *Leuctra handlirschi* and *L. teriolensis* (see Bibliography of Plecoptera of the Czech Republic below) in fact refer to *L. pusilla* and *L. rauscheri*.

Five species (*Chloroperla kisi* Zwick, 1967, *Rhabdiopteryx acuminata* Klapálek, 1905, *Rhabdiopteryx neglecta* (Albarda, 1889), *Nemoura obtusa* Ris, 1902 and *Perlodes jurassicus* Aubert, 1946), recorded in some hydrobiological studies (see Bibliography), are not included in the check-list because they have been recorded only at larval stage, and their identification is not reliable. Furthermore, *Perlodes jurassicus* is considered to live in the Jura Massif in Switzerland and France only (KNISPÉL et al. 2002), and the *Rhabdiopteryx neglecta* species-group was recently revised (VINÇON & MURÁNYI 2009), and larvae of their species were not redescribed.

*Siphonoperla* cf. *burmeisteri* is included in the check-list; however, the material from the Czech Republic is morphologically different from *Siphonoperla burmeisteri* distributed mainly in Fennoscandia and Baltics, with the area extension at least to Germany (lectotype from Halle; ZWICK 1971, P. ZWICK, in litt. 2012). Detailed revision of the material is needed. *Siphonoperla* cf. *burmeisteri* was collected in large lowland rivers by F. Klapálek at the turn of the 20th century and by E. Křelinová in the 1950s. However, the species has not been collected at these sites since then and it is therefore regionally extinct in the Czech Republic.

## Remarks to species described from the present territory of the Czech Republic

### *Isoperla sudetica* (Kolenati, 1860)

*Chloroperla sudetica*: KOLENATI (1859): 33 (nomen nudum)

*Chloroperla sudetica* Kolenati, 1860: 384 (original description)

**Comment.** Since KOLENATI (1859) only mentioned the name *Chloroperla sudetica* without any detailed description, the name *Ch. sudetica* Kolenati, 1859 is considered a nomen nudum (cf. ZWICK 1973). It was described from the Desná (Tess) river in the Hrubý Jeseník Mts. one year later. The valid combination is *Isoperla sudetica* (Kolenati, 1860). We failed to find the deposition of the type material; it is probably lost. Designation of the neotype from the type locality is needed, and complex revision based on the material from the whole area is necessary due to description of the species variability and exclusion of possible cryptic species.

### *Agnentina elegantula* (Klapálek, 1907)

*Perla elegantula*: KĽAPÁLEK (1905): 29 (nomen nudum)

*Perla (Agnentina) elegantula* Klapálek, 1907: 17 (original description)

**Comment.** Since only the name *Perla elegantula* n. sp. and the locality Zlatá stoka, Třeboň was mentioned in KĽAPÁLEK (1905), the name *Perla elegantula* Klapálek, 1905 is considered a nomen nudum. The species was described later as *Perla (Agnentina) elegantula* by KĽAPÁLEK

(1907) from Zlatá stoka stream near Třeboň. The valid combination is *Agnentina elegantula* (Klapálek, 1907). Lectotype (♀, Třeboň, leg. F. Klapálek) and paralectotypes (3 ♀♀, Třeboň, leg. F. Klapálek) designated by ZWICK (1984) are deposited in the National Museum in Prague, the Klapálek collection.

### *Isoperla difformis* Klapálek, 1909

*Isoperla difformis* Klapálek, 1909 in KLAPÁLEK & GRÜNBERG (1909): 51 (original description)

**Comment.** The species was described by Klapálek in KLAPÁLEK & GRÜNBERG (1909), from ‘Dresden (Schiller), Bohemia and Denmark’. Type locality was limited to ‘Dresden, Germany’ by ILLIES (1966) but did not designate the lectotype. In 1980, P. Zwick labelled one ♀ of *I. difformis* (Dresden, leg. Schiller) in the Klapálek collection as lectotype. However, this designation was not published. The material mentioned in KLAPÁLEK & GRÜNBERG (1909) was previously used by Klapálek (1900) for the description of the male and the larva of *Chloroperla helvetica* Schoch, 1885: Zlatá stoka stream near Třeboň (April 1896 and 15. 4. 1897), Nežárka river in Veselí (28. 4. 1897) and Dresdner Haide in Dresden (1 ♂ 2 ♀♀, 30. 4. 1889, leg. Schiller). Material from Zlatá stoka and Nežárka is deposited in the Klapálek collection and actually represents *Isoperla difformis*. *Chloroperla helvetica* Schoch, 1885 is considered a junior synonym of *Isoperla rivulorum* (Pictet, 1841) according to ILLIES (1955). All the above mentioned material is deposited in the National Museum in Prague, the Klapálek collection.

### *Brachyptera braueri* (Klapálek, 1900)

*Taeniopteryx braueri* Klapálek, 1900: 7 (original description)

**Comment.** Imagines and larva of this species were described as *Taeniopteryx braueri* by KLAPÁLEK (1900). KLAPÁLEK (1900) also corrected his redescription of *Taeniopteryx trifasciata* (Pictet, 1832) (KLAPÁLEK 1896) to belong to *Taeniopteryx braueri*. Based on the excellent illustrations and detailed description in KLAPÁLEK (1896), there is no doubt about the identity of the species, but information on the type material and type locality was not given. Nevertheless, all material collected before 1896 included in the Klapálek collection came from Bohemia, so it is reasonable to conclude that the terra typica is Bohemia. The majority of this material was collected in Prague (Vltava river) in 1891–1894, where *B. braueri* was famous for its mass emergence at that time (see BOJKOVÁ et al. 2011). The remaining material was collected in Veselí (Nežárka river) in 1895. Therefore, it is likely that the species was described based on the material collected in Prague.

### *Nemurella pictetii* Klapálek, 1900

*Nemurella pictetii* Klapálek, 1900 (original description)

**Comment.** Imagines of this species were illustrated and described by KLAPÁLEK (1896) under the name *Nemura inconspicua* Pictet, 1836. The name *Nemurella pictetii* was proposed by the author later (KLAPÁLEK 1900) together with the description of the larva. Information on the type material and type locality was not given. Nevertheless, it is possible to conclude from

the text that terra typica is 'Bohemia' (ZWICK 1973). Lectotype designation was mentioned in ZWICK (1982). However, a lectotype was not designated in the end because the excellent illustrations in KĽAPÁLEK (1896) leave no doubt about the identity of the species (P. Zwick, pers. comm. 2013).

### *Protonemura autumnalis* Raušer, 1956

*Protonemura autumnalis* Raušer, 1956a: 468 (original description based on larva)

*Protonemura autumnalis*: RAUŠER (1957): 369 (description of imago)

**Comment.** Larvae were described by RAUŠER (1956a) before the description of imagines (RAUŠER 1957). Larval morphology was described based on mature larvae and exuviae associated with imagines. The type material referred to only as 'types' was collected at Velký brook near Ostravice (550 m a.s.l.) and Řečice river near Ostravice (520 m a.s.l.). This material, although not labelled as type material, is available in the Raušer collection deposited at the Department of Botany and Zoology, Faculty of Sciences, Masaryk University, Brno. It includes the following specimens considered here syntypes: Velký brook near Ostravice, 9.–10.ix.1955, 4 ♂♂, 3 exuviae (all labeled only by the codes 469 and OS 186), leg. J. Raušer; Řečice river in Řečice, 9.ix.1955, 2 ♂♂, 3 ♀♀, 2 larvae, 5 exuviae associated with imagines, one of them mounted on slide (all labeled only by the code OS 179), leg. J. Raušer.

### *Protonemura hrabei* Raušer, 1956

*Protonemura hrabei* Raušer, 1956a: 466 (original description based on larva)

*Protonemura hrabei*: RAUŠER (1957): 371 (description of imago)

**Comment.** The larvae were described (RAUŠER 1956a) before the description of imagines (RAUŠER 1957). Larval morphology was described based on mature larvae and exuviae associated with imagines. Type material referred to only as 'types' was collected in these localities: Ostravice river near Nová Dědina, Krupá river, Branná river below Jindřichov, brook near Vápenná, Morava river near Červený potok, Moravice river near Malá Štáhle, brook near Ramzová. A part of the type material, although not labelled as type material, is available in the Raušer collection deposited at the Department of Botany and Zoology, Faculty of Sciences, Masaryk University, Brno. It includes the following specimens considered here syntypes: Ostravice river near Nová Dědina, 9.ix.1955, 2 ♂♂, 1 exuvia mounted on slide (all labelled only by the code OS 175), S. Hrabě leg.

### *Nemoura monticola* Raušer, 1965, syn. nov. = *Nemoura fusca* Kis, 1963

*Nemoura monticola* Raušer, 1965b: 158

**Comment.** *Nemoura monticola* was described by RAUŠER (1965b) from the Horní Wahlenbergovo pleso lake (holotype locality) and the source Nadina Studánka near Liptovský Ján (paratype locality) in Slovakia. However, the holotype and paratype are not available in the J. Raušer collection and they are most probably lost (P. Raušer, pers. comm. 2008). Only imagines mentioned as 'other material examined' in the description (Řečice river in the Czech Republic) and imagines collected by J. Raušer at localities near Liptovský Ján in

Slovakia (close to the localities where paratypes were collected) are available. According to the description (RAUŠER 1965b), it is not possible to distinguish *Nemoura monticola* from *Nemoura fusca* Kis, 1963. Moreover, Raušer did not mention *Nemoura fusca* in the affinities, so he did not know this species when he described *N. monticola*. The comparison of *N. monticola* from Řečice river and Liptovský Ján with type material of *Nemoura fusca* proved that this material in fact belongs to *Nemoura fusca*. Therefore, *N. monticola* Raušer, 1965 is considered here a junior synonym of *Nemoura fusca*.

### Distribution of Plecoptera in the Czech Republic

The highest number of species (80 species) was found in the Vltava river basin (Table 2). It was caused primarily by an exceptional species richness of the Šumava Mts. and the neighbouring Novohradské hory Mts. These are inhabited by the majority of montane species occurring in other Hercynian mountains in the Czech Republic and by several species not occurring elsewhere in the Czech Republic, such as: *Isoperla goertzi*, *Chloroperla susemicheli*, *Brachyptera monilicornis*, *Capnia nigra*, *Capnopsis schilleri*, and *Leuctra cingulata*. The majority of these species have their northern area limits in this region. Lowland rivers, mainly the Vltava river and the Lužnice river, are the second hotspot of species diversity in this basin. They host several large river specialists, such as *Isogenus nubecula*, *Isoperla obscura*, and *Xantoperla apicalis*. However, the majority of their records are more than a hundred years old and the present stonefly assemblages are mere fragments of their original fauna (BOJKOVÁ et al. 2012b). The same impoverished fauna inhabits other large rivers in the Czech Republic, mainly the Labe river.

The upper (eastern) part of the Labe river basin drains the western and central part of the Sudete Mts. and the Czech Plateau and it is inhabited by 74 species of stoneflies (Table 2). The lower (western) part of the Labe river drains the Elbe Sandstone Mts. and Krušné hory Mts. and is inhabited by 65 species. The fauna of the Krušné hory Mts. is rather poorly known and more species can be expected there. Streams at the highest altitude of the Labe river basin are valuable because they host diverse and species-rich taxocenoses with many rare montane species, such as *Arcynopteryx dichroa*, *Protonemura brevistyla*, and *Leuctra rosinae*.

A similar number of species as in the upper part of the Labe river basin was found in the Morava river basin, including tributaries of the Váh river, and Odra river basin (70 and 72 species, respectively). Both basins consist of a Hercynian and a Carpathian region, which differ in their stonefly fauna. Plecoptera of the Hercynian regions are similar to those in the Labe river and Vltava river basins, whereas the Carpathian region hosts a unique fauna. The Carpathian fauna includes many species not occurring elsewhere, namely *Isoperla buresi*, *Nemoura carpathica*, *N. fusca*, *Protonemura autumnalis*, *Leuctra bronislawi*, and *L. quadrimaculata*. Moreover, there are several species that are much more frequent and abundant than in any other region of the Czech Republic. These are particularly *Isoperla tripartita*, *Nemoura sciurus*, *Protonemura aestiva*, and *Capnia bifrons* in the Morava river basin, and *Perla grandis*, *Arcynopteryx dichroa*, and *Leuctra armata* in the Odra river basin.

Lower number of species was found in the Berounka river and Dyje river basins, 54 and 51 species, respectively (Table 2). This lower diversity is connected with the absence of high mountains in these basins, thus, montane stoneflies do not occur here. Naturally, the lowest number of species was found in the Bohemian part of the Dunaj river basin (Table 2) which occupies only small area of the Czech Republic and includes only the upper parts of streams. Therefore, many species preferring large and mid-sized streams are absent there.

### Red List of Plecoptera of the Czech Republic

With an exception of a few eurytopic species (especially *Nemoura cinerea*, *Leuctra fusca*, and *L. geniculata*), all representatives of the order Plecoptera are highly sensitive to any changes of their habitats and all types of pollution. Therefore, they are considered one of the most endangered groups of invertebrates (MASTER et al. 2000).

The previous Red List of Plecoptera of the Czech Republic by HELEŠIC et al. (2005) was based mainly on recent faunistic data and historic literature data. At present, new data on changes in the distribution and frequency of occurrence of species in the past hundred years are available (BOJKOVÁ et al. 2012b, 2013). They documented that several originally very abundant species have substantially decreased their areas, although they are still rather common in the Czech Republic. On the contrary, some species have not changed their distribution, though they have always been rare or less frequent. These data should be apparently taken into account in Red List assessment. According to extended faunistic data and new long-term data, several species included in the Red List by HELEŠIC et al. (2005) require a re-classification because they are not actually disappearing or their present distribution suggests them to be more frequent than supposed earlier. Several species included in the Red List by HELEŠIC et al. (2005) actually do not occur in the Czech Republic and are, therefore, excluded from the Red List. The species were categorised as follows:

(i) The most endangered stoneflies are specialists of large lowland rivers. *Isogenus nubecula*, *Isoperla obscura*, and *Xanthoperla apicalis* were recorded at the beginning of the 20th century for the last time. The last records of *Marthamea vitripennis* and *Siphonoperla* cf. *burmeisteri* date back to 1959. Therefore, these species are considered regionally extinct in the Czech Republic.

(ii) Some lowland species (*Agnentina elegantula*, *Isoptena serricornis*, *Taeniopteryx nebulosa*, and *Brachyptera braueri*) have persisted in a few, often isolated localities and, therefore, they are critically endangered. *Agnentina elegantula* is currently known to occur in four streams and *Isoptena serricornis* only in a single stream in the Czech Republic (BOJKOVÁ & ŠPAČEK 2006). *Taeniopteryx nebulosa* has almost completely disappeared from large lowland rivers and persisted in seven streams at colline and montane altitudes (BOJKOVÁ et al. 2011). Only *Brachyptera braueri* recently re-colonised several rivers after dramatic decline in the middle 20th century. It was recently found at four sites; however, it is not abundant comparing to the turn of 20th century when its mass emergence commonly occurred in the Vltava river in Prague (BOJKOVÁ et al. 2011). Two species, *Perla grandis* and *Amphinemura borealis*, have strongly restricted their distribution in the last fifty years



and, thus, became critically endangered as well. The former became locally extinct in the montane regions of the Labe river basin due to acidification (BOJKOVÁ & KROČA 2011). The latter has disappeared from the majority of mid-sized submontane and mid-altitude streams (BOJKOVÁ et al. 2012b, 2013), probably due to pollution.

(iii) Lowland and mid-altitude species *Perlodes dispar*, and montane and submontane species *Leuctra major* are considered to be endangered because they have disappeared from many sites in the entire Czech Republic (BOJKOVÁ et al. 2012b, 2013). Their distribution is currently fragmented and they occur only in near-natural streams. *Arcynopteryx dichroa* was considered critically endangered by HELEŠIČ et al. (2005) due to its fragmented and relict distribution in the Krkonoše and Moravskoslezské Beskydy Mts. It was known to occur only at five sites at that time (KROČA 2010a). Since then, it has been found in additional 13 streams in the Moravskoslezské Beskydy Mts. (KROČA 2010a). However, its distribution is still restricted and fragmented and it is sensitive to pollution and channelisation of streams (J. Kroča, pers. comm. 2012). Therefore, it is considered to be endangered.

(iv) Relatively high number of species are considered to be vulnerable. These are: *Dinocras cephalotes*, *Perla abdominalis*, *P. marginata*, *Isoperla difformis*, *Siphonoperla taurica*, *Amphinemura standfussi*, *A. triangularis*, *Protonemura hrabei*, *P. meyeri*, and *Leuctra mortoni*. These species have disappeared from many sites in the entire Czech Republic in the past fifty years and became much rarer than before (cf. BOJKOVÁ et al. 2012b, 2013). Moreover, some of them (*Perla abdominalis*, *Amphinemura standfussi*, *Protonemura hrabei*, and *Protonemura meyeri*) have restricted their ranges and changed their altitudinal preference throughout the area. It was caused by a concentration of anthropogenic pressures in low- and mid-altitudes (BOJKOVÁ et al. 2012b).

(v) Twelve species with very restricted distribution in the Czech Republic are considered to be near threatened because of the high risk of their extirpation caused by possible degradation of the few streams where they occur. Naturally, it is the most subjective category of the Red List because the categorization can be influenced by the level of knowledge on species distribution. This category includes mostly species which have their western area limits in the eastern part of the Czech Republic (Carpathian species) or northern area limits in the northern or southern parts of the Czech Republic. They are montane species inhabiting cold fast-flowing brooks which occur only in the Carpathians (*Isoperla buresi*, *Protonemura autumnalis*, *Leuctra quadrimaculata*, and *L. bronislawi*), Krkonoše Mts. (*Protonemura brevistyla*), and Šumava and Novohradské hory Mts. (*Isoperla goertzi*, *Siphonoperla montana*, *Chloroperla susemicheli*, and *Leuctra cingulata*). There are also species living in cold fast-flowing streams, which are often humic, in the foothills of Šumava Mts.: *Capnopsis schilleri*, *Capnia nigra*, and *Brachyptera monilicornis*.

Other species inhabiting restricted area in the Czech Republic are rather common in habitats they prefer (e.g. *Nemoura carpathica* and *Nemoura fusca* in the Carpathians, *Leuctra armata* in the Carpathians and Jeseníky Mts., *Taeniopteryx auberti* in the Jeseníky Mts. and Rychlebské hory Mts., and *Leuctra rosinae* in the Jeseníky Mts. and Krkonoše Mts.) and are likely not threatened at present.

## Checklist and Red List of Plecoptera of the Czech Republic

In synonymy, only the names used in the previous check-list by RAUŠER (1977) are presented. All the listed species and their occurrences in Bohemia and Moravia are based on published records (see Bibliography) and there are no additional species in the examined unpublished material. Abbreviations: B – Bohemia, M – Moravia (including Czech part of Silesia, see KMENT 2009); EX – regionally extinct, CR – critically endangered, EN – endangered, VU – vulnerable, NT – near threatened.

### Suborder Arctoperlaria Group Systellognatha Superfamily Perloidea

#### Family Perlidae

##### Subfamily Perlinae

#### ***Agnetina* Klapálek, 1907**

*Agnetina elegantula* (Klapálek, 1907) B CR

#### ***Dinocras* Klapálek, 1907**

*Dinocras cephalotes* (Curtis, 1827) B M VU

#### ***Marthamea* Klapálek, 1907**

*Marthamea vitripennis* (Burmeister, 1839) B M RE

#### ***Perla* Geoffroy, 1762**

*Perla abdominalis* Burmeister, 1839 B M VU  
= *Perla burmeisteriana* Claassen, 1936

*Perla grandis* Rambur, 1842 B M CR

= *Perla maxima* (Scopoli, 1763)

*Perla marginata* (Panzer, 1799) B M VU

#### Family Perlodidae

##### Subfamily Perlodinae

#### ***Arcynopteryx* Klapálek, 1904**

*Arcynopteryx dichroa* (McLachlan, 1872) B M EN  
= *Arcynopteryx compacta* (McLachlan, 1872)

#### ***Diura* Billberg, 1820**

*Diura bicaudata* (Linnaeus, 1758) B M

#### ***Perlodes* Banks, 1903**

*Perlodes dispar* (Rambur, 1842) B M EN

*Perlodes intricatus* (Pictet, 1841) B M

= *Perlodes intricata* (Pictet, 1841)

*Perlodes microcephalus* (Pictet, 1833) B M

= *Perlodes microcephala* (Pictet, 1833)

**Isogenus Newman, 1833**

<i>Isogenus nubecula</i> Newman, 1833	B	M	RE
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## Subfamily Isoperlinae

**Isoperla Banks, 1906**

<i>Isoperla buresi</i> Raušer, 1962		M	NT
<i>Isoperla difformis</i> (Klapálek, 1909)	B	M	VU
<i>Isoperla goertzi</i> Illies, 1952	B		NT
<i>Isoperla grammatica</i> (Poda, 1761)	B	M	
<i>Isoperla obscura</i> (Zetterstedt, 1840)	B		RE
<i>Isoperla oxylepis</i> (Despax, 1936)	B	M	
<i>Isoperla rivulorum</i> (Pictet, 1841)	B	M	
<i>Isoperla silesica</i> Illies, 1952	B	M	
= <i>Isoperla silesiaca</i> Illies, 1952			
<i>Isoperla sudetica</i> (Kolenati, 1860)	B	M	
<i>Isoperla tripartita</i> Illies, 1954	B	M	

**Family Chloroperlidae**

## Subfamily Chloroperlinae

**Chloroperla Newman, 1836**

<i>Chloroperla susemicheli</i> Zwick, 1967	B		NT
<i>Chloroperla tripunctata</i> (Scopoli, 1763)	B	M	

**Isoptena Enderlein, 1909**

<i>Isoptena serricornis</i> (Pictet, 1841)	B		CR
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**Siphonoperla Zwick, 1967**

<i>Siphonoperla</i> cf. <i>burmeisteri</i> (Pictet, 1841)	B		RE
<i>Siphonoperla montana</i> (Pictet, 1841)	B		NT
<i>Siphonoperla neglecta</i> (Rostock, 1888)	B	M	
<i>Siphonoperla taurica</i> (Pictet, 1841)	B	M	VU
<i>Siphonoperla torrentium</i> (Pictet, 1841)	B	M	

**Xanthoperla Zwick, 1967**

<i>Xanthoperla apicalis</i> (Newman, 1836)	B	M	RE
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Group Euholognatha  
Superfamily Nemouroidea

**Family Taeniopterygidae**

## Subfamily Taeniopteryginae

**Taeniopteryx Pictet, 1842**

<i>Taeniopteryx auberti</i> Kis & Sowa, 1964		M	
<i>Taeniopteryx hubaulti</i> Aubert, 1946	B	M	
<i>Taeniopteryx nebulosa</i> (Linnaeus, 1758)	B	M	CR

## Subfamily Brachypterinae

**Brachyptera Newport, 1849**

<i>Brachyptera braueri</i> (Klapálek, 1900)	B	M	CR
<i>Brachyptera monilicornis</i> (Pictet, 1841)	B		NT
<i>Brachyptera risi</i> (Morton, 1896)	B	M	
<i>Brachyptera seticornis</i> (Klapálek, 1902)	B	M	
<i>Brachyptera starmachi</i> Sowa, 1966	B	M	

## Family Nemouridae

## Subfamily Amphinemourinae

**Amphinemura Ris, 1902**

<i>Amphinemura borealis</i> (Morton, 1894)	B	M	CR
<i>Amphinemura standfussi</i> (Ris, 1902)	B	M	VU
<i>Amphinemura sulcicollis</i> (Stephens, 1836)	B	M	
<i>Amphinemura triangularis</i> (Ris, 1902)	B	M	VU

**Protonemura Kempny, 1898**

<i>Protonemura aestiva</i> Kis, 1965		M	
<i>Protonemura auberti</i> Illies, 1954	B	M	
<i>Protonemura autumnalis</i> Raušer, 1956		M	NT
<i>Protonemura brevistyla</i> (Ris, 1902)	B		NT
<i>Protonemura hrabei</i> Raušer, 1956	B	M	VU
<i>Protonemura intricata</i> (Ris, 1902)	B	M	
<i>Protonemura lateralis</i> (Pictet, 1835)	B	M	
<i>Protonemura meyeri</i> (Pictet, 1841)	B	M	VU
<i>Protonemura montana</i> Kimmins, 1941	B	M	
<i>Protonemura nimborum</i> (Ris, 1902)	B	M	
<i>Protonemura nitida</i> (Pictet, 1835)	B	M	
<i>Protonemura praecox</i> (Morton, 1894)	B	M	

## Subfamily Nemourinae

**Nemoura Latreille, 1796**

<i>Nemoura avicularis</i> Morton, 1894	B	M	
<i>Nemoura cambrica</i> Stephens, 1836	B	M	
<i>Nemoura carpathica</i> Illies, 1963		M	
<i>Nemoura cinerea</i> (Retzius, 1783)	B	M	
<i>Nemoura dubitans</i> Morton, 1894	B	M	
<i>Nemoura flexuosa</i> Aubert, 1949	B	M	
<i>Nemoura fusca</i> Kis, 1963		M	
<i>Nemoura marginata</i> Pictet, 1835	B	M	
<i>Nemoura mortoni</i> Ris, 1902	B	M	
<i>Nemoura sciurus</i> Aubert, 1949	B	M	

*Nemoura uncinata* Despax, 1934 B M  
 = *Nemoura fulviceps* sensu RAUŠER (1977),  
 nec *N. fulviceps* Klapálek, 1902

***Nemurella* Kempny, 1898**

*Nemurella pictetii* Klapálek, 1900 B M  
 = *Nemurella picteti* Klapálek, 1900

**Family Capniidae**

***Capnia* Pictet, 1841**

*Capnia bifrons* (Newman, 1839) B M  
*Capnia nigra* (Pictet, 1833) B NT  
*Capnia vidua vidua* Klapálek, 1904 B M

***Capnopsis* Morton, 1896**

*Capnopsis schilleri* (Rostock, 1892) B NT

**Family Leuctridae**

Subfamily Leuctrinae

***Leuctra* Stephens, 1836**

*Leuctra albida* Kempny, 1899 B M  
*Leuctra alpina* Kührtreiber, 1934 B  
*Leuctra armata* Kempny, 1899 M  
*Leuctra aurita* Navás, 1919 B M  
*Leuctra autumnalis* Aubert, 1948 B M  
*Leuctra braueri* Kempny, 1898 B M  
*Leuctra bronislawi* Sowa, 1970 M NT  
*Leuctra cingulata* Kempny, 1899 B NT  
*Leuctra dalmoni* Vinçon & Murányi, 2006 B M  
*Leuctra digitata* Kempny, 1899 B M  
*Leuctra fusca* (Linnaeus, 1758) B M  
*Leuctra geniculata* Stephens, 1836 B  
*Leuctra hippopus* Kempny, 1899 B M  
*Leuctra inermis* Kempny, 1899 B M  
*Leuctra major* Brinck, 1949 B M EN  
*Leuctra mortoni* Kempny, 1899 M VU  
*Leuctra nigra* (Olivier, 1811) B M  
*Leuctra prima* Kempny, 1899 B M  
*Leuctra pseudocingulata* Mendl, 1968 B M  
*Leuctra pseudosignifera* Aubert, 1954 B M  
*Leuctra pusilla* Krno, 1985 B M  
*Leuctra quadrimaculata* Kis, 1963 M NT  
*Leuctra rauscheri* Aubert, 1957 B M  
*Leuctra rosinae* Kempny, 1900 B M

## Bibliography of Plecoptera from the Czech Republic

### *Agnetina elegantula* (Klapálek, 1907)

ŠPAČEK (1998); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ (2009)  
 as *Perla elegantula* Klapálek, 1907 (original combination): Klapálek (1905, 1907)  
 as *Marthamea vitripennis* (misidentification, revised by J. Bojková): KŘELINOVÁ (1962)

### *Dinocras cephalotes* (Curtis, 1827)

ZELINKA (1950); HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); LOSOS & MARVAN (1957); HRABĚ et al. (1958); WINKLER (1963); KŘELINOVÁ (1962); STRAŠKRABA (1966); OBRDLÍK (1972); HELAN et al. (1973); OBRDLÍK (1979); KOMÍNEK et al. (1982); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); SOLDÁN et al. (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); SUKOP (2006); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009)  
 as *Perla cephalotes* Curtis, 1827 (original combination): DALLA-TORRE (1878); Klapálek (1903, 1905, 1907); ŠÁMAL (1920b)

### *Marthamea vitripennis* (Burmeister, 1839)

RAUŠER (1992); SOLDÁN et al. (1998); BOJKOVÁ (2009); SUKOP (2010)  
 as *Perla vitripennis* Burmeister, 1839 (original combination): Klapálek (1905)

### *Perla abdominalis* Burmeister, 1839

Klapálek (1903, 1905); KOCIAN & ŠPAČEK (1953); LOSOS & MARVAN (1957); BOJKOVÁ (2009); BOJKOVÁ et al. (2012a)  
 as *Perla burmeisteriana* Claassen, 1936 (junior synonym): HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956b); ŠTĚRBA (1959); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); STRAŠKRABA (1966); SEDLÁK (1969); RAUŠER (1970); KUBÍČEK et al. (1971); OBRDLÍK (1972); HELAN et al. (1973); SUKOP (1976); ADÁMEK & RAUŠER (1977); ZELINKA et al. (1977); OBRDLÍK (1980); ZELINKA et al. (1984); SIMANOV & KANTOREK (1985); HELEŠIC & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); KUBÍČEK et al. (1999); SUKOP & KOCOUR (2000); NĚMCOVÁ (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); SOLDÁN (2004, 2006); SUKOP (2006); FRICOVÁ et al. (2007); SUKOP (2008, 2010); MARADOVÁ & SOLDÁN (2012)

### *Perla bipunctata* Pictet, 1833

based only on larvae, doubtful: STRAŠKRABA & RAUŠER (1954); LOSOS & MARVAN (1957); SOLDÁN et al. (1998)

### *Perla grandis* Rambur, 1842

SOLDÁN et al. (1998); BOJKOVÁ (2009); BOJKOVÁ & KROČA (2011)  
 as *Perla maxima* (Scopoli, 1763) (synonym): DALLA-TORRE (1878); Klapálek (1905); KOCIAN & ŠPAČEK (1953); HRABĚ et al. (1958); KŘELINOVÁ (1962); SEDLÁK (1969); OBRDLÍK (1979, 1981); SOLDÁN (1996, 2004)

### *Perla marginata* (Panzer, 1799)

KOLENATI (1859, 1860); Klapálek (1905); PAX & MASCHKE (1935); NOWAK et al. (1937); ZELINKA (1950); HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956b); HRABĚ et al. (1958); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); STRAŠKRABA (1966); RAUŠER (1970); HELAN et al. (1973); OBRDLÍK (1979); KOMÍNEK et al. (1982); OBRDLÍK (1980); SIMANOV & KANTOREK (1985); TRNKOVÁ (1989); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); JURAIDA et al. (2000); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP (2010); BOJKOVÁ et al. (2012a)

### *Arcynopteryx dichroa* (McLachlan, 1872)

as *A. compacta* (McLachlan, 1872) (misidentification by Klapálek (1912)): KŘELINOVÁ (1962); ŠPAČEK (1999); TUŠA (2000); ŠPAČEK (2001); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ (2009); KROČA (2010a)

### *Isogenus nubecula* Newman, 1833

DALLA-TORRE (1878); Klapálek (1903, 1904a, 1905); NOWAK et al. (1937); LOSOS & MARVAN (1957); RAUŠER (1992); SOLDÁN (1996); SOLDÁN et al. (1998); SOLDÁN (2004); SUKOP (2006); KROČA (2010a)  
 as *Perla nubecula* (combination): KOLENATI (1859); ANDERS (1898)

***Diura bicaudata* (Linnaeus, 1758)**

ZELINKA (1951); RAUŠER (1956b); HRABĚ et al. (1958); ŠVEC (1960); KRĚLINOVÁ (1962); OBRDLÍK (1972); ADÁMEK & RAUŠER (1977); WINKLER (1977, 1979); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); RŮŽIČKOVÁ & KOTRBOVÁ (2000); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012) as *Dictyopteryx septentrionis* Klapálek, 1904 (junior synonym): Klapálek (1904a)  
as *Dictyopterygella septentrionis* (Klapálek, 1904) (junior synonym): Klapálek (1906b)  
as *Dictyopterygella recta* Kempny, 1901 (junior synonym): Klapálek (1909)

***Perlodes dispar* (Rambur, 1842)**

ZELINKA (1950); LOSOS & MARVAN (1957); KRĚLINOVÁ (1962); ADÁMEK (1972); OBRDLÍK (1980); SIMANOV & KANTOREK (1985); SOLDÁN et al. (1998); ŠPAČEK (1998); SUKOP & KOCOUR (2000); SUKOP & SPURNÝ (2003); BOJKOVÁ (2009); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2012a)

***Perlodes intricatus* (Pictet, 1841)**

WINKLER (1963); SEDLÁK (1969); ZELINKA et al. (1977); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); SUKOP & KOCOUR (2000); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP (2010)  
as *Dictyopteryx intricata* (Pictet, 1841) (combination): Klapálek (1905)

***Perlodes jurassicus* Aubert, 1946**

based only on larvae determined by J. Raušer or according to his key (RAUŠER 1980), misidentified: HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); ŠTĚRBA (1959); ŠVEC (1960); SIMANOV & KANTOREK (1985); SUKOP & SPURNÝ (2003)

***Perlodes microcephalus* (Pictet, 1833)**

HRABĚ et al. (1954); RAUŠER (1956b); WINKLER (1956b); LOSOS & MARVAN (1957); HRABĚ et al. (1958); ŠTĚRBA (1959); ŠVEC (1960); PETR (1961); KRĚLINOVÁ (1962); OBRDLÍK (1972); HELAN et al. (1973); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); OBRDLÍK (1980); KOMÍNEK et al. (1982); SIMANOV & KANTOREK (1985); ADÁMEK & SUKOP (1996); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); KUBÍČEK et al. (1999); ŠPAČEK (1999); JURAIDA et al. (2000); RŮŽIČKOVÁ & KOTRBOVÁ (2000); NĚMCOVÁ (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP et al. (2010); BOJKOVÁ et al. (2010, 2012a); SVOBODOVÁ et al. (2012)  
as *Dictyopteryx rectangula* Pictet, 1841 (junior synonym): Klapálek (1903)  
as *Dictyopteryx microcephala* (Pictet, 1833) (combination): Klapálek (1905, 1906b); DALLA-TORRE (1878); ANDERS (1898).  
as *Perlodes mortoni* (Klapálek, 1906) (junior synonym): ŠÁMAL (1920b)

***Isoperla buresi* Raušer, 1962**

SOLDÁN et al. (1998); BOJKOVÁ & ŠPAČEK (2006); SUKOP (2010)

***Isoperla difformis* (Klapálek, 1909)**

ŠTĚRBA (1959); PETR (1961); KRĚLINOVÁ (1962); WINKLER (1963); KUBÍČEK et al. (1971); SUKOP (1976); OBRDLÍK (1980); TUŠA (1987); HELEŠIC & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); SOLDÁN (2004, 2006); SUKOP (2008); BOJKOVÁ (2009); SUKOP (2010).  
as *Chloroperla helvetica* Schoch, 1885 (misidentification, revised by P. Zwick): Klapálek (1900, 1903, 1905)

***Isoperla goertzi* Illies, 1952**

WINKLER (1956b); KRĚLINOVÁ (1962); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998, 2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2012a)

***Isoperla grammatica* (Poda, 1761)**

ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); KUBÍČEK et al. (1971); OBRDLÍK (1972); SUKOP (1976); ADÁMEK & RAUŠER (1977); WINKLER (1977); OBRDLÍK (1980); ZELINKA et al. (1984); ŠIMANOV & KANTOREK (1985); HELEŠIČ & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); KUBÍČEK et al. (1999); ŠPAČEK (1998, 1999); SUKOP & KOCOUR (2000); NĚMCOVÁ (2001); POŘÍZKOVÁ (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); SOLDÁN (2004, 2006); SUKOP et al. (2010); BOJKOVÁ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a)

as *Chloroperla grammatica* (Poda, 1761) (combination): Klapálek (1901, 1903); Dalla-Torre (1878); Nowak et al. (1937)

as *Chloroperla rufescens* Stephens, 1836 (junior synonym): Klapálek (1904b, 1905)

as *Chloroperla strandi* Kempny, 1900 (junior synonym): Šámal (1920a,b)

***Isoperla obscura* (Zetterstedt, 1840)**

Helešič & Sedlák (1995); Kubiček et al. (1971); Sukop (1976); Raušer (1992); Soldán et al. (1998); Kubiček et al. (1999); Sukop (2008, 2010); Sukop et al. (2010)

as *Chloroperla griseipennis* (Pictet, 1841) (junior synonym): Klapálek (1903, 1905)

***Isoperla oxylepis* (Despax, 1936)**

Stráskraba & Raušer (1954); Hrabě et al. (1958); Petr (1961); Křelinová (1962); Sedlák (1969); Kubiček et al. (1971); Helan et al. (1973); Sukop (1976); Adámek & Raušer (1977); Šimanov & Kantorek (1985); Tuša (1987); Trnková (1989); Helešič & Sedlák (1995); Soldán (1996); Landa et al. (1997); Soldán et al. (1998); Sukop & Vrbica (1998); Špaček (1998, 1999); Preisler & Špaček (2001); Soldán et al. (2001); Špaček (2001); Soldán & Špaček (2002); Jezberová (2003); Růžičková et al. (2004b); Soldán (2004, 2006); Fricová et al. (2007); Sukop (2008); Bojková (2009); Bojková & Helešič (2009); Sukop & Šťastný (2009); Bojková et al. (2010); Sukop (2010); Sukop et al. (2010); Bojková et al. (2012a); Maradová & Soldán (2012); Svobodová et al. (2012)

***Isoperla pawlowskii* Wojtas, 1961**

Expected to occur in the Czech Republic in the check-list by Raušer (1977), no other record found.

***Isoperla rivulorum* (Pictet, 1841)**

Hrabě et al. (1954); Raušer (1956b); Křelinová (1962); Winkler (1977); Soldán (1996); Landa et al. (1997); Soldán et al. (1998); Kubiček et al. (1999); Špaček (1999, 2001); Růžičková et al. (2004b); Soldán (2004); Fricová et al. (2007); Bojková (2009); Sukop (2010); Maradová & Soldán (2012)

as *Chloroperla rivulorum* (Pictet, 1841) (combination): Klapálek (1905, 1903); Kolenati (1859)

as *Chloroperla helvetica* Schoch, 1885 (junior synonym): Šámal (1920a,b)

***Isoperla silesica* Illies, 1952**

Křelinová (1962); Soldán (1996); Soldán et al. (1998); Soldán (2004); Bojková (2009)

***Isoperla sudetica* (Kolenati, 1860)**

Winkler (1956a); Křelinová (1962); Winkler (1977); Soldán (1996); Soldán et al. (1998); Špaček (1999); Soldán et al. (2001); Špaček (2001); Bojková (2009); Bojková & Helešič (2009); Sukop & Šťastný (2009); Bojková et al. (2012a)

as *Chloroperla sudetica* Kolenati, 1859 (original combination): Kolenati (1859, 1860); Klapálek (1905, 1909)

***Isoperla tripartita* Illies, 1954**

Křelinová (1962); Obrdlík (1980); Soldán et al. (1998); Kubiček et al. (1999); Sukop & Spurný (2003); Bojková & Špaček (2006); Bojková (2009); Sukop (2010); Kroupalová et al. (2011); Bojková et al. (2012a)

***Chloroperla kisi* Zwick, 1967**

based only on larvae, doubtful: Soldán et al. (1998)

***Chloroperla susemicheli* Zwick, 1967**

Bojková (2009)



***Chloroperla tripunctata* (Scopoli, 1763)**

HRABĚ et al. (1954); KŘELINOVÁ (1962); ADÁMEK & RAUŠER (1977); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998, 2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠŤASTNÝ (2009); SOLDÁN et al. (2012)  
 as *Isopteryx tripunctata* (Scopoli, 1763) (combination): Klapálek (1903, 1905); DALLA-TORRE (1878); ŠÁMAL (1920a)

***Isoptena serricornis* (Pictet, 1841)**

KŘELINOVÁ (1962); SOLDÁN et al. (1998); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ (2009)  
 as *Isopteryx serricornis* (Pictet, 1841) (combination): Klapálek (1905)

***Siphonoperla cf. burmeisteri* (Pictet, 1841)**

ZELINKA (1950); WINKLER (1956b, 1963); BOJKOVÁ (2009)  
 as *Isopteryx burmeisteri* (Pictet, 1841) (combination): Klapálek (1903, 1905)  
 as *Chloroperla burmeisteri* (Pictet, 1841) (combination): KŘELINOVÁ (1962)

***Siphonoperla montana* (Pictet, 1841)**

SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); RŮŽIČKOVÁ & KOTRBOVÁ (2000); SOLDÁN et al. (2001); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009)  
 as *Chloroperla montana* (Pictet, 1841) (combination): NOVÁKOVÁ (1958); KŘELINOVÁ (1962)

***Siphonoperla neglecta* (Rostock, 1881)**

WINKLER (1977, 1979); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1998, 1999); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP (2010); BOJKOVÁ et al. (2012a); SVOBODOVÁ et al. (2012)  
 as *Isopteryx neglecta* Rostock, 1881 (original combination): Klapálek (1903, 1905, 1909)  
 as *Chloroperla neglecta* (Rostock, 1881) (combination): HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); WINKLER (1956a); ŠVEC (1960); KŘELINOVÁ (1962)

***Siphonoperla taurica* (Pictet, 1841)**

SOLDÁN (1996); SOLDÁN et al. (1998); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP (2010)  
 as *Chloroperla burmeisteri* (Pictet, 1841) (misidentification, revised by J. Bojková): KŘELINOVÁ (1962)  
 as *S. burmeisteri* (misidentification, J. Špaček, pers. comm. 2012): ŠPAČEK (1998)

***Siphonoperla torrentium* (Pictet, 1841)**

KUBÍČEK et al. (1971); ADÁMEK & RAUŠER (1977); WINKLER (1977); SIMANOV & KANTOREK (1985); HELEŠIČ & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1998, 1999); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004, 2006); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); MARADOVÁ & SOLDÁN (2012); BOJKOVÁ et al. (2012a); SOLDÁN et al. (2012); STRAKA et al. (2012)  
 as *Isopteryx torrentium* (Pictet, 1841) (combination): Klapálek (1903, 1905)  
 as *Chloroperla torrentium* (Pictet, 1841) (combination): HRABĚ et al. (1954, 1958); RAUŠER (1956b); WINKLER (1956b); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962).

***Xanthoperla apicalis* (Newman, 1836)**

LOSOS & MARVAN (1957); RAUŠER (1992); ŠPAČEK (1998, 1999)  
 as *Isopteryx apicalis* (Newman, 1836) (combination): KOLENATI (1859, 1860); Klapálek (1903, 1905)

***Brachyptera braueri* (Klapálek, 1900)**

ZELINKA (1950); KŘELINOVÁ (1962); ADÁMEK (1972); OBRDLÍK (1980); RAUŠER (1992); SOLDÁN et al. (1998); SUKOP & SPURNÝ (2003); BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ (2009); SUKOP (2010); BOJKOVÁ et al. (2011)  
 as *Taeniopteryx braueri* Klapálek, 1900 (original combination): Klapálek (1905, 1906a); ŠÁMAL (1920a)

***Brachyptera monilicornis* (Pictet, 1841)**

LOSOS & MARVAN (1957); SOLDÁN (2004); BOJKOVÁ et al. (2011)  
as *Taeniopteryx kempyi* (Klapálek, 1901) (junior synonym): Klapálek (1903, 1906a)

***Brachyptera risi* (Morton, 1896)**

HRABĚ et al. (1954); LOSOS & MARVAN (1957); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); OBRDLÍK (1979, 1981); SIMANOV & KANTOREK (1985); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2011, 2012a)  
as *Taeniopteryx risi* Morton, 1896 (original combination): Klapálek (1905, 1906a); ŠÁMAL (1920b)

***Brachyptera seticornis* (Klapálek, 1902)**

HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); WINKLER (1956b); HRABĚ et al. (1958); ŠVEC (1960); KŘELINOVÁ (1962); WINKLER (1963); RAUŠER (1970); ADÁMEK & RAUŠER (1977); WINKLER (1977); OBRDLÍK (1979, 1981); TONNER et al. (1983); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); RŮŽIČKOVÁ & KOTRBOVÁ (2000); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); JEZBEROVÁ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2011, 2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)  
as *Taeniopteryx seticornis* Klapálek, 1902 (original combination): Klapálek (1903, 1905, 1906a); ŠÁMAL (1920b)

***Brachyptera starmachi* Sowa, 1966**

BOJKOVÁ (2009); BOJKOVÁ et al. (2011)

***Brachyptera trifasciata* (Pictet, 1832)**

Included in the check-list by RAUŠER (1977). Records in SIMANOV & KANTOREK (1985) are based only on larvae which is doubtful and a record by ŠPAČEK (2001) was misidentified (see BOJKOVÁ et al. 2011).

***Oemopteryx loewii* (Albarda, 1889)**

Expected to occur in the Czech Republic in the check-list by RAUŠER (1977). Material mentioned in NOVÁKOVÁ (1956), KŘELINOVÁ (1962) and SOLDÁN et al. (1998) was misidentified (see BOJKOVÁ 2009).

***Rhabdiopteryx acuminata* Klapálek, 1905**

Records in SOLDÁN (2004), SOLDÁN et al. (1998), SUKOP & ŠŤASTNÝ (2009) were based only on larvae, which is doubtful (see BOJKOVÁ et al. 2011).

***Rhabdiopteryx neglecta* (Albarda, 1889)**

Records in SOLDÁN et al. (1998), RŮŽIČKOVÁ & KOTRBOVÁ (2000), and SOLDÁN (2004) are based only on larvae, which is doubtful (see BOJKOVÁ et al. 2011).

***Taeniopteryx auberti* Kis & Sowa, 1964**

OBRDLÍK (1979, 1981); BOJKOVÁ (2009); BOJKOVÁ et al. (2011)

***Taeniopteryx araneoides* Klapálek, 1902**

Expected to occur in the Czech Republic in the check-list by RAUŠER (1977). Mentioned by LANDA et al. (1997), see BOJKOVÁ et al. (2011).

***Taeniopteryx hubaulti* Aubert, 1946**

LOSOS & MARVAN (1957); NOVÁKOVÁ (1958); KŘELINOVÁ (1962); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998, 2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2011)

***Taeniopteryx nebulosa* (Linnaeus, 1758)**

DALLA-TORRE (1878); KŘELINOVÁ (1962); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ et al. (2011)  
as *Semblis nebulosa* (Linnaeus, 1758) (combination): GLÜCKSELIG (1843)  
as *Nephelopteryx nebulosa* (Linnaeus, 1758) (combination): Klapálek (1905); NOWAK et al. (1937)

***Taeniopteryx kuehntreiberi* Aubert, 1950**

Expected to occur in the Czech Republic in the check-list by RAUŠER (1977). Records in SOLDÁN (1996) and SOLDÁN (2004) were based only on larvae, which is doubtful (see BOJKOVÁ et al. 2011).

***Amphinemura borealis* (Morton, 1894)**

HRABĚ et al. (1954, 1958); ŠVEC (1960); KŘELINOVÁ (1962); RAUŠER (1963); WINKLER (1963); SEDLÁK (1969); ZELINKA et al. (1977); OBRDLÍK (1979); WINKLER (1979); OBRDLÍK (1981); SIMANOV & KANTOREK (1985); HELEŠIČ & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP (2010); MARADOVÁ & SOLDÁN (2012)

***Amphinemura standfussi* (Ris, 1902)**

STRAŠKRABA & RAUŠER (1954); WINKLER (1956b); LOSOS & MARVAN (1957); ŠTĚRBA (1959); KŘELINOVÁ (1962); RAUŠER (1963); OBRDLÍK (1972, 1980); SIMANOV & KANTOREK (1985); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); SOLDÁN (2004, 2006); SUKOP (2008); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012) as *Nemura standfussi* Ris, 1902 (original combination): K LAPÁLEK (1903, 1905); ŠÁMAL (1920a,b)

***Amphinemura sulcicollis* (Stephens, 1836)**

HRABĚ et al. (1954, 1958); WINKLER (1956b); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); KUBÍČEK et al. (1971); OBRDLÍK (1972); HELAN et al. (1973); WINKLER (1977); OBRDLÍK (1979); WINKLER (1979); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); RŮŽIČKOVÁ & KOTRBOVÁ (2000); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004, 2006); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP & ŠTĚRNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)

as *Nemura cinerea* (Olivier, 1811) (synonym): K LAPÁLEK (1901, 1903, 1905)

as *Amphinemura cinerea* (Olivier, 1811) (synonym): ŠTĚRBA (1959); SUKOP & SPURNÝ (2003)

***Amphinemura triangularis* (Ris, 1902)**

ŠVEC (1960); KŘELINOVÁ (1962); RAUŠER (1970); ADÁMEK & RAUŠER (1977); SOLDÁN (1996); SOLDÁN et al. (1998); RŮŽIČKOVÁ & KOTRBOVÁ (2000); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); SOLDÁN (2006); BOJKOVÁ (2009); SUKOP (2010)

as *Nemura triangularis* Ris, 1902 (original combination): K LAPÁLEK (1905); ŠÁMAL (1920b)

***Nemoura avicularis* Morton, 1894**

ŠÁMAL (1920a,b); KŘELINOVÁ (1962); WINKLER (1963, 1977); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); KUBIKOVÁ et al. (2012); SOLDÁN et al. (2012)

***Nemoura cambrica* Stephens, 1836**

K LAPÁLEK (1903, 1905); ŠÁMAL (1920a); ZELINKA (1950); HRABĚ et al. (1954); RAUŠER (1956b); ŠVEC (1960); KŘELINOVÁ (1962); KUBÍČEK et al. (1971); HELAN et al. (1973); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); WINKLER (1977, 1979); SIMANOV & KANTOREK (1985); TUŠA (1987); ADÁMEK & SUKOP (1996); SOLDÁN (1996); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN (2004, 2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

***Nemoura carpathica* Illies, 1963**

BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2012a)

***Nemoura cinerea* (Retzius, 1783)**

HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); WINKLER (1956b); ŠTĚRBA (1959); PETR (1961); HRABĚ (1962); KŘELINOVÁ (1962); WINKLER (1963); STRAŠKRABA (1966); SEDLÁK (1969); KUBÍČEK et al. (1971); ADÁMEK & RAUŠER (1977); KUBIČKOVÁ (1977); ZELINKA et al. (1977); OBRDLÍK (1980); ZELINKA et al. (1984); HELEŠIČ & SEDLÁK (1995); ADÁMEK & SUKOP (1996); SOLDÁN (1996); LANDA et al. (1997); WOHLGEMUTH (1997); SOLDÁN et

al. (1998); HELEŠIČ (1999); ŠPAČEK (1999); JURAIDA et al. (2000); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); SUKOP & SPURNÝ (2003); VRBA et al. (2003); SOLDÁN (2004); BOUKAL et al. (2006); NEDBALOVÁ et al. (2006); SOLDÁN (2006); SUKOP (2008); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KRŮPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); KUBÍKOVÁ et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)

as *Nemoura variegata* (Olivier, 1811) (junior synonym): DALLA-TORRE (1878); KĽAPÁLEK (1901, 1903, 1905); ŠÁMAL (1920a); ZELINKA (1950)

***Nemoura dubitans* Morton, 1894**

KŘELINOVÁ (1962); SOLDÁN et al. (1998); STEHNO (2000); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010)

***Nemoura flexuosa* Aubert, 1949**

HRABÉ et al. (1954); KŘELINOVÁ (1962); KUBÍČEK et al. (1971); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); OBRDLÍK (1979); ADÁMEK & SUKOP (1996); SOLDÁN (1996); SOLDÁN et al. (1998); STEHNO (2000); POŘÍZKOVÁ (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); FRICOVÁ et al. (2007); BOJKOVÁ (2009); SUKOP et al. (2010); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012)

***Nemoura fusca* Kis, 1963**

BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ et al. (2012a)

as *Nemoura monticola* Raušer, 1965 (junior synonym): RAUŠER (1965b); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009)

***Nemoura marginata* Pictet, 1835**

DALLA-TORRE (1878); KĽAPÁLEK (1900, 1903, 1905); ŠÁMAL (1920a); ZELINKA (1950); HRABÉ et al. (1954); RAUŠER (1956b); LOSOS & MARVAN (1957); ŠVEC (1960); KŘELINOVÁ (1962); ADÁMEK & RAUŠER (1977); WINKLER (1977); KOMÍNEK et al. (1982); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); ŠPAČEK (1999); STEHNO (2000); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); JEZBEROVÁ (2003); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KRŮPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); KUBÍKOVÁ et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

***Nemoura mortoni* Ris, 1902**

KŘELINOVÁ (1962); SOLDÁN (1996); ŠPAČEK (1999, 2001); RŮŽIČKOVÁ & KOTRBOVÁ (2000); SOLDÁN (2004); SOLDÁN (2006); BOJKOVÁ (2009)

***Nemoura obtusa* Ris, 1902**

based only on larvae, doubtful: OBRDLÍK (1981); SUKOP & ŠŤASTNÝ (2009)

***Nemoura sciurus* Aubert, 1949**

KŘELINOVÁ (1962); RAUŠER (1965b); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); KRŮPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012)

***Nemoura uncinata* Despax, 1934**

STEHNO (2000); BOJKOVÁ (2009); KUBÍKOVÁ et al. (2012)

as *Nemoura fulviceps* Klapálek, 1902 (misidentified): HELAN et al. (1973); ADÁMEK & RAUŠER (1977); ZELINKA et al. (1977); OBRDLÍK (1981); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (2001); SOLDÁN (2004); SUKOP (2010)

***Nemurella pictetii* Klapálek, 1900**

KĽAPÁLEK (1903, 1905); PAX & MASCHKE (1935); NOWAK et al. (1937); ZELINKA (1951); TENORA (1955); WINKLER (1956b); LOSOS & MARVAN (1957); HRABÉ et al. (1958); ŠVEC (1960); KŘELINOVÁ (1962); SEDLÁK (1969); ADÁMEK & RAUŠER (1977); KUBÍČKOVÁ (1977); WINKLER (1977, 1979); TONNER et al. (1983); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1997, 1998, 1999); HELEŠIČ (1999); RŮŽIČKOVÁ & KOTRBOVÁ (2000); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et

al. (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); VRBA et al. (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004, 2006); NEDBALOVÁ et al. (2006); FRICOVÁ et al. (2007); SUKOP (2008); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠĚSTÝ (2009); BOJKOVÁ et al. (2010); KRŮPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); KUBÍKOVÁ et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); STRAKA et al. (2012); SVOBODOVÁ et al. (2012)

as *Nemura pictetii* (Klapálek, 1900) (combination): Klapálek (1901); ŠÁMAL (1920a)

#### ***Protonemura aestiva* Kis, 1965**

BOJKOVÁ & ŠPAČEK (2006); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2012a)

#### ***Protonemura auberti* Illies, 1954**

STRAŠKRABA & RAUŠER (1954); RAUŠER (1956a); WINKLER (1956b); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); STRAŠKRABA (1966); KUBÍČEK et al. (1971); OBRDLÍK (1972); WINKLER (1977, 1979); TONNER et al. (1983); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠĚSTÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a); KUBÍKOVÁ et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)

as *Nemoura fumosa* Stephens, 1835 (synonym): Klapálek (1903, 1905); ŠÁMAL (1920a); HRABĚ et al. (1954)

#### ***Protonemura autumnalis* Raušer, 1956**

RAUŠER (1956a, 1957); OBRDLÍK (1972); SIMANOV & KANTOREK (1985); SOLDÁN et al. (1998); BOJKOVÁ (2009)

#### ***Protonemura brevistyla* (Ris, 1902)**

KŘELINOVÁ (1962); WINKLER (1977); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); SOLDÁN (2004); BOJKOVÁ (2009)

as *Nemura brevistyla* Ris, 1902 (combination): Klapálek (1905); ŠÁMAL (1920a,b)

#### ***Protonemura hrabei* Raušer, 1956**

RAUŠER (1956a, 1957); HRABĚ et al. (1958); KŘELINOVÁ (1962); OBRDLÍK (1981); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP (2010); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

#### ***Protonemura intricata* (Ris, 1902)**

HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956a); WINKLER (1956b); HRABĚ et al. (1958); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); OBRDLÍK (1972); HELAN et al. (1973); ADÁMEK & RAUŠER (1977); WINKLER (1977); ZELINKA et al. (1977); WINKLER (1979); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); SOLDÁN (2004); BOUKAL et al. (2006); SOLDÁN (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP & ŠĚSTÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

as *Protonemura humeralis* (Pictet, 1836) (misidentification, revised by J. Bojková): Klapálek (1903, 1905)

as *Protonemura umbrosa* Illies, 1966 (junior synonym): KUBÍČEK et al. (1971)

#### ***Protonemura lateralis* (Pictet, 1835)**

RAUŠER (1956a); KŘELINOVÁ (1962); OBRDLÍK (1972); WINKLER (1977); OBRDLÍK (1979); WINKLER (1979); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); ŠPAČEK (2001); JEZBEROVÁ (2003); SOLDÁN (2004); BOJKOVÁ (2009); KRŮPALOVÁ et al. (2011); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

as *Nemura lateralis* Pictet, 1835 (combination): ŠÁMAL (1920a,b)

#### ***Protonemura meyeri* (Pictet, 1841)**

HRABĚ et al. (1954); RAUŠER (1956a); HRABĚ et al. (1958); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); HELAN et al. (1973); OBRDLÍK (1981); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998);

ŠPAČEK (1999); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); SOLDÁN (2004); SUKOP (2006); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2010); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012) as *Nemura meyeri* Pictet, 1841 (combination): Klapálek (1903, 1905); ŠÁMAL (1920b)

***Protonemura montana* Kimmins, 1941**

TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); VRBA et al. (2003); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SOLDÁN et al. (2012) as *Protonemura nimborella* (Mosely, 1930) (misidentification, revised by J. Bojková): RAUŠER (1956a); ŠVEC (1960) as *Protonemura* sp. aff. *montana* (misidentification, revised by J. Bojková): KŘELINOVÁ (1962)

***Protonemura nimborum* (Ris, 1902)**

RAUŠER (1956a); WINKLER (1963, 1977); OBRDLÍK (1981); TONNER et al. (1983); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); SOLDÁN (2004); BOJKOVÁ (2009) as *Nemura nimborum* Ris, 1902 (original combination): Klapálek (1903, 1905); ŠÁMAL (1920b)

***Protonemura nitida* (Pictet, 1835)**

RAUŠER (1956a,b); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); OBRDLÍK (1972); HELAN et al. (1973); ADÁMEK & RAUŠER (1977); KUBÍČKOVÁ (1977); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); POŘÍZKOVÁ (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); MARADOVÁ & SOLDÁN (2012) as *Nemura nitida* Pictet, 1835 (combination): KOLENATI (1859, 1860); Klapálek (1903, 1905)

***Protonemura praecox* (Morton, 1894)**

HRABÉ et al. (1954, 1958); RAUŠER (1956a,b); ŠVEC (1960); KŘELINOVÁ (1962); WINKLER (1963); KUBÍČEK et al. (1971); ADÁMEK & RAUŠER (1977); WINKLER (1977); ZELINKA et al. (1977); OBRDLÍK (1979); WINKLER (1979); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012)

***Capnia bifrons* (Newman, 1839)**

KŘELINOVÁ (1962); KUBÍČEK et al. (1971); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); ADÁMEK & SUKOP (1996); SOLDÁN (1996); SOLDÁN et al. (1998); JURAJDA et al. (2000); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); SOLDÁN (2004); SUKOP (2008); BOJKOVÁ (2009); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2012a). Most specimens mentioned as *Capnia atra* and *C. nigra* in Klapálek (1905) are *C. bifrons* (P. Zwick revid.).

***Capnia nigra* (Pictet, 1833)**

Klapálek (1903, 1905); ŠÁMAL (1920b); SOLDÁN et al. (1998); SOLDÁN (2004); BOJKOVÁ (2009)

***Capnia vidua vidua* Klapálek, 1904**

WINKLER (1956b); KŘELINOVÁ (1962); WINKLER (1977); OBRDLÍK (1981); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP & ŠŤASTNÝ (2009); SOLDÁN et al. (2012)

***Capnioneura mitis* (Despax, 1932)**

Expected to occur in the Czech Republic in the check-list (RAUŠER 1977). No other record found.

***Capnopsis schilleri* (Rostock, 1892)**

RAUŠER (1992); SOLDÁN (1996); ŠPAČEK et al. (1999); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009)

***Leuctra albida* Kempny, 1899**

Klapálek (1901, 1903, 1905); ŠÁMAL (1920a,b); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956b,c); HRABÉ et al. (1958); ŠTÉRBA (1959); ŠVEC (1960); KŘELINOVÁ (1962); HELAN et al. (1973); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); ZELINKA et al. (1977); OBRDLÍK (1980); SIMANOV & KANTOREK (1985); HELEŠIC & SEDLÁK (1995); ADÁMEK & SUKOP (1996); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1998, 1999); KUBÍČEK et al.

(1999); STEHNO (2000); NĚMCOVÁ (2001); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); SUKOP & SPURNÝ (2003); SOLDÁN (2004, 2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); BOJKOVÁ et al. (2010); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012)

***Leuctra alpina* Kührtreiber, 1934**

KŘELINOVÁ (1962); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); BOJKOVÁ (2009); PREISLER & ŠPAČEK (2001); SOLDÁN (2004); SOLDÁN et al. (2012)

***Leuctra armata* Kempny, 1899**

HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956c); STRAŠKRABA (1966); SOLDÁN et al. (1998); SOLDÁN & HELEŠIC (1999); STEHNO (2000); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009)

***Leuctra aurita* Navás, 1919**

RAUŠER (1956b,c); HRABĚ et al. (1958); ŠTĚRBA (1959); ŠVEC (1960); KŘELINOVÁ (1962); HELAN et al. (1973); WINKLER (1979); OBRDLÍK (1980); SIMANOV & KANTOREK (1985); TUŠA (1987); HELEŠIC & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SUKOP & SPURNÝ (2003); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); SOLDÁN (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠŤASTNÝ (2009); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012)

***Leuctra autumnalis* Aubert, 1948**

HRABĚ et al. (1958); NOVÁKOVÁ (1958); KŘELINOVÁ (1962); HELAN et al. (1973); SIMANOV & KANTOREK (1985); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999); POŘÍZKOVÁ (2001); ŠPAČEK (2001); JEZBEROVÁ (2003); VRBA et al. (2003); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP (2010); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); STRAKA et al. (2012); SVOBODOVÁ et al. (2012)

***Leuctra braueri* Kempny, 1898**

KLAPÁLEK (1901, 1903, 1903, 1904b, 1905); HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956c); WINKLER (1956a); ŠVEC (1960); KŘELINOVÁ (1962); STRAŠKRABA (1966); RAUŠER (1970); KUBÍČEK et al. (1971); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); NEDBALOVÁ et al. (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); KUBÍČEK et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)

***Leuctra bronislawi* Sowa, 1970**

KROČA (2010c)

***Leuctra cingulata* Kempny, 1899**

BOJKOVÁ (2009)

***Leuctra dalmoni* Vinçon & Murányi, 2006**

VINČON & MURÁNYI (2006); SOLDÁN et al. (2012)

***Leuctra digitata* Kempny, 1899**

KLAPÁLEK (1901, 1903, 1905); WINKLER (1956b); PETR (1961); KŘELINOVÁ (1962); ZELINKA et al. (1984); HELEŠIC & SEDLÁK (1995); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠŤASTNÝ (2009); BOJKOVÁ et al. (2010); KROČA (2010b); SUKOP (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); STRAKA et al. (2012); SVOBODOVÁ et al. (2012)

***Leuctra fusca* (Linnaeus, 1758)**

RAUŠER (1956b,c); ŠTĚRBA (1959); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); SEDLÁK (1969); OBRDLÍK (1980); ZELINKA et al. (1984); SIMANOV & KANTOREK (1985); HELEŠIC & SEDLÁK (1995); ADÁMEK & SUKOP (1996); SOLDÁN (1996); SOLDÁN et al. (1998); SUKOP & VRBICA (1998); ŠPAČEK (1998, 1999); KUBÍČEK et al.

al. (1999); SUKOP & KOCOUR (2000); NĚMCOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SUKOP & SPURNÝ (2003); VRBA et al. (2003); SOLDÁN (2004); NEDBALOVÁ et al. (2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠTASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); SUKOP et al. (2010); BOJKOVÁ et al. (2012a); SOLDÁN et al. (2012)

as *Leuctra klapaleki* Kempny, 1898 (junior synonym): K LAPÁLEK (1903, 1905); ŠÁMAL (1920a)

***Leuctra geniculata* Stephens, 1836**

BOJKOVÁ & ŠPAČEK (2006); PŘIL et al. (2008)

***Leuctra handlirschi* Kempny, 1898**

K LAPÁLEK (1901, 1903); HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); WINKLER (1977); OBRDLÍK (1980); TONNER et al. (1983); SIMANOV & KANTOREK (1985); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); SUKOP & SPURNÝ (2003); SOLDÁN (2004); SUKOP & ŠTASTNÝ (2009); SUKOP (2010); KUBÍKOVÁ et al. (2012).

All misidentified, see BOJKOVÁ (2009).

***Leuctra hippopus* Kempny, 1899**

K LAPÁLEK (1903, 1905); RAUŠER (1956b,c); HRABĚ et al. (1958); ŠVEC (1960); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); KUBÍČEK et al. (1971); HELAN et al. (1973); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); WINKLER (1979); KOMÍNEK et al. (1980, 1982); SIMANOV & KANTOREK (1985); ADÁMEK & SUKOP (1996); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004, 2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠTASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); STRAKA et al. (2012)

***Leuctra inermis* Kempny, 1899**

K LAPÁLEK (1905); HRABĚ et al. (1954, 1958); RAUŠER (1956c); WINKLER (1956a,b); PETR (1961); KŘELINOVÁ (1962); WINKLER (1963); HELAN et al. (1973); ADÁMEK (1977); ADÁMEK & RAUŠER (1977); ZELINKA et al. (1977); WINKLER (1977, 1979); SIMANOV & KANTOREK (1985); TUŠA (1987); ADÁMEK & SUKOP (1996); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004, 2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠTASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012)

***Leuctra leptogaster* Aubert, 1949**

Included in the check-list by RAUŠER (1977). Records in HELEŠIC & SEDLÁK (1995), SOLDÁN (1996), SOLDÁN et al. (1998), STEHNO (2000), and SOLDÁN (2004) were based only on larvae, which is doubtful.

***Leuctra major* Brinck, 1949**

KŘELINOVÁ (1962); SEDLÁK (1969); WINKLER (1977); SIMANOV & KANTOREK (1985); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); SOLDÁN (2004); BOJKOVÁ (2009); SUKOP (2010); BOJKOVÁ et al. (2012a) as *Leuctra cylindrica* De Geer, 1778 (synonym): K LAPÁLEK (1904b, 1905); DALLA-TORRE (1878); ŠÁMAL (1920a,b); PAX & MASCHKE (1935)

***Leuctra mortoni* Kempny, 1899**

RAUŠER (1956c); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); BOJKOVÁ (2009)

***Leuctra nigra* (Olivier, 1811)**

KOLENATI (1859, 1860); K LAPÁLEK (1903, 1905); ŠÁMAL (1920a,b); HRABĚ et al. (1954); STRAŠKRABA & RAUŠER (1954); RAUŠER (1956b,c); WINKLER (1956a,b); ŠVEC (1960); KŘELINOVÁ (1962); SEDLÁK (1969); WINKLER (1977); TONNER et al. (1983); SIMANOV & KANTOREK (1985); TUŠA (1987); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1998, 1999); STEHNO (2000); PREISLER & ŠPAČEK (2001); SOLDÁN et al. (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); JEZBEROVÁ (2003); VRBA et al. (2003); RŮŽIČKOVÁ et al. (2004b); SOLDÁN (2004); NEDBALOVÁ et al. (2006); FRICOVÁ et al. (2007); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIC (2009); SUKOP & ŠTASTNÝ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et



al. (2012a); KUBÍKOVÁ et al. (2012); MARADOVÁ & SOLDÁN (2012); SOLDÁN et al. (2012); STRAKA et al. (2012); SVOBODOVÁ et al. (2012)

#### ***Leuctra prima* Kempny, 1899**

KLAPÁLEK (1903, 1905); ŠÁMAL (1920a,b); ZELINKA (1950); RAUŠER (1956b,c); ŠVEC (1960); KŘELINOVÁ (1962); KUBÍČEK et al. (1971); HELAN et al. (1973); ADÁMEK & RAUŠER (1977); SIMANOV & KANTOREK (1985); SOLDÁN (1996); LANDA et al. (1997); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); POŘÍZKOVÁ (2001); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004, 2006); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); SUKOP et al. (2010); KŘOUPALOVÁ et al. (2011); BOJKOVÁ et al. (2012a); MARADOVÁ & SOLDÁN (2012)

#### ***Leuctra pseudocingulata* Mendl, 1968**

WINKLER (1977); SOLDÁN et al. (1998); ŠPAČEK (1999); STEHNO (2000); PREISLER & ŠPAČEK (2001); ŠPAČEK (2001); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012) as *Leuctra cingulata* Kempny, 1899 (misidentification): KLAPÁLEK (1901, 1903, 1904b, 1905); ŠÁMAL (1920a); KŘELINOVÁ (1962)

#### ***Leuctra pseudosignifera* Aubert, 1954**

KŘELINOVÁ (1962); TUŠA (1987); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); BOJKOVÁ et al. (2010); SUKOP (2010); BOJKOVÁ et al. (2012a); SOLDÁN et al. (2012) as *Leuctra signifera* Kempny, 1899 (misidentification): KLAPÁLEK (1903, 1905)

#### ***Leuctra pusilla* Krno, 1985**

BOJKOVÁ (2009); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012) as *L. handlirschi* Kempny, 1898 (misidentification, revised by J. Bojková): RAUŠER (1956c); KŘELINOVÁ (1962); SOLDÁN et al. (2001); VRBA et al. (2003); NĚDBALOVÁ et al. (2006)

#### ***Leuctra quadrimaculata* Kis, 1963**

BOJKOVÁ & ŠPAČEK (2006); KROČA (2011); BOJKOVÁ et al. (2012a)

#### ***Leuctra rauscheri* Aubert, 1957**

KŘELINOVÁ (1962); WINKLER (1977); SOLDÁN (1996); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); STEHNO (2000); PREISLER & ŠPAČEK (2001); HORECKÝ et al. (2002); SOLDÁN & ŠPAČEK (2002); SOLDÁN (2004); BOJKOVÁ (2009); BOJKOVÁ & HELEŠIČ (2009); SUKOP (2010); SOLDÁN et al. (2012); SVOBODOVÁ et al. (2012) as *L. teriolensis* Kempny, 1900 (misidentification, revised by J. Bojková): RAUŠER (1956c)

#### ***Leuctra rosinae* Kempny, 1900**

ZELINKA (1951); RAUŠER (1956c); KŘELINOVÁ (1962); WINKLER (1977); SIMANOV & KANTOREK (1985); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); BOJKOVÁ (2009)

#### ***Leuctra teriolensis* Kempny, 1900**

HRABĚ et al. (1954); SIMANOV & KANTOREK (1985); SOLDÁN et al. (1998); ŠPAČEK (1999, 2001); PREISLER & ŠPAČEK (2001); JEZBEROVÁ (2003); SUKOP (2010).  
All misidentified, see BOJKOVÁ (2009).

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