

Stoneflies (Plecoptera) of the Bílé Karpaty Protected Landscape Area and Biosphere Reserve (Czech Republic)

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BOJKOVÁ J., CHVOJKA P. & KOMZÁK P. 2012: Stoneflies (Plecoptera) of the Bílé Karpaty Protected Landscape Area and Biosphere Reserve (Czech Republic). In: MALENOVSKÝ I., KMENT P. & KONVIČKA O. (eds.): Species inventories of selected insect groups in the Bílé Karpaty Protected Landscape Area and Biosphere Reserve (Czech Republic). *Acta Musei Moraviae, Scientiae biologicae* (Brno) **96(2)** (2011): 37–70. – In the course of a faunistic survey in the Bílé Karpaty Protected Landscape Area and Biosphere Reserve (south-eastern Moravia, Czech Republic), a total of 37 species of Plecoptera (37% of the fauna of the Czech Republic) from 12 genera and seven families were recorded. Seven species are classified in the Red List of threatened invertebrates of the Czech Republic, in the categories “endangered” (*Isoperla sudetica* (Kolenati, 1859), *I. tripartita* Illies, 1954, *Perlodes dispar* (Rambur, 1842), and *Perla marginata* (Panzer, 1799)) and “vulnerable” (*Perla abdominalis* Burmeister, 1839, *Amphinemura standfussi* (Ris, 1902) and *Nemoura sciurus* Aubert, 1949). The occurrences of the eastern Mediterranean species *Isoperla tripartita*, which reaches the north-western limit of its distribution in the Czech Republic and is widespread and frequent in the Bílé Karpaty PLA, and the central European species *Nemoura sciurus*, infrequent in the Czech Republic but common in the area investigated, are especially noteworthy. Other remarkable records include four species with a Carpathian, Balkan-Carpathian or Carpathian-Anatolian distribution (*Nemoura carpathica* Illies, 1963, *N. fusca* Kis, 1963, *Protonemura aestiva* Kis, 1965, and *Leuctra quadrimaculata* Kis, 1963) which are rare in the Czech Republic. Three species (*Perlodes dispar* (Rambur, 1842), *Perla marginata* (Panzer, 1799) and *Leuctra major* Brinck, 1949) found in the Bílé Karpaty PLA in 1958 have not been re-collected in recent years at the sites of their earlier occurrence. These species are sensitive to pollution and stream morphology degradation and these impacts may have led to their disappearance from the area. The highest species richness of stoneflies was found in springs and brooks in the mountainous part of the PLA. The majority of species recorded occur in these biotopes.

Key words. Plecoptera, faunistics, biogeography, species conservation, aquatic habitats, White Carpathians, Moravia, Czech Republic

Introduction

The order Plecoptera (stoneflies) consists of a relatively small group of aquatic insects largely inhabiting running water habitats. Stoneflies are ecologically significant in freshwater ecosystems, as they live predominantly in undisturbed habitats with natural temperature, oxygen conditions and water quality. In the Czech Republic, RAUŠER (1977) listed 90 species of stoneflies: 81 in Bohemia and 75 in Moravia. Since 1977, the number of species arose in the light of taxonomic changes (see BOJKOVÁ 2009 for details) and new records (ŠPAČEK *et al.* 1999, BOJKOVÁ & ŠPAČEK 2006, BOJKOVÁ *et al.* 2010, KROČA

2010); there are currently 100 species recorded from the Czech Republic (87 species in Bohemia and 78 species in Moravia).

Until recently, knowledge of the Plecoptera of the Bílé Karpaty Protected Landscape Area and Biosphere Reserve (abbreviated to Bílé Karpaty PLA hereafter) situated in the south-eastern part of the Czech Republic (see KUČA *et al.* 1992, MACKOVČIN & JATTOVÁ 2002, JONGEPIEROVÁ 2008, and KONVIČKA *et al.* 2012 for detailed characteristics of the natural history of the area) has been only fragmentary. The only historical data come from the 1950s, when detailed faunistic research into Czechoslovak Ephemeroptera, Plecoptera and Trichoptera was carried out by the Institute of Entomology of the former Czechoslovak Academy of Sciences and the Faculty of Sciences of the Jan Evangelista Purkyně University, Brno (see LANDA & SOLDÁN 1989, SOLDÁN *et al.* 1998, and BOJKOVÁ 2009). Ten streams in the area of what is now the Bílé Karpaty PLA and its close vicinity were investigated in 1958 (the Klanečnice stream in the village of Strání-Květná, the Kuželovský potok brook near the village of Tasov, the Luhačovický potok brook near the village of Dolní Lhota, the Mlýnský potok brook below the village of Nivnice, the Okluky stream below the village of Horní Němčí, the Olšava stream above the village of Pitín, the Radějovka stream above the village of Radějov, the Smolinka stream above the village of Mirošov, the Velička stream above the village of Louka, and the Vlára river below the town of Brumov-Bylnice). Stoneflies were found at five of these ten sites. Altogether 16 species were recorded: *Perlodes dispar*, *Isoperla grammatica*, *Perla marginata*, *Siphonoperla torrentium*, *Brachyptera risi*, *Amphinemura standfussi*, *Nemoura cinerea*, *N. flexuosa*, *Protonemura praecox*, *Leuctra albida*, *L. digitata*, *L. hippopus*, *L. fusca*, *L. major*, and *L. prima*. These data were used in RAUŠER (1963, 1965), but details of the records were not specified. The material was, however, almost completely preserved in the Jaroslav Raušer collection, which has been recently revised (see BOJKOVÁ 2009 for details and the faunistic data below). JURAJDA *et al.* (2000) found additional two species, *Perlodes microcephalus* and *Capnia bifrons*, in the Drietomica river basin. BOJKOVÁ & ŠPAČEK (2006) recorded six stonefly species from the Bílé Karpaty PLA as new or interesting for the Czech fauna: *Isoperla goertzi*, *I. tripartita*, *Nemoura carpathica*, *N. fusca*, *Protonemura aestiva*, and *Leuctra quadrimaculata*. The first of these species, *I. goertzi*, was, however, misidentified. Based on the penial armature and egg chorionic structure, the material was later re-identified as *I. sudetica*. However, the taxonomy of this species is complicated and further taxonomic changes cannot be ruled out. JURAJDA *et al.* (2007) conducted a detailed investigation on fish and the macro-invertebrates of streams in the Vlára river basin. Although the Plecoptera were mentioned as present in the area, the authors gave no species list. Plecoptera taxocoenoses of spring fens in the Moravian-Slovak borderland were studied by BOJKOVÁ & HELEŠIC (2009), including seven calcareous fens in the Bílé Karpaty PLA, but no detailed species list was given for these sites.

The published information on stoneflies is more complete for the Slovak part of the White Carpathian Mts. ŠPORKA *et al.* (1998) studied the macro-invertebrates of the Drietomica stream and found three stonefly species. Stoneflies of the Myjava river basin were studied by KRNO (1994), who reported 26 species in total. A detailed investigation

into the stoneflies of the Biele Karpaty Mts. was conducted by KRNO & HORNIÁK (2007) in 1991–2006. They recorded 32 species at 33 sites in six main river basins. Altogether, 37 Plecoptera species have been recorded in the Slovak part of the White Carpathian Mts. to date.

Material and methods

Imagines of stoneflies were collected by sweeping and in Malaise traps. The Malaise traps were exposed during the whole vegetation season and emptied every three weeks. The material was preserved in 70% ethanol and is currently deposited in two collections: that of the Department of Entomology, National Museum, Prague (NMPC) and the Jindřiška Bojková collection at the Department of Botany and Zoology, Faculty of Sciences, Masaryk University, Brno (JBBC). The historical material collected in the Bílé Karpaty PLA by Jaroslav Raušer is deposited in the Jaroslav Raušer collection at the Department of Botany and Zoology, Brno, Czech Republic (JRBC). All material examined was identified by J. Bojková. The classification and nomenclature of Plecoptera adopted in this paper follow GRAF *et al.* (2002). Conservation status for individual species is given according to the Red List of threatened invertebrates of the Czech Republic (HELEŠIČ *et al.* 2005). Distribution and ecological requirements largely follow ILLIES (1978), ZHILTOVA (2003), GRAF *et al.* (2009), and TESLENKO & ZHILTOVA (2009), or the source is given in the respective text.

The following abbreviations are used: NM – Nature Monument, NNR – National Nature Reserve, NR – Nature Reserve, PLA – Protected Landscape Area (all of these are the various categories and terms specified by the Czech system of legally protected natural areas); MT – Malaise trap; RT – right tributary, LT – left tributary; EN – endangered species, VU – vulnerable species (both the latter are specified categories defined in the Red List of threatened invertebrates of the Czech Republic, *cf.* HELEŠIČ *et al.* 2005); L – larva.

List of collecting sites

Altogether 326 sites, which cover all the main watercourses and aquatic habitats in the area, were surveyed for Plecoptera and Trichoptera in 2004–2010. A complete list of the sites is given by KOMZÁK & CHVOJKA (2012). Stoneflies were found at 169 (52%) of these sites, as listed below. The numbering of the sites follows KOMZÁK & CHVOJKA (2012) and is arranged according to the main drainage basins; sites within individual partial basins are ordered from the source downstream according to their altitude, tributaries are listed successively in the order in which they join the main stream. Each entry is arranged as follows: number of site in KOMZÁK & CHVOJKA (2012), name and position of collecting site, name of cadastral unit and code of field (in parentheses) in the faunistic and floristic grid mapping system of central Europe (EHRENDORFER & HAMANN 1965, PRUNER & MÍKA 1996; each basic field divided into 16 subfields, *cf.* KONVIČKA *et al.* 2012), and altitude.

Morava river basin – left tributaries

Olšava stream

8. Olšava stream above Pitín, Pitín (6973c1), 350–380 m a.s.l.
10. Kolelač stream above Bojkovice reservoir, Pitín (6973a3), 335 m a.s.l.
12. Bojkovice reservoir near inflow of Kolelač stream, Rudimov (6973a3), 320 m a.s.l.
13. Kolelač stream below Bojkovice reservoir, Bojkovice (6973c1), 295 m a.s.l.
16. Koménka stream above Komňa, Komňa (7072b2), 375 m a.s.l.
19. Koménka stream above Bojkovice, Bojkovice (6972d2), 275 m a.s.l.
22. Kladenka stream S Petrůvka, Petrůvka u Slavičina (6972b2), 390 m a.s.l.
23. Třešňůvka brook below Rudimov, Bojkovice (6972b4), 310 m a.s.l.
26. Kladenka stream NW Záhorovice, Záhorovice (6972d1), 245 m a.s.l.
27. Luhačovický potok stream below Slopné, Slopné (6873a3), 325 m a.s.l.
29. left tributary of Luhačovický potok stream S Slopné, Slopné (6873c1), 330 m a.s.l.
30. left tributary of Petrůvka brook, spring areas below U Petrůvky NM, Petrůvka u Slavičina (6872d4), 400 m a.s.l.
33. Luhačovický potok stream below Dolní Lhota, Dolní Lhota u Luhačovic (6872d2), 285 m a.s.l.
34. Gáborka brook, spring areas S Obětová hill, Kladná-Žilín (6872d3), 390–420 m a.s.l.
35. Gáborka brook above confluence with Luhačovický potok stream, Luhačovice (6872d3), 280 m a.s.l.
37. Nivnička stream, spring area, Bystřice pod Lopeníkem (7072b3), 580 m a.s.l.
38. Nivnička stream SE Bystřice pod Lopeníkem, Bystřice pod Lopeníkem (7072b3), 480 m a.s.l.
39. Pivný potok brook, spring brooks SW Nový Dvůr, Bystřice pod Lopeníkem (7072b4), 550–560 m a.s.l.
41. Pivný potok brook above Bystřice pod Lopeníkem, Bystřice pod Lopeníkem (7072b3), 390 m a.s.l.
42. Lubná brook above Lubná reservoir, Korytná (7072c1), 325 m a.s.l.
45. Korytnice brook above Korytná, Korytná (7071d2), 345 m a.s.l.
46. Korytnice brook below Korytná, Nivnice (7071b4), 290 m a.s.l.

Okluky stream

48. right tributary of Okluky stream, brooklets in Uvezené NM, Horní Němčí (7071d4), 530–540 m a.s.l.
51. Okluky stream above Horní Němčí, Horní Němčí (7071d4), 350–370 m a.s.l.
53. Boršický potok brook, spring brook, Slavkov u Uherského Brodu (7071d3), 475 m a.s.l.
54. Boršický potok brook, Slavkov u Uherského Brodu (7071d3), 370–420 m a.s.l.
55. Boršický potok brook above Boršice u Blatnice, Boršice u Blatnice (7071c2), 320 m a.s.l.

Svodnice stream

57. Bozatiný potok brook NW Háj hill NE Velká nad Veličkou, Velká nad Veličkou (7171a1), 350 m a.s.l.

Velička stream

58. Velička stream, spring area and upper section, Javorina NNR, Strání (7172a3), 850–900 m a.s.l.
62. left tributary of Velička stream near Hubertova bouda hut, Strání (7171b4), 700 m a.s.l.
64. left tributary of Velička stream near Hubertova bouda hut, spring area, Strání (7171b4), 570–620 m a.s.l.
68. Velička stream above confluence with Kamenný potok brook, Strání (7171b4), 470–480 m a.s.l.
69. left tributary of Kamenný potok brook near Dřevěná bouda hut, Strání (7171b2), 620–650 m a.s.l.
70. left tributary of Kamenný potok brook below Dřevěná bouda hut, Strání (7171b2), 510–550 m a.s.l.
71. right tributary of Kamenný potok brook, spring area below Porážky, Strání (7171b2), 560 m a.s.l.;
74. left tributary of Velička stream, spring of right branch NE Čupec hill, Nová Lhota u Veselí nad Moravou (7171b3), 675 m a.s.l.

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75. left tributary of Velička stream, right branch NE Čupec hill, Nová Lhota u Veselí nad Moravou (7171b3), 600 m a.s.l.
77. left tributary of Velička stream, spring of left branch NW Čupec hill, Nová Lhota u Veselí nad Moravou (7171d1), 800 m a.s.l.
80. left tributary of Velička stream, brooklet and spring area, Grůň SW Vápenky, Nová Lhota u Veselí nad Moravou (7171b3), 520–540 m a.s.l.
82. left tributary of Velička stream below Vápenky, Nová Lhota u Veselí nad Moravou (7171b3), 435 m a.s.l.
83. Velička stream below Vápenky, Nová Lhota u Veselí nad Moravou (7171b1/b3), 400–420 m a.s.l.
84. right tributary of Velička stream NE Hryzlácké Mlýny, Nová Lhota u Veselí nad Moravou (7171b1), 450 m a.s.l.
87. Kazivec brook S Horní Němčí, Slavkov u Uherského Brodu (7071d3), 460–485 m a.s.l.
88. left tributary of Kazivec brook ESE Suchov, Suchov (7171b1), 420–440 m a.s.l.
89. left tributary of Kazivec brook SE Suchov, Suchov (7171a2), 400 m a.s.l.
90. Kazivec brook SE Suchov, Suchov (7171a2), 390–410 m a.s.l.
92. left tributary of Velička stream, left branch NE Hradisko hill, Nová Lhota u Veselí nad Moravou (7171a4), 500 m a.s.l.
94. left tributary of Velička stream, Jazevčí NNR, Javorník nad Veličkou (7171a4), 355–360 m a.s.l.
95. Velička stream above Javorník, Jazevčí NNR, Javorník nad Veličkou/Nová Lhota u Veselí nad Moravou (7171a4), 325–350 m a.s.l.
97. Hrubý potok stream, Megovka hut, Nová Lhota u Veselí nad Moravou (7171c2), 455 m a.s.l.
98. left tributary of Hrubý potok stream N Kamenná vrata hill, Javorník nad Veličkou (7171c2), 550 m a.s.l.
101. Hrubý potok stream above Javorník, Javorník nad Veličkou (7171a3/a4/c2), 340–370 m a.s.l.
102. Zahrady pod Hájem NNR, Velká nad Veličkou (7171a1), 360 m a.s.l.
103. Velička stream, Tasov nad Veličkou (7070d3), 205 m a.s.l.
106. Kuželovský potok brook SE Tasov, Tasov nad Veličkou (7170b1), 212 m a.s.l.
107. left tributary of Velička stream S Kněždub, Kněždub (7170a2), 250 m a.s.l.
- Radějovka stream
108. Radějovka stream, Čertoryje NNR, Kněždub (7170b3), 355–360 m a.s.l.
111. Járkovec brook, Tvarožná Lhota (7170d1), 420 m a.s.l.
112. left tributary of Járkovec brook, spring area N Bukovina hill, Tvarožná Lhota (7170c2), 450–470 m a.s.l.
113. Járkovec brook, Čertoryje NNR, Kněždub/Tvarožná Lhota (7170a4/c2/d1), 320–365 m a.s.l.
116. left tributary of Radějovka stream N Veselka hill, Tvarožná Lhota (7170a4), 290 m a.s.l.
117. Radějovka stream above Radějov, Tvarožná Lhota (7170a3), 270 m a.s.l.
119. Radějovka stream above Petrov, Petrov u Hodonína (7169b1), 175 m a.s.l.
- Sudoměřický potok stream
120. Sudoměřický potok stream above Mlýnky, Radějov u Strážnice (7169d2), 300 m a.s.l.
123. Mandát stream, Kútky NR, Radějov u Strážnice (7170c2), 350 m a.s.l.
124. right tributary of Mandát stream, meadow spring area, Kútky NR, Radějov u Strážnice (7170c2), 400–415 m a.s.l.
125. Mandát stream above confluence with Sudoměřický potok stream, Radějov u Strážnice (7169d2), 265 m a.s.l.
127. Sudoměřický potok stream SW Staré hory hill, Sudoměřice (7169b3), 220 m a.s.l.
129. Sudoměřický potok stream above Sudoměřice, Sudoměřice (7169b3), 190 m a.s.l.
- Myjava stream
130. Myjava stream, Nová Lhota u Veselí nad Moravou (7171d1), 580–650 m a.s.l.
131. left tributary of Myjava stream, Nová Lhota u Veselí nad Moravou (7171d1), 630 m a.s.l.
134. left tributary of Rybnický potok brook, spring area, Machová NR, Javorník nad Veličkou (7171c1), 440 m a.s.l.

135. Rybnický potok brook, Machová NR, Javorník nad Veličkou (7171c1/c2), 410–445 m a.s.l.
136. Rybnický potok brook, Machová NR, Javorník nad Veličkou (7171c1), 380–400 m a.s.l.

Váh river basin – right tributaries

Tovarský potok stream

139. Radošínský potok brook NE Nedašova Lhota, Nedašova Lhota (6874d1), 540–570 m a.s.l.
140. right tributary of Zápechová stream, spring area NE Nedašova Lhota, Nedašova Lhota (6874d1), 550 m a.s.l.
141. Zápechová stream NE Nedašova Lhota, Nedašova Lhota (6874d1), 520–530 m a.s.l.

Vlára river

142. right tributary of Sviborka stream NW Haluzice, Haluzice (6873c2), 390–425 m a.s.l.
145. Sviborka stream above confluence with Vlára river, Vlachovice (6873d1), 350–355 m a.s.l.;
147. Křekovský potok brook, springs W Jelenovská hill, Lipina (6873d4), 580 m a.s.l.
148. Křekovský potok brook above Křekov, Lipina (6873d4), 440–500 m a.s.l.
150. left tributary of Vlára river E Vrbětice below Vaňatka, Vrbětice (6873d4), 450 m a.s.l.
154. right tributary of Lukšinka stream SW Lipová, Lipová u Slavičina (6973c3), 420–435 m a.s.l.
155. Lukšinka stream above Slavičín, Slavičín (6973a1), 375 m a.s.l.
156. left tributary of Lipovský potok stream, spring area N Lipová, Lipová u Slavičina (6873c2), 500 m a.s.l.
157. left tributary of Lipovský potok stream E Lipová, Lipová u Slavičina (6873c4), 415 m a.s.l.
158. Lipovský potok stream above Slavičín, Slavičín (6973a2), 370 m a.s.l.
161. Václavský potok brook, spring W Haluzice, Haluzice (6873c2), 480 m a.s.l.
162. left tributary of Václavský potok brook, spring area S Haluzice, Haluzice (6873c2), 490 m a.s.l.
169. right tributary of Rokytěnka stream SSE Rokytnice, right branch, Rokytnice u Slavičina (6973b3), 400 m a.s.l.
173. Havránkův potok brook above Popov, Popov nad Vlárí (6973b2), 350–360 m a.s.l.
180. Vápenický potok brook above confluence with Zelenský potok stream, Štítná nad Vlárí (6973b4), 360 m a.s.l.
184. left tributary of Rakové brook, spring areas and brooklets N Ploštiny hill, Poteč (6874c2), 600–670 m a.s.l.
185. left tributary of Rakové brook E Poteč, Poteč (6874a4), 500–510 m a.s.l.
186. Rakové brook NE Poteč, Poteč (6874a4), 440–450 m a.s.l.
189. left tributary of Brumovka stream, spring areas and brooklets in Javorůvky NR, Valašské Klobouky (6874c1), 530–570 m a.s.l.
190. left tributary of Brumovka stream below Javorůvky NR, Valašské Klobouky (6874c1), 450 m a.s.l.
194. Dešňanský potok brook, spring area and brooklet in Dobšená NM, Valašské Klobouky (6874c1), 530–570 m a.s.l.
196. Brumovka stream below Valašské Klobouky, Valašské Klobouky (6874c3), 340–355 m a.s.l.
197. left tributary of Brumovka stream, spring areas in Bílé potoky NR, Valašské Klobouky (6874c3), 430–460 m a.s.l.
198. left tributary of Brumovka stream in Bílé potoky NR, Valašské Klobouky (6874c3), 400–430 m a.s.l.
201. right tributary of Nedašovka stream SE Ploštiny hill, Nedašova Lhota (6874c2), 540 m a.s.l.
203. left tributary of Nedašovka stream, spring section below Měříčka, Nedašova Lhota (6874d1), 580–610 m a.s.l.
204. Hrušovka brook, meadow wetland SW Kaňoury NM, Nedašov (6874d3), 520 m a.s.l.
205. left tributary of Nedašovka stream above Nedašov – Na Salaši, spring section, Nedašov (6974b1), 600–610 m a.s.l.

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206. left tributary of Nedašovka stream above Nedašov – Na Salaši, Nedašov (6974b1), 490–570 m a.s.l.
207. left tributary of Nedašovka stream, spring area SW Kaňúr hill, Nedašov (6874d3), 630 m a.s.l.
215. left tributary of Bylnička brook, spring area below Dily, Bylnice (6974a4), 600 m a.s.l.
217. left tributary of Bylnička brook N Tratihušť hill, Bylnice (6974a4), 500 m a.s.l.
218. left tributary of Bylnička brook N Maděrovce, Bylnice (6974a4), 450–550 m a.s.l.
222. right tributary of Vlára river, source area, Lazy NR S Bylnice, Bylnice (6974a3), 420 m a.s.l.
224. Hlubočský potok brook, Hluboče NM, Bylnice (6974a4), 440–460 m a.s.l.
226. Bukový potok brook, spring area below Chladný vrch NM, Svatý Štěpán (6974c1), 600 m a.s.l.
230. Uhlisko brook, right branch, Svatý Štěpán (6974c3), 570 m a.s.l.
231. Uhlisko brook, Svatý Štěpán (6974c1), 420 m a.s.l.
236. Vlára river, Vlárský průsmyk pass, Svatý Štěpán (6974c1–2), 285 m a.s.l.
239. Vlárka stream E Průklesy hill, Brumov (6974b1), 530–550 m a.s.l.
240. Vlárka stream above Sidonie, Sidonie (6974b3), 380 m a.s.l.
241. right tributary of Vlárka stream, spring area 1.2 km E Tratihušť hill, Sidonie (6974a4), 530–550 m a.s.l.
242. right tributary of Vlárka stream, spring areas and brooks above Sidonie NR, Sidonie (6974a4), 540–560 m a.s.l.
243. right tributary of Vlárka stream, Sidonie NR, Sidonie (6974a4), 430–470 m a.s.l.
244. right tributary of Vlárka stream, spring areas NE Okrouhlá hill, Sidonie (6974a4), 460–550 m a.s.l.

Drietomice stream

247. Drietomice stream, spring area, Vyškovec (7073c1), 590–620 m a.s.l.
249. left tributary of Drietomice stream, Ve Vlčí NR, Vyškovec (7073c1), 620–650 m a.s.l.
251. left tributary of Drietomice stream, spring areas and brooks E Vyškovec hill, Vyškovec (7073c1), 550–600 m a.s.l.
255. left tributary of Drietomice stream NE Kykula hill, Chmelinec NM, Vyškovec (7073c1), 435–440 m a.s.l.
256. left tributary of Drietomice stream, wetland and brooklet, Chmelinec NM, Vyškovec (7073c1), 438 m a.s.l.
258. Drietomice stream above confluence with Krátkovský potok stream, Starý Hrozenkov (7073a3), 360–390 m a.s.l.;
259. right tributary of Krátkovský potok stream, spring brook N Mikulčín vrch hill, Vápenice u Starého Hrozenkova (7072b4), 585 m a.s.l.
261. Krátkovský potok stream above Vápenice, Mravenčí louka NM, Vápenice u Starého Hrozenkova (7072b4), 450–485 m a.s.l.
262. left tributary of Krátkovský potok stream, spring area SE Nový Dvůr, Komňa (7072b4), 485 m a.s.l.
264. Trstná brook above Vápenice, Komňa (7072b4), 450–480 m a.s.l.
266. right tributary of Trstná brook, spring area NW Vápenice, Komňa (7072b4), 450–460 m a.s.l.
267. Krátkovský potok stream above confluence with Hrnčářův potok brook, Vápenice u Starého Hrozenkova (7073a3), 420 m a.s.l.
268. Hrnčářův potok brook above Vápenice, Vápenice u Starého Hrozenkova (7072b), 470–485 m a.s.l.
269. left tributary of Hrnčářův potok brook, spring area and brooklet in V Krátkých NM, Vápenice u Starého Hrozenkova (7072b4), 490 m a.s.l.
272. Vlčí potok brook NW Starý Hrozenkov, Starý Hrozenkov (7073a1), 440 m a.s.l.
275. left tributary of Žitkovský potok brook, spring areas in Hutě NR, Žitková (7073a2), 460–520 m a.s.l.
276. Žitkovský potok brook, Hutě NR, Žitková (7073a2), 440–450 m a.s.l.
281. Žitkovský potok below Žitková, Žitková (7073a4), 360–380 m a.s.l.

Bošáčka stream

283. left tributary of Predpolomský potok brook, spring area and brooklet S Výškovce hill, Výškovce (7072d2), 630–650 m a.s.l.
288. right tributary of Hrubár stream, Hrubý Mechnáč spring area, Lopeník (7072d2), 640–650 m a.s.l.
289. Hrubár stream above Lopeník, Lopeník (7072d1), 560–570 m a.s.l.
290. left tributary of Hrubár stream, spring brook in U Zvonice NM, Lopeník (7072d1), 655–660 m a.s.l.
291. Soliskový potok brook N Malý Lopeník Mt., Lopeník (7072d1), 680–780 m a.s.l.
292. Soliskový potok brook, Grůň NM, Lopeník (7072d1), 580–590 m a.s.l.
293. left tributary of Soliskový potok brook, meadow spring area in Grůň NM, Lopeník (7072d1), 590 m a.s.l.
295. Hrubár stream above Březová, Březová u Uherského Brodu (7072c2), 435 m a.s.l.
297. left tributary of Hrubár stream NE Březová, Březová u Uherského Brodu (7072c2), 440 m a.s.l.
298. right tributary of Hrubár stream W Březová, Březová u Uherského Brodu (7072c2), 480–500 m a.s.l.
299. Zlatný potok brook NW Velký Lopeník Mt., Březová u Uherského Brodu (7072d3), 550–590 m a.s.l.
300. right tributary of Zlatný potok brook, spring area NW Velký Lopeník Mt., Březová u Uherského Brodu (7072d3), 630 m a.s.l.
301. left tributary of Zlatný potok brook W Velký Lopeník Mt., Březová u Uherského Brodu (7072d3), 590–600 m a.s.l.
304. Zlatný potok brook W Velký Lopeník Mt., Březová u Uherského Brodu (7072d3), 430–450 m a.s.l.
305. Hrubár stream below confluence with Zlatný potok brook, Březová u Uherského Brodu (7072c4), 365–370 m a.s.l.

Klanečnice stream

308. Klanečnice stream above Straňanská nádrž reservoir, Strání (7072c3), 450 m a.s.l.
309. left tributary of Klanečnice stream, spring areas in Hrnčárky NM, Strání (7072c3), 440–490 m a.s.l.
311. right tributary of Klanečnice stream above Záhumenice NM, spring section, Strání (7172a1), 650 m a.s.l.
312. right tributary of Klanečnice stream, Záhumenice NM, Strání (7172a1), 460–500 m a.s.l.
313. Svinárský potok stream, Javorina NNR, Strání (7172a3), 670 m a.s.l.
314. Svinárský potok stream, Strání (7172a3), 560–590 m a.s.l.
316. right tributary of Svinárský potok stream, Javorina NNR, Strání (7172a3), 700 m a.s.l.
317. left tributary of Svinárský potok stream, spring area 2.5 km N Velká Javořina Mt., Strání (7172a1), 630 m a.s.l.
320. Svinárský potok stream above Květná, Strání (7172a1), 390–420 m a.s.l.
322. left tributary of Svinárský potok stream, spring area in Mechnáčky NM, Strání (7172a1), 460 m a.s.l.
324. Klanečnice stream below Květná, Strání (7172a2), 345–350 m a.s.l.
325. left tributary of Klanečnice stream, brook and spring area SE Nová hora hill, Strání (7172a2), 440–480 m a.s.l.
326. left tributary of Klanečnice stream E Květná, spring area, Strání (7172a2), 430 m a.s.l.

Annotated list of species

All material examined from recent collections is listed for each species; individual records are ordered according to the number of the collecting site. Each record is arranged as follows: shortened name of the collecting site, altitude, number of the collecting site (in parentheses), date(s) of collection(s), number of specimens, collector(s), and the deposition of the material (in parentheses). The (mostly revised) material collected in the Bílé Karpaty PLA in 1958 by J. Raušer is listed separately under the section “Unpublished historical records”, with the basic field code number in the faunistic and floristic grid mapping system of central Europe in parentheses. Published data are cited including the name of the collecting site, name of the nearest village, town or mountain, and the corresponding subfield code number in the faunistic and floristic grid mapping system of central Europe in parentheses.

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

Recent material examined. Velička, spring area, upper section, 850–900 m (58), 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Bylnička brook, 500 m (217), 21.v.2009, 1 ♀, J. Ježek leg. (NMPC). Soliskový potok, 580–590 m (292), 9.v.2008, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Soliskový potok, spring area, 590 m (293), 1.vi.2008, 1 ♀, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v.2008, 2 ♀♀; 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC). Svinárský potok, 560–590 m (314), 19.v.–7.vi.2005 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Svinárský potok, 700 m (316), 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: An infrequent species occurring above 550–600 m a.s.l. **Red List status:** –.

Comments. A Holarctic species. In Europe present in Fennoscandia and disjunctive areas in the Alps, Hercynian mountains and the Carpathians. In the Czech Republic, it occurs in small streams in the montane and submontane zones.

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

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 18.vi.1958, 1 ♂. Klanečnice stream in Strání-Květná, 340 m a.s.l. (7172), 18.vi.1958, 2 ♂♂ 1 ♀; 16.vii.1958; 3 ♂♂ 6 ♀♀. All J. Raušer leg. (JRBC).

Recent material examined. Bozatiný potok, 350 m (57), 6.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Velička, 325–350 m (95), 3.vi.2009, 1 ♂ 2 ♀♀; 23.v.2009, 1 ♂ 7 ♀♀, P. Komzák leg. (JBBC). Járkovec, 320–365 m (113), 29.v.–20.vi.2006 (MT), 3 ♂♂ 2 ♀♀; 20.vi.–10.vii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 350 m (123), 4.vi.–26.vi.2008 (MT), 1 ♂ 3 ♀♀; 26.vi.–15.vii.2008 (MT), 3 ♂♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 265 m (125), 19.vi.2006, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Sudoměřický potok, 220 m (127), 8.vi.2005, 1 ♂; 19.vi.2006, 1 ♀; 12.vii.2006, 1 ♀, P. Chvojka leg. (NMPC). Sudoměřický potok, 190 m (129), 12.vii.2006, 1 ♀; 27.vi.2008, 1 ♂ 3 ♀♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 18.vi.–9.vii.2007 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 14.vi.–13.vii.2010 (MT), 6 ♂♂, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: It inhabits streams at lower altitudes, mostly in the southern part of the area. **Red List status:** –.

Comments. A widespread western Palaearctic species, occurring in whole Europe and the Near East. It lives in various types of running waters at different altitudes. In the Czech Republic, it is common especially in the colline and lowland zones.

Isoperla oxylepis oxylepis (Despax, 1936)

Recent material examined. LT Kamenný potok, 510–550 m (70), 29.vi.2005, 1 ♂, leg. P. Chvojka (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Recorded only once. **Red List status:** –.

Comments. A central European species extending to the Balkans. In the Czech Republic, it is very common; it inhabits submontane and montane brooks and streams.

Isoperla sudetica (Kolenati, 1859)

(EN)

Published records. BOJKOVÁ & ŠPAČEK (2006) (as *I. goertzi*): unnamed springbrook in Bílé potoky NR, Valašské Klobouky (6874c3); unnamed springbrook near Hrubý Mechnáč, Lopeník (7072d2); spring area near Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Velička above Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Svinárský potok N of Velká Javořina Mt., Strání (7172a3).

Recent material examined. Nivnička, spring area, 580 m (37), 26.vi.2010, 1 ♂, P. Komzák leg. (JBBC). RT Okluky, brooklets, 530–540 m (48), 30.v.2009, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Kamenný potok, 620–650 m (69), 4.vi.2009, 1 ♀; 29.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 5.vi.2009, 1 ♀; 23.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 5.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 22.vi.–15.vii.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 12.v.–2.vi.2009 (MT), 2 ♂♂; 25.vi.–15.vii.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 325–350 m (95), 3.vi.2009, 1 ♂ 2 ♀♀, P. Chvojka leg. (NMPC). Velička, 325–350 m (95), 25.vi.2009, 1 ♂ 7 ♀♀, P. Chvojka leg. (NMPC). Myjava, 580–650 m (130), 14.vi.2010, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Havránkův potok, 350–360 m (173), 27.v.2010, 1 ♂, P. Chvojka leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 22.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 24.v.–16.vi.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 5.v.–25.v.2010 (MT), 2 ♂♂, P. Chvojka & J. Macek leg. (NMPC). Krátkovský potok, 450–485 m (261), 31.v.2008, 4 ♂♂ 1 ♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 23.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). LT Brumovka, spring areas, 430–460 m (197), 13.vii.–31.viii.2006 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, 435–440 m (255), 17.v.2007, 1 ♂, J. Bojková leg. (JMBC). RT Vlárka, spring area, 530–550 m (241), 17.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). RT Krátkovský potok, spring brook, 585 m (259), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). Krátkovský potok, 450–485 m (261), 31.v.2008, 4 ♂♂ 1 ♀, P. Komzák leg. (JBBC). RT Hrubár, spring area, 640–650 m (288), 25.vi.2008, 2 ♀♀, P. Chvojka leg. (NMPC). LT Hrubár, spring brook, 655–660 m (290), 9.v.2008, 3 ♀♀; 1.vi.2008, 2 ♀♀, 28.vi.2008, 1 ♂, P. Komzák leg. (JBBC). Soliskový potok, 680–780 m (291), 28.vi.2008, 3 ♂ 7 ♀♀, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 1.vi.2008, 1 ♂; 22.v.2010, 1 ♀, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v.2008, 4 ♂♂ 1 ♀; 1.vi.2008, 3 ♂ 5 ♀♀, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 9.v.2008, 1 ♂, 1.vi.2008, 1 ♀, P. Komzák leg. (JBBC). RT Svinárský potok, 700 m (316), 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: It occurs in upper sections of streams and in submontane sections of streams that flow from high mountains. **Red List status:** EN.

Comments. A central European species restricted to the Hercynian mountains and the Carpathians. It occurs in various types of montane watercourses.

Isoperla tripartita tripartita Illies, 1954

(EN)

Published records. BOJKOVÁ & ŠPAČEK (2006): unnamed springbrook NE of Poteč (6874a4); Hrušovka below Kaňoury NM, Nedašov (6874d3); unnamed springbrook SE of Nedašov – Na Salaši (6974b1); unnamed springbrook near Hrubý Mechnáč, Lopeník (7072d2); Kazivec SE of Suchov (7171a2); Járkovec SE of Čertoryje NNR, Kněždub/Tvarožná Lhota (7170a4/c2/d1); Vrbecka SW of Čertoryje NNR, Kněždub/Tvarožná Lhota (7170a4/c2); Radějovka, Čertoryje NNR, Kněždub (7170b3); Mandát S of Radějov (7170c1); Velička above Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Rybnický potok S of Javorník (7171c1/c2); Svinárský potok N of Velká Javořina Mt., Strání (7172a3).

Recent material examined. Kolelač, 335 m (10), 27.vi.2010, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). Kladenka, 390 m (22), 21.iv.–13.v.2008 (MT), 1 ♂; 13.v.–3.vi.2008 (MT), 7 ♂♂ 2 ♀♀; 3.vi.–23.vi.2008 (MT), 3 ♂♂ 8 ♀♀; 23.vi.–16.vii.2008 (MT), 2 ♂♂ 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Třešňávka, 310 m (23), 26.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Kladenka, 245 m (26), 4.v.2009, 1 ♂, P. Komzák leg. (JBBC). Luhačovický potok, 325 m (27), 24.vi.2008, 1 ♀, P. Chvojka leg. (NMPC); 23.v.2010, 8 ♂♂, P. Komzák leg. (JBBC). LT Luhačovický potok, 330 m (29), 27.vi.2010, 2 ♂♂ 1 ♀, P. Komzák leg. (JBBC). Luhačovický potok, 285 m (33), 27.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Gáborka, spring areas, 390–420 m (34), 27.vi.2010, 2 ♀♀, P. Komzák leg. (JBBC). Nivnička, 480 m (38), 26.vi.2010, 2 ♂♂, P. Komzák leg. (JBBC). Pivný potok, 390 m (41), 22.v.2010, 1 ♂; 26.vi.2010, 2 ♂♂ 4 ♀♀, P. Komzák leg. (JBBC). Lubná, 325 m (42), 4.vi.2007, 1 ♂, P. Komzák leg. (JBBC). Korytnice, 345 m (45), 25.v.2010, 1 ♂; 16.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Korytnice, 290 m (46), 26.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Boršický potok, 370–420 m (54), 27.vi.2009, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Velička, 435 m (82), 12.v.–3.vi.2009 (MT), 1 ♂; 3.vi.–22.vi.2009 (MT), 5 ♂♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Kazivec, 460–485 m (87), 2.viii.2004, 2 ♂♂ 3 ♀♀; 1.vii.2005, 1 ♀, P. Chvojka leg. (NMPC). Kazivec, 460–485 m (87), 30.v.2009, 2 ♂♂ 2 ♀♀; 27.vi.2009, 1 ♂ 1 ♀; 29.vii.2009, 1 ♂, P. Komzák leg. (JBBC). LT Kazivec, 420–440 m (88), 1.vii.2005, 2 ♂♂, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 12.v.–2.vi.2009 (MT), 1 ♂ 1 ♀; 2.vi.–25.vi.2009 (MT), 6 ♂♂ 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 355–360 m (108), 1.vi.2009, 5 ♂♂ 1 ♀, P. Chvojka leg. (NMPC); 25.v.–15.vi.2010 (MT), 8 ♂♂ 1 ♀; 15.vi.–14.vii.2010 (MT), 2 ♂♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 29.v.–20.vi.2006 (MT), 5 ♂♂ 2 ♀♀; 20.vi.–10.vii.2006 (MT), 2 ♂♂ 4 ♀♀; 10.vii.–31.vii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 1.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Radějovka, 290 m (116), 20.vi.2006, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Radějovka, 270 m (117), 20.vi.2006, 1 ♂, P. Chvojka leg. (NMPC). Sudoměřický potok, 300 m (120), 19.vi.2006, 1 ♀; 27.vi.2008, 1 ♀, P. Chvojka leg. (NMPC). Mandát, 350 m (123), 14.v.–4.vi.2008 (MT), 5 ♂♂ 8 ♀♀; 4.vi.–26.vi.2008 (MT), 25 ♂♂ 5 ♀♀; 26.vi.–15.vii.2008 (MT), 6 ♂♂ 5 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 12.iv.–9.v.2007 (MT), 1 ♂; 9.v.–28.v.2007 (MT), 3 ♂♂ 2 ♀♀; 18.vi.–9.vii.2007 (MT), 1 ♂; 9.vii.–2.viii.2007 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 27.vi.2005, 1 ♀, P. Chvojka leg. (NMPC); 14.vi.–13.vii.2010 (MT), 6 ♂♂ 5 ♀♀, P. Chvojka & J. Macek leg. (NMPC). RT Lukšinka, 420–435 m (154), 27.vi.2010, 3 ♂♂ 1 ♀, P. Komzák leg. (JBBC). Lukšinka, 375 m (155), 27.vi.2010, 2 ♂♂, P. Komzák leg. (JBBC). LT Rakové, 500–510 m (185), 11.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). Krátkovský potok, 450–485 m (261), 31.v.2008, 1 ♂, P. Chvojka leg. (NMPC). LT Krátkovský potok, spring area, 485 m (262), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). Hrubár, 560–570 m (289), 25.vi.2008, 2 ♂♂ 4 ♀♀, P. Chvojka leg. (NMPC). Soliskový potok, 580–590 m (292), 1.vi.2008, 1 ♀, P. Komzák leg. (JBBC); 25.vi.2008, 1 ♂, P. Chvojka leg. (NMPC). Klanečnice, 450 m (308), 2.vi.2007, 4 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). RT Klanečnice, 460–500 m (312), 2.vi.2007, 3 ♀♀, P. Komzák leg. (JBBC); 25.v.–15.vi.2010 (MT), 9 ♂♂ 2 ♀♀; 15.vi.–9.vii.2010 (MT), 10 ♂♂ 8 ♀♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A widespread and abundant species inhabiting all types of running water habitats except the upper stream sections at high altitudes. **Red List status:** EN.

Comments. An eastern Mediterranean species extending into the Carpathians in the north. It occurs from the submontane to planar zones. In the Czech Republic, it is frequent only in the south-eastern part of Moravia; isolated records are known also from the Bohemian-Moravian Highlands and central Bohemia (RAUŠER 1964b).

Isoperla spp.

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 23.iv.1958, 2 L. Radějovka stream above Radějov, 275 m a.s.l. (7170), 18.vii.1958, 1 ♀. Both J. Raušer leg. (JRBC).

Recent material examined. Lubná, 325 m (42), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). LT Velička, 700 m (62), 28.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, spring area, 570–620 m (64) 19.v.–7.vi.2005 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 435 m (82), 12.v.–3.vi.2009 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 175 m (119), 8.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). Radějovka, 270 m (117), 14.vii.2008, 1 ♀, P. Chvojka leg. (NMPC). RT Sviborka, 390–425 m (142), 24.vi.2008, 1 ♀, P. Chvojka leg. (NMP). Vlárka, 530–550 m (239), 9.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 4 ♀♀; 24.vi.2007, 1 ♀, P. Komzák leg. (JBBC). LT Svinárský potok, 560–590 m (314), 29.vi.–27.vii.2005 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Svinárský potok, spring area, 630 m (317), 29.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). Klanečnice, 345–350 m (324), 15.vi.2010, 1 ♀, P. Chvojka leg. (NMPC).

Comments. From the above cited sites, only female specimens and juvenile larvae were available which could not be identified with certainty. Identification of females in the genus *Isoperla* is ambiguous with the exception of *I. tripatita*.

Perlodes dispar (Rambur, 1842)

(EN)

Unpublished historical records. Klanečnice stream in Strání-Květná, 340 m a.s.l. (7172), 28.viii.1958, 1 L, J. Raušer leg. (RAUŠER in litt.).

Distribution and frequency in the Bílé Karpaty PLA: *P. dispar* was recorded from the area based on an unpublished protocol by J. Raušer. The corresponding material was, however, not found in his collection (JRBC) and thus could not be revised. The occurrence of *P. dispar* in the Klanečnice stream is rather unlikely because the character of this stream does not fully correspond to the habitat preference of the species (GRAF *et al.* 2009). On the other hand, its occurrence in the Bílé Karpaty PLA cannot be excluded.

Red List status: EN.

Comments. A European species occurring predominantly in epipotamal and metapotamal sections of rivers in the colline zone and lowlands.

Perlodes microcephalus (Pictet, 1833)

Published records. JURAJDA *et al.* (2000): Trstná in Vápenice (7072); Vlčí potok above Starý Hrozenkov (7073).

Distribution and frequency in the Bílé Karpaty PLA: *P. microcephalus* was recorded only in two streams in the Drietomica river basin. **Red List status:** –.

Comments. A common European species missing only in northern and eastern Europe. It inhabits various running water habitats at a wide range of altitudes.

Family PERLIDAE

Perla abdominalis Burmeister, 1839

(VU)

Recent material examined. LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 1 ♂; 12.v.–3.vi.2009 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 1 ♀; 12.v.–2.vi.2009 (MT), 16 ♂♂ 2 ♀♀; 2.vi.–25.vi.2009 (MT), 6 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 325–350 m (95), 3.vi.2009, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: The species was found in the Velička river near Javorník and in Malaise traps near its two left tributaries, close to the villages of Vápenky and Javorník. However, the most likely, it inhabits only the Velička river. The Malaise traps near its tributaries were *ca.* 300 m far from the Velička river and the imagines from the river could have easily reached them. **Red List status:** VU.

Comments. A Submediterranean species present in southern and central Europe, and North Africa (SIVĚC & STARK 2002). In the Czech Republic, it inhabits metarhithral, hyporhithral and epipotamal sections of rivers mainly in the submontane and colline zones. The chorionic structure of eggs of the female collected in the Velička river does not correspond to the descriptions published by SIVĚC & STARK (2002).

Perla marginata (Panzer, 1799)

(EN)

Published records. JURAJDA *et al.* (2000): Krátkovský potok above Starý Hrozenkov (7073).

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 15.x.1958, 1 L. Klanečnice stream in Strání-Květná, 340 m a.s.l. (7172), 28.viii.1958, 1 L, J. Raušer leg. (JRBC).

Distribution and frequency in the Bílé Karpaty PLA: There are only three records from the area. Recently, the species has not been confirmed at the sites of its earlier occurrence. **Red List status:** EN.

Comments. A western and central European species (SIVĚC & STARK 2002). In the Czech Republic, it inhabits only clear, fast-flowing mountain streams. It is sensitive to pollution and acidification.

Family CHLOROPERLIDAE

Siphonoperla neglecta (Rostock, 1881)

Recent material examined. Pivný potok, spring brooks, 550–560 m (39), 22.v.2010, 1 ♂, P. Komzák leg. (JBBC). LT Velička, right branch, 600 m (75), 5.vi.2009, 2 ♂♂ 1 ♀, P. Chvojka leg. (NMPC). Hrušovka, wetland, 520 m (204), 10.vi.2005, 2 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). RT Vlárka, 430–470 m (243), 5.v.–25.v.2010 (MT), 1 ♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Zlatný potok, 550–590 m (299), 9.v.2008, 1 ♂ 3 ♀♀; 1.vi.2008, 2 ♂♂ 4 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 7.v.2007, 2 ♂♂ 1 ♀, P. Komzák leg. (JBBC). Svinárský potok, 560–590 m (314), 19.v.–7.vi.2005 (MT), 1 ♂ 5 ♀♀; 7.vi.–29.vi.2005 (MT), 4 ♀♀; 29.vi.–27.vii.2005 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: An infrequent species occurring above 500 m a.s.l. **Red List status:** –.

Comments. A southern and central European species distributed in the Hercynian mountains, the Alps, the Carpathians, and the Balkans. In the Czech Republic, it occurs mostly in small streams and brooks at higher altitudes.

Siphonoperla torrentium (Pictet, 1841)

Unpublished historical records. Radějovka stream above Radějov, 275 m a.s.l. (7170), 18.vi.1958, 1 ♂, J. Raušer leg. (JRBC).

Recent material examined. Sudoměřický potok, 300 m (120), 16.v.2007, 3 ♂♂ 10 ♀♀, J. Bojková leg. (JBBC). Mandát, 350 m (123), 22.iv.–14.v.2008 (MT), 1 ♀; 14.v.–4.vi.2008 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 265 m (125), 19.vi.2006, 1 ♀; 27.vi.2008, 1 ♂, P. Chvojka leg. (NMPC). LT Hrubár, spring brook, 655–660 m (290), 9.v.2008, 1 ♂; 1.vi.2008, 2 ♀♀, P. Komzák leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: Infrequent but not rare. **Red List status:** –.

Comments. A European species missing in Fennoscandia. It is common and often abundant in various running water habitats at a wide range of altitudes.

Siphonoperla spp.

Recent material examined. RT Okluky, brooklets, 530–540 m (48), 30.v.2009, 1 ♀, P. Komzák leg. (JBBC). LT Kamenný potok, 620–650 m (69), 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 5.vi.2009, 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 2.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 6.vi.2005, 3 ♀♀, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 24.v.–16.vi.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). Krátkovský potok, 450–485 m (261), 8.v.2008, 1 ♀, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 1.vi.2008, 2 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 2.vi.2007, 4 ♀♀, P. Komzák leg. (JBBC).

Comments. In the above cited sites, only female specimens were found. The identification of females in the genus is ambiguous.

Family TAENIOPTERYGIDAE

Brachyptera risi (Morton, 1896)

Unpublished historical records. Radějovka stream above Radějov, 275 m a.s.l. (7170), 23.iv.1958, 2 L. Olšava stream above Pířín, 375 m a.s.l. (6973), 23.iv.1958, 2 L, Raušer leg. (JRBC).

Recent material examined. Lubná, 325 m (42), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Velička, 470–480 m (68), 28.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). LT Kamenný potok, 510–550 m (70), 29.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 1 ♂; 2.vi.–25.vi.2009 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 355–360 m (108), 5.v.–25.v.2010 (MT), 4 ♂♂ 5 ♀♀; 25.v.–15.vi.2010 (MT), 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 10.v.–29.v.2006 (MT), 2 ♂♂ 26 ♀♀; 29.v.–20.vi.2006 (MT), 1 ♂ 12 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 1.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). Radějovka, 270 m (117), 20.vi.2006, 3 ♂♂ 1 ♀, P. Chvojka leg. (NMPC). Sudoměřický potok, 300 m (120), 19.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). Mandát, 350 m (123), 22.iv.–14.v.2008 (MT), 2 ♂♂ 4 ♀♀; 14.v.–4.vi.2008 (MT), 1 ♂ 7 ♀♀; 4.vi.–26.vi.2008 (MT), 4 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 265 m (125), 19.vi.2006, 1 ♂ 4 ♀♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 9.v.–28.v.2007 (MT), 2 ♀♀, P.

Stoneflies (Plecoptera)

Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 2 ♂♂ 1 ♀; 14.vi.–13.vii.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Zápechová, 520–530 m (141), 18.vi.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Hrušovka, wetland, 520 m (204), 10.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 5.v.–24.v.2010 (MT), 1 ♂; 24.v.–16.vi.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Vlára, 285 m (236), 9.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). Vlárka, 530–550 m (239), 9.vi.2005, 1 ♀; 17.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). Vlárka, 380 m (240), 25.v.2010, 1 ♀, P. Chvojka leg. (NMPC). Krátkovský potok, 420 m (267), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Hrnčářův potok, 470–485 m (268), 30.v.2009, 1 ♀, P. Komzák leg. (JBBC). Hrubár, 560–570 m (289), 25.vi.2008, 1 ♀, P. Chvojka leg. (NMPC). Soliskový potok, 580–590 m (292), 9.v.2008, 2 ♀♀; 22.v.2010, 1 ♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 7.v.2007, 2 ♂♂, P. Komzák leg. (JBBC); 8.iv.–5.v.2010 (MT), 4 ♂♂; 5.v.–25.v.2010 (MT), 25 ♂♂ 59 ♀♀; 25.v.–15.vi.2010 (MT), 8 ♂♂ 37 ♀♀; 15.vi.–9.vii.2010 (MT), 1 ♂ 17 ♀♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Very common at the altitudes of ca. 300–550 m a.s.l. **Red List status:** –.

Comments. A European species, occurring in the Czech Republic in medium-sized and larger streams at lower altitudes, usually downstream from the habitats of *B. seticornis*.

Brachyptera seticornis (Klapálek, 1902)

Recent material examined. LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Hrnčářův potok, 470–485 m (268), 31.v.2008, 3 ♂♂ 2 ♀♀; 30.v.2009, 1 ♀, P. Komzák leg. (JBBC). Hrubár, 560–570 m (289), 23.v.2006, 1 ♀, J. Bojková leg. (JBBC). Soliskový potok, 580–590 m (292), 1.vi.2008, 1 ♀; 22.v.2010, 3 ♀♀, P. Komzák leg. (JBBC). Svinářský potok, 560–590 m (314), 19.v.–7.vi.2005 (MT), 1 ♀; 7.vi.–29.vi.2005 (MT), 3 ♀♀; 29.vi.–27.vii.2005 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Found only in streams in the central, mountainous part of the area. **Red List status:** –.

Comments. A central and southern European species. In the Czech Republic, it is frequent in clean submontane and montane streams.

Family NEMOURIDAE

Amphinemura standfussi (Ris, 1902)

(VU)

Unpublished historical records. Klanečnice stream in Strání-Květná, 340 m a.s.l. (7172), 18.vi.1958, 1 ♀, J. Raušer leg. (JRBC).

Recent material examined. Kolelač, 335 m (10), 27.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Kladenska, 390 m (22), 3.vi.–23.vi.2008 (MT), 2 ♀♀; 23.vi.–16.vii.2008 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Třešňůvka, 310 m (23), 26.vi.2010, 1 ♀, P. Komzák leg. (JBBC). LT Luhačovický potok, 330 m (29), 27.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Pivný potok, 390 m (41), 26.vi.2010, 2 ♀♀, P. Komzák leg. (JBBC). Lubná, 325 m (42), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Boršický potok, 370–420 m (54), 27.vi.2009, 2 ♀♀, P. Komzák leg. (JBBC). Boršický potok, 320 m (55), 30.v.2009, 3 ♂♂, P. Komzák leg. (JBBC). Bozatský potok, 350 m (57), 6.vi.2005, 2 ♂♂ 3 ♀♀, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 3.vi.–22.vi.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Kazivec, 460–485 m (87), 1.vii.2005, 3 ♂♂, P. Chvojka leg. (NMPC); 30.v.2009, 1 ♂ 3 ♀♀; 27.vi.2009, 2 ♀; 29.vii.2009, 1 ♂ 3 ♀♀, P. Komzák leg. (JBBC). Kazivec, 390–410 m (90), 15.ix.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 2.vi.–25.vi.2009 (MT), 1 ♂ 3 ♀♀; 25.vi.–15.vii.2009 (MT), 5 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Hrubý potok, 455 m (97), 14.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 250 m (107),

10.vii.2006, 1 ♀, P. Chvojka leg. (NMPC). Radějovka, 355–360 m (108), 11.vii.2006, 1 ♀, P. Chvojka leg. (NMPC); 5.v.–25.v.2010 (MT), 1 ♂; 25.v.–15.vi.2010 (MT), 4 ♂♂ 6 ♀♀; 15.vi.–14.vii.2010 (MT), 48 ♂♂ 39 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 29.v.–20.vi.2006 (MT), 2 ♀♀; 20.vi.–10.vii.2006 (MT), 6 ♂♂ 9 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 1.vi.2009, 2 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). LT Radějovka, 290 m (116), 20.vi.2006, 2 ♂♂ 4 ♀♀, P. Chvojka leg. (NMPC). Radějovka, 270 m (117), 20.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). Mandát, 350 m (123), 14.v.–4.vi.2008 (MT), 1 ♂ 2 ♀♀; 4.vi.–26.vi.2008 (MT), 4 ♀♀; 26.vi.–15.vii.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 4.vi.–26.vi.2008 (MT), 5 ♂♂ 30 ♀♀; 15.vii.–5.viii.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 265 m (125), 19.vi.2006, 1 ♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 2.viii.–22.viii.2007 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 14.vi.–13.vii.2010 (MT), 18 ♂♂ 28 ♀♀; 13.vii.–10.viii.2010 (MT), 3 ♂♂ 3 ♀♀, P. Chvojka & J. Macek leg. (NMPC). RT Lukšinka, 420–435 m (154), 27.vi.2010, 1 ♂, P. Komzák leg. (JBBC). Lukšinka, 375 m (155), 27.vi.2010, 1 ♂; 1.viii.2010, 1 ♀, leg. P. Komzák. RT Rokytenka, right branch, 400 m (169), 14.vii.2009, 1 ♂, P. Chvojka leg. (NMPC). RT Vlára, source area, 420 m (222), 18.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). RT Vlárka, spring areas, 460–550 m (244), 5.vi.2010, 1 ♂ 4 ♀♀, P. Chvojka leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 1 ♂; 5.viii.2007, 1 ♂, P. Komzák leg. (JBBC). LT Krátkovský potok, spring area, 485 m (262), 27.vi.2008, 1 ♀, P. Komzák leg. (JBBC). LT Hrubár, 440 m (297), 31.vii.2010, 1 ♀, P. Komzák leg. (JBBC). RT Hrubár, 480–500 m (298), 9.vii.2010, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Klanečnice, 450 m (308), 2.vi.2007, 1 ♂ 2 ♀♀, P. Komzák leg. (JBBC). LT Klanečnice, spring areas, 440–490 m (309), 2.vi.2007, 1 ♂; 23.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 2.vi.2007, 3 ♂♂ 2 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 25.v.–15.vi.2010 (MT), 4 ♂♂ 10 ♀♀; 15.vi.–9.vii.2010 (MT), 74 ♂♂ 211 ♀♀, P. Chvojka & J. Macek leg. (NMPC). LT Klanečnice, brook and spring area, 440–480 m (325), 15.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). LT Klanečnice, spring area, 430 m (326), 15.vi.2010, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A very common species in the area, in contrast with other regions (faunistic districts) of the Czech Republic. **Red List status:** VU.

Comments. A Transpalaeartic species, in Europe missing only in the Iberian peninsula. It inhabits small watercourses at different altitudes, often in habitats with organic substratum.

Nemoura cambrica Stephens, 1836

Recent material examined. Kladenska, 390 m (22), 21.iv.–13.v.2008 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, spring area, 570–620 m (64), 19.v.2005 (MT), 1 ♂, 19.v.–7.vi.2005, 15 ♂♂; 7.vi.–28.vi.2005 (MT), 2 ♂♂; 28.vi.–25.vii.2005 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Kamenný potok, 510–550 m (70), 29.vi.2005, 3 ♂♂, P. Chvojka leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 5.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 5.vi.2009, 6 ♂♂, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 8 ♂♂; 12.v.–2.vi.2009 (MT), 3 ♂♂; 2.vi.–25.vi. 009 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 19.iv.–10.v.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Myjava, 630 m (131), 14.vi.2010, 4 ♂♂, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 12.iv.–9.v.2007 (MT), 1 ♂; 9.v.–28.v.2007 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Sviborka, 390–425 m (142), 24.vi.2008, 1 ♂, P. Chvojka leg. (NMPC). LT Rakové, 500–510 m (185), 11.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). LT Brumovka, spring areas, 430–460 m (197), 21.iv.–12.v.2006 (MT), 4 ♂♂; 12.v.–5.vi.2006 (MT), 3 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, 400–430 m (198), 30.iv.2006, 3 ♂♂, J. Bojková leg. (JBBC); 21.v.2006, 2 ♂♂, P. Komzák leg. (JBBC). Hrušovka, wetland, 520 m (204), 10.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 5.v.–24.v.2010 (MT), 5 ♂♂; 24.v.–16.vi.2010 (MT), 1 ♂; 16.vi.–4.vii.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 6.iv.–5.v.2010 (MT), 4 ♂♂, 25.v.–16.vi.2010 (MT), 1 ♂; P. Chvojka & J. Macek leg.

Stoneflies (Plecoptera)

(NMPC). LT Krátkovský potok, spring area, 485 m (262), 31.v.2008, 1 ♂, P. Komzák leg. (JBBC). Hrnčarův potok, 470–485 m (268), 30.v.2009, 1 ♂, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 9.v.2008, 3 ♂♂; 22.v.2010, 1 ♂; 1.vi.2008, 2 ♂♂, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v. 2008, 1 ♂; 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 9.v.2008, 3 ♂♂, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 8.iv.–5.v.2010 (MT), 1 ♂; 5.v.–25.v.2010 (MT), 2 ♂♂; 25.v.–15.vi.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). Svinárský potok, 560–590 m (314), 19.v.2005 (MT), 15 ♂♂; 19.v.–7.vi.2005 (MT), 21 ♂♂; 7.vi.–29.vi.2005 (MT), 6 ♂♂; 29.vi.–27.vii.2005 (MT), 8 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Common in various running water habitats. **Red List status:** –.

Comments. A European species missing in Fennoscandia and eastern European lowlands. It is generally common and inhabits various running water habitats from montane to planar zones.

Nemoura carpathica Illies, 1963

Published records. BOJKOVÁ & ŠPAČEK (2006): spring area near Hubertova bouda hut, Nová Lhota-Vápenky. (7171b4); Velička, upper section, Velká Javořina Mt., Strání (7172a3); Svinárský potok N of Velká Javořina Mt., Strání (7172a3).

Recent material examined. LT Rakové, spring areas and brooklets, 600–670 m (184), 11.v.–6.vi.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A very rare species occurring only in the streams of the Velká Javořina Mt. and Ploštiny hill. **Red List status:** –.

Comments. A Carpathian and Anatolian species (ZWICK 1971). In the Czech Republic, it is rare and restricted to brooks in the montane zone of the Beskydy [Beskids] and the Bílé Karpaty Mts. (BOJKOVÁ & ŠPAČEK 2006).

Nemoura cinerea (Retzius, 1783)

Published records. JURAJDA *et al.* (2000): Drietomica above confluence with Krátkovský potok (7073).

Unpublished historical records. Radějovka stream above Radějov, 275 m a.s.l. (7170), 18.vi.1958, 1 ♀, J. Raušer leg. (JRBC).

Recent material examined. Kolelač, 335 m (10), 23.v.2010, 2 ♂♂ 2 ♀♀; 27.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Bojkovice reservoir (12), 23.v.2010, 1 ♂, P. Komzák leg. (JBBC). Kolelač, 295 m (13), 26.vi.2010, 1 ♀, P. Komzák leg. (JBBC). Koménka, 275 m (19), 4.v.2009, 1 ♂, P. Komzák leg. (JBBC). Kladenska, 390 m (22), 13.v.–3.vi.2008 (MT), 2 ♀♀; 3.vi.–23.vi.2008 (MT), 1 ♂ 8 ♀♀; 23.vi.–16.vii.2008 (MT), 8 ♀♀; 16.vii.–4.viii.2008 (MT), 1 ♂ 5 ♀♀; 4.viii.–24.viii.2008 (MT), 5 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Třešňůvka, 310 m (23), 26.vi.2010, 2 ♀♀, P. Komzák leg. (JBBC). Kladenska, 245 m (26), 4.v.2009, 7 ♂♂, P. Komzák leg. (JBBC). Luhačovický potok, 325 m (27), 1.viii.2010, 1 ♂, P. Chvojka leg. (NMPC). LT Luhačovický potok, 330 m (29), 23.v.2010, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). Pivný potok, spring brooks, 550–560 m (39), 22.v.2010, 4 ♂♂ 4 ♀♀, P. Komzák leg. (JBBC). Pivný potok, 390 m (41), 22.v.2010, 5 ♂♂ 5 ♀♀; 26.vi.2010, 1 ♂ 3 ♀♀, P. Komzák leg. (JBBC). Lubná, 325 m (42), 4.vi.2007, 1 ♂, P. Komzák leg. (JBBC). Korytnice, 345 m (45), 25.v.2010, 1 ♂; 16.vi.2010, 4 ♀♀, P. Komzák leg. (JBBC). Korytnice, 290 m (46), 22.v.2010, 3 ♂♂ 1 ♀; 26.vi.2010, 1 ♂ 4 ♀♀, P. Komzák leg. (JBBC). Okluky, 350–370 m (51), 29.vii.2009, 1 ♀, P. Komzák leg. (JBBC). Boršický potok, 370–420 m (54), 27.vi.2009, 1 ♀, P. Komzák leg. (JBBC). Boršický potok, 320 m (55), 27.vi.2009, 1 ♀, P. Komzák leg. (JBBC). Bozatinský potok, 350 m (57), 6.vi.2005, 1 ♂ 2 ♀♀, P. Chvojka leg. (NMPC). Velička, spring area, upper section, 850–900 m (58), 23.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 700 m (62), 28.vii.2005, 1 ♂, P. Chvojka leg. (NMPC). RT Kamenný potok, spring

area, 560 m (71), 2.viii.2004, 1 ♂, P. Komzák leg. (JBBC). LT Velička, 435 m (82), 12.v.–3.vi.2009 (MT), 2 ♀♀; 3.vi.–22.vi.2009 (MT), 4 ♀♀; 22.vi.–15.vii.2009 (MT), 11 ♀♀; 24.viii.–16.ix.2009 (MT), 9 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Velička, 450 m (84), 12.v.–3.vi.2009 (MT), 1 ♀; 3.vi.–22.vi.2009 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Kazivec, 460–485 m (87), 30.v.2009, 2 ♂♂ 2 ♀♀; 27.vi.2009, 2 ♀♀; 29.vii.2009, 3 ♀♀, P. Komzák leg. (JBBC). LT Velička, 355–360 m (94), 12.v.–2.vi.2009 (MT), 1 ♂ 1 ♀; 2.vi.–25.vi.2009 (MT), 6 ♂♂ 26 ♀♀; 25.vi.–15.vii.2009 (MT), 46 ♀♀; 15.vii.–5.viii.2009 (MT), 13 ♀♀; 5.viii.–24.viii.2009 (MT), 1 ♂ 2 ♀♀; 14.ix.–22.x.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Zahrady pod Hájem NNR, 360 m (102), 12.v.–2.vi.2005 (MT), 1 ♂; 2.vi.–25.vi.2005 (MT), 4 ♂♂ 7 ♀♀; 25.vi.–15.vii.2005 (MT), 1 ♂; 15.vii.–6.viii.2005 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Kuželovský potok, 212 m (106), 4.v.2009, 1 ♂ 2 ♀♀, P. Komzák leg. (JBBC). Radějovka, 355–360 m (108), 1.vi.2009, 7 ♀♀, P. Chvojka leg. (NMPC); 7.iv.–5.v.2010 (MT), 10 ♂♂ 8 ♀♀; 5.v.–25.v.2010 (MT), 41 ♂♂ 53 ♀♀; 25.v.–15.vi.2010 (MT), 21 ♂♂ 143 ♀♀; 15.vi.–14.vii.2010 (MT), 4 ♂♂ 235 ♀♀; 12.viii.–9.ix.2010 (MT), 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 29.v.–20.vi.2006 (MT), 2 ♂♂ 161 ♀♀; 10.vii.–31.vii.2006 (MT), 1 ♂; 31.vii.–21.viii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 175 m (119), 29.iv.2005, 6 ♂♂ 2 ♀♀; 8.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Mandát, 350 m (123), 27.iii.–22.iv.2008 (MT), 4 ♂♂ 5 ♀♀; 22.iv.–14.v.2008 (MT), 28 ♂♂ 32 ♀♀; 14.v.–4.vi.2008 (MT), 11 ♂♂ 13 ♀♀; 4.vi.–26.vi.2008 (MT), 1 ♂ 61 ♀♀; 15.vii.–5.viii.2008 (MT), 3 ♂♂ 23 ♀♀; 5.viii.–26.viii.2008 (MT), 1 ♂ 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 22.iv.–14.v.2008 (MT), 1 ♂; 26.vi.–15.vii.2008 (MT), 2 ♂♂ 9 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Sudoměřický potok, 220 m (127), 8.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 9.v.–28.v.2007 (MT), 3 ♂♂ 1 ♀; 28.v.–18.vi.2007 (MT), 6 ♂♂ 2 ♀♀; 18.vi.–9.vii.2007 (MT), 3 ♂♂ 1 ♀; 9.vii.–2.viii.2007 (MT), 1 ♂ 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 2 ♂♂; 14.vi.–13.vii.2010 (MT), 41 ♂♂ 544 ♀♀; 13.vii.–10.viii.2010 (MT), 2 ♂♂ 80 ♀♀; 10.viii.–7.ix.2010 (MT), 1 ♂ 4 ♀♀, P. Chvojka & J. Macek leg. (NMPC). RT Zápechová, spring area, 550 m (140), 9.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Zápechová, 520–530 m (141), 18.vi.2010, 6 ♂♂, P. Chvojka leg. (NMPC). RT Sviborka, 390–425 m (142), 24.vi.2008, 1 ♀, P. Chvojka leg. (NMPC). RT Lukšinka, 420–435 m (154), 27.vi.2010, 4 ♀♀, P. Komzák leg. (JBBC). Sviborka, 350–355 m (145), 25.v.2006, 3 ♀♀, P. Komzák leg. (JBBC). Lukšinka, 375 m (155), 23.v.2010, 10 ♂♂ 6 ♀♀; 27.vi.2010, 4 ♀♀; 1.viii.2010, 4 ♀♀, P. Komzák leg. (JBBC). LT Lipovský potok, 415 m (157), 23.v.2010, 3 ♂♂ 3 ♀♀, P. Komzák leg. (JBBC). Lipovský potok, 370 m (158), 23.v.2010, 2 ♂♂ 6 ♀♀, P. Komzák leg. (JBBC). LT Nedašovka, 580–610 m (203), 18.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). Hrušovka, wetland, 520 m (204), 10.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 16.vi.–4.vii.2010 (MT), 1 ♂; 4.vii.–11.viii.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). Vlárka, 530–550 m (239), 17.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). RT Vlárka, spring area, 530–550 m (241), 16.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). RT Vlárka, 430–470 m (243), 16.vi.–5.vii.2010 (MT), 1 ♂ 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 2 ♂♂ 6 ♀♀, P. Komzák leg. (JBBC). LT Drietomice, wetland and brooklet, 438 m (256), 24.vi.2007, 1 ♂ 2 ♀♀, P. Komzák leg. (JBBC). RT Krátkovský potok, spring brook, 585 m (259), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). LT Hrnčarův potok, spring area and brooklet, 490 m (269), 31.v.2008, 2 ♀♀, P. Komzák leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 11.vii.–31.vii.2007 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Predpolomský potok, spring area and brooklet, 630–650 m (283), 4.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). Hrubár, 560–570 m (289), 25.vi.2008, 2 ♂♂, P. Chvojka leg. (NMPC). Soliskový potok, 580–590 m (292), 26.vi.2010, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). Hrubár, 435 m (295), 9.v.2008, 1 ♀, P. Komzák leg. (JBBC). LT Hrubár, 440 m (297), 31.vii.2010, 1 ♀, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 9.v.2008, 1 ♂, P. Komzák leg. (JBBC). Hrubár, 365–370 m (305), 1.vi.2008, 1 ♀, P. Komzák leg. (JBBC). Klanečnice, 450 m (308), 2.vi.2007, 3 ♂♂ 2 ♀♀; 23.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). LT Klanečnice, spring areas, 440–490 m (309), 23.vi.2007, 1 ♂, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 7.v.2007, 1 ♂ 9 ♀♀, P. Komzák leg. (JBBC); 5.v.–25.v.2010 (MT), 2 ♂♂; 25.v.–15.vi.2010 (MT), 9 ♂♂ 366 ♀♀; 15.vi.–9.vii.2010 (MT), 87 ♂♂ 695 ♀♀; 12.viii.–9.ix.2010 (MT), 1 ♂ 15 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Svinárský potok, 560–590 m (314), 29.viii.–20.ix.2005 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Svinárský potok, spring area, 460 m (322), 7.v.2007, 17 ♂♂ 11 ♀♀; 23.vi.2007, 1 ♂, P. Komzák leg. (JBBC). LT Klanečnice, spring area, 430 m (326), 15.vi.2010, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: *N. cinerea* is the most common and abundant species of the Plecoptera in the area, hundreds of specimens were collected into Malaise traps. **Red List status:** –.

Comments. A Euro-Siberian species distributed also in the Near East. A very common, ubiquitous species, occurring in various types of running water habitats and also in standing waters.

Nemoura flexuosa Aubert, 1949

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 23.iv.1958, 3 ♂♂; Radějovka stream above Radějov, 275 m a.s.l. (7170), 23.iv.1958, 4 ♂♂. Both J. Raušer leg. (JRBC).

Recent material examined. Velička, 470–480 m (68), 7.vi.2005, 2 ♂, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 5 ♂♂; 12.v.–3.vi.2009 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Velička, 450 m (84), 7.iv.–12.v.2009 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 7 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 10.v.–29.v.2006 (MT), 3 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 350 m (123), 27.iii.–22.iv.2008 (MT), 2 ♂♂; 22.iv.–14.v.2008 (MT), 2 ♂♂; 14.v.–4.vi.2008 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 12.iv.–9.v.2007 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 7 ♂♂, P. Chvojka, & J. Macek leg. (NMPC). Žitkovský potok, 360–380 m (281), 5.v.2009, 2 ♂♂, P. Komzák leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: Found in clear streams at 350–450 m a.s.l. **Red List status:** –.

Comments. A European-Anatolian species missing in the British Isles and the Iberian Peninsula. In the Czech Republic, it is common in clear submontane streams.

Nemoura fusca Kis, 1963

Published records. BOJKOVÁ & ŠPAČEK (2006): Velička above Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Velička, upper section, Velká Javořina Mt., Strání (7172a3); Svinárský potok N of Velká Javořina Mt., Strání (7172a3).

Recent material examined. LT Velička, spring area, 570–620 m (64), 25.vii.–9.viii.2005 (MT), 3 ♂♂; 29.viii.–22.ix.2005 (MT), 3 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 5.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 3.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 11.v.–6.vi.2006 (MT), 3 ♂♂; 6.vi.–22.vi.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 20.v.2006, 1 ♂, P. Komzák leg. (JBBC). LT Brumovka, spring areas and brooklets, 530–570 m (189), 20.v.2006, 2 ♂♂, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 11.v.–5.vi.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Bukový potok, spring area, 600 m (226), 6.iv.–5.v.2010 (MT), 3 ♂♂; 5.v.–24.v.2010 (MT), 4 ♂♂; 24.v.–16.vi.2010 (MT), 1 ♂; 16.vi.–4.vii.2010 (MT), 3 ♂♂, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, spring area, 530–550 m (241), 17.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). Svinárský potok, 560–590 m (314), 27.vii.–29.viii.2005 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Found relatively often but only in montane brooks at the highest altitudes (Velká Javořina Mt., Javorník Mt., Průklesy hill, and Ploštiny hill). **Red List status:** –.

Comments. An endemic species of the Carpathians. In the Czech Republic, it is rare and found only in cold, fast-flowing, montane brooks of the Moravskoslezské Beskydy Mts. [Moravian-Silesian Beskids] and the Bílé Karpaty Mts.

Nemoura marginata Pictet, 1835

Recent material examined. LT Petrůvka, spring areas, 400 m (30), 21.iv.–13.v.2008 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Boršický potok, spring brook, 475 m (53), 30.v.2009, 1 ♂, P. Komzák leg. (JBBC). Velička, spring area, upper section, 850–900 m (58), 28.iv.–7.vi.2005 (MT), 32 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 19.v.2005, 2 ♂♂, P. Chvojka leg. (NMPC). LT Velička, 700 m (62), 28.vi.2005, 4 ♂♂; 28.vii.2005, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, spring area, 570–620 m (64), 19.v.–7.vi.2005 (MT), 52 ♂♂; 28.vi.–25.vii.2005 (MT), 12 ♂♂; 25.vii.–9.viii.2005 (MT), 3 ♂♂; 29.viii.–22.ix.2005 (MT), 3 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Kamenný potok, 510–550 m (70), 29.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 5.vi.2009, 2 ♂♂, P. Chvojka leg. (NMPC). LT Velička, spring of left branch, 800 m (77), 5.vi.2009, 4 ♂♂, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 12.v.–2.vi.2009 (MT), 1 ♂; 25.vi.–15.vii.2009 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Zápechová, spring area, 550 m (140), 10.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). Václavský potok, spring, 480 m (161), 23.v.2010, 2 ♂♂, P. Komzák leg. (JBBC). LT Rakové, spring areas and brooklets, 600–670 m (184), 20.iv.–11.v.2006 (MT), 1 ♂; 22.vi.–13.vii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 20.v.2006, 4 ♂♂, P. Komzák (JBBC). Dešňanský potok, spring area, brooklet, 530–570 m (194), 20.v.2006, 1 ♂, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 21.iv.–12.v.2006 (MT), 6 ♂♂; 12.v.–5.vi.2006 (MT), 4 ♂♂; 13.vii.–31.viii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, 400–430 m (198), 30.iv.2006, 1 ♂, J. Bojková leg. (JBBC). LT Bylnička, spring area, 600 m (215), 13.vii.2009, 1 ♂, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 6.iv.–5.v.2010 (MT), 4 ♂♂; 5.v.–24.v.2010 (MT), 9 ♂♂; 24.v.–16.vi.2010 (MT), 12 ♂♂; 16.vi.–4.vii.2010 (MT), 4 ♂♂, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 24.vi.2007, 1 ♂, P. Komzák leg. (JBBC). LT Drietomice, 435–440 m (255), 17.v.2007, 1 ♂, J. Bojková leg. (JBBC). Krátkovský potok, 450–485 m (261), 8.v.2008, 1 ♂, P. Komzák leg. (JBBC). LT Krátkovský potok, spring area, 485 m (262), 31.v.2008, 1 ♂, P. Komzák leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 11.vii.–31.vii.2007 (MT), 1 ♂, P. Chvojka leg. (NMPC). LT Hrubár, spring brook, 655–660 m (290), 9.v.2008, 1 ♂, P. Komzák leg. (JBBC). LT Soliskový potok, spring area, 590 m (293), 22.v.2010, 1 ♂, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v.2008, 2 ♂, P. Komzák leg. (JBBC). RT Zlatný potok, spring area, 630 m (300), 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC). Svinárský potok, 560–590 m (314), 19.v.2005 (MT), 6 ♂♂; 19.v.–7.vi.2005 (MT), 1 ♂; 7.vi.–29.vi.2005 (MT), 2 ♂♂; 29.vi.–27.vii.2005 (MT), 4 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A common inhabitant of forest springs, calcareous spring fens, and small brooks with a groundwater supply. **Red List status:** –.

Comments. A southern and central European species occurring also in the Near East and reaching the northern limit of its distribution in the Hercynian mountains. It is generally common in springs and small brooks, especially in the submontane zone.

Nemoura sciurus Aubert, 1949

(VU)

Recent material examined. Koménka, 375 m (16), 22.v.2010, 1 ♂, P. Komzák leg. (JBBC). Kladenka, 390 m (22), 26.iii.–21.iv.2008 (MT), 14 ♂♂; 21.iv.–13.v.2008 (MT), 45 ♂♂; 13.v.–3.vi.2008 (MT), 8 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Petrůvka, spring areas, 400 m (30), 26.iii.–21.iv.2008 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Nivnička, 480 m (38), 22.v.2010, 4 ♂♂, P. Komzák leg. (JBBC). LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 9 ♂♂; 12.v.–3.vi.2009 (MT), 5 ♂♂, P. Chvojka, J. Ježek & J.

Stoneflies (Plecoptera)

Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 13 ♂♂; 12.v.–2.vi.2009 (MT), 3 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 355–360 m (108), 7.iv.–5.v.2010 (MT), 1 ♂; 5.v.–25.v.2010 (MT), 2 ♂♂; 15.vi.–14.vii.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 10.v.–29.v.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 350 m (123), 27.iii.–22.iv.2008 (MT), 7 ♂♂; 22.iv.–14.v.2008 (MT), 1 ♂; 14.v.–4.vi.2008 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 22.iv.–14.v.2008 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 12.iv.–9.v.2007 (MT), 2 ♂♂; 9.v.–28.v.2007 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 7.iv.–5.v.2010 (MT), 33 ♂♂ 31 ♀♀; 5.v.–24.v.2010 (MT), 34 ♂♂ 186 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Sviborka, 350–355 m (145), 25.v.2006, 1 ♂, P. Komzák leg. (JBBC). LT Lipovský potok, 415 m (157), 23.v.2010, 1 ♂, P. Komzák leg. (JBBC). LT Rakové, spring areas and brooklets, 600–670 m (184), 20.iv.–11.v.2006 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Dešňanský potok, spring area, brooklet, 530–570 m (194), 20.v.2006, 1 ♂, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 5.vi.–23.vi.2006 (MT), 1 ♂; 11.v.–5.vi.2006 (MT), 4 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Bukový potok, spring area, 600 m (226), 6.iv.–5.v.2010 (MT), 1 ♂; 5.v.–24.v.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 6.iv.–5.v.2010 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Drietomice, 435–440 m (255), 17.v.2007, 7 ♂♂, J. Bojková leg. (JBBC). Krátkovský potok, 450–485 m (261), 8.v.2008, 6 ♂♂, P. Komzák leg. (JBBC). LT Hrubár, spring brook, 655–660 m (290), 9.v.2008, 5 ♂♂, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 9.v.2008, 1 ♂; 22.v.2010, 2 ♂♂, P. Komzák leg. (JBBC). LT Soliskový potok, spring area, 590 m (293), 22.v.2010, 3 ♂♂, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v.2008, 2 ♂♂, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 9.v.2008, 1 ♂, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 5.v.–25.v.2010 (MT), 1 ♂; 25.v.–15.vi.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A widespread species, frequent mainly at lower altitudes. **Red List status:** VU.

Comments. A central European species; in the Czech Republic, it is found largely in small brooks and springs of the colline zone, but it occurs in the submontane zone as well. It is generally infrequent; there are only few records from Bohemia (KŘELINOVÁ 1962, BOJKOVÁ *et al.* 2010) and relatively more data from Moravia, especially the Moravian Karst, the Chřiby Mts. (RAUŠER 1964a; M. Straka, unpubl.), and the Moravian-Slovak borderland (BOJKOVÁ & HELEŠIC 2009), where it is more common.

Nemoura spp.

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 15.x.1958, 2 L, J. Raušer leg. (JRBC).

Recent material examined. Kladenka, 390 m (22), 26.iii.–21.iv.2008 (MT), 21 ♀♀; 21.iv.–13.v.2008 (MT), 134 ♀♀; 13.v.–3.vi.2008 (MT), 56 ♀♀; 3.vi.–23.vi.2008 (MT), 5 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Gáborka, 280 m (35), 23.v.2010, 1 ♀, P. Komzák leg. (JBBC). Nivnička, spring area, 580 m (37), 22.v.2010, 4 ♀♀, P. Komzák leg. (JBBC). LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 41 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, spring area, upper section, 850–900 m (58), 28.iv.–7.vi.2005 (MT), 56 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 700 m (62), 7.vi.2005, 98 ♀♀, P. Chvojka leg. (NMPC). LT Velička, spring area, 570–620 m (64), 7.vi.2005 (MT), 145 ♀♀; 7.vi.–28.vi.2005 (MT), 4 ♀♀; 25.vii.–9.viii.2005 (MT), 14 ♀♀; 29.viii.–22.ix.2005 (MT), 11 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). 4.vi.2009, 3 ♀♀, P. Chvojka leg. (NMPC). Velička, 470–480 m (68), 7.vi.2005, 2 ♀♀; 28.vi.2006, 3 ♀♀, P. Chvojka leg. (NMPC). LT Kamenný potok, 620–650 m (69), 4.vi.2009, 3 ♀♀, P. Chvojka leg. (NMPC). LT Kamenný potok, 510–550 m (70), 29.vi.2005, 8 ♀♀, P. Chvojka leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 5.vi.2009, 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 5.vi.2009, 12 ♀♀, P. Chvojka leg. (NMPC). LT Velička, spring of left branch, 800 m (77), 5.vi.2009, 5 ♀♀, P. Chvojka leg. (NMPC). LT Velička, brooklet and spring area,

520–540 m (80), 23.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 41 ♀♀; 12.v.–3.vi.2009 (MT), 22 ♀♀; 3.vi.–22.vi.2009 (MT), 7 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Velička, 450 m (84), 22.vi.–15.vii.2009 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 20 ♀♀; 12.v.–2.vi.2009 (MT), 9 ♀♀; 2.vi.–25.vi.2009 (MT), 23 ♀; 25.vi.–15.vii.2009 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 325–350 m (95), 3.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). Hrubý potok, 455 m (97), 14.vi.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Hrubý potok, 340–370 m (101), 25.vii.2005, 2 ♀♀, P. Chvojka leg. (NMPC). LT Járkovec, spring area, 450–470 m (112), 11.vii.2006, 4 ♀♀, P. Chvojka leg. (NMPC). Mandát, 350 m (123), 27.iii.–22.iv.2008 (MT), 1 ♀; 22.iv.–14.v.2008 (MT), 5 ♀♀; 14.v.–4.vi.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 22.iv.–14.v.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 265 m (125), 19.vi.2006, 3 ♀♀, P. Chvojka leg. (NMPC). Sudoměřický potok, 190 m (129), 19.vi.2006, 1 ♀; 12.vii.2006, 1 ♀, P. Chvojka leg. (NMPC). Myjava, 580–650 m (130), 14.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Myjava, 630 m (131), 14.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). Rybnický potok, 380–400 m (136), 14.vi.–13.vii.2010 (MT), 8 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Zápechová, 520–530 m (141), 18.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). RT Sviborka, 390–425 m (142), 24.vi.2008, 1 ♀, P. Chvojka leg. (NMPC). LT Vlára, 450 m (150), 27.v.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Lipovský potok, 370 m (158), 23.v.2010, 1 ♀, P. Komzák leg. (JBBC). Václavský potok, spring, 480 m (161), 23.v.2010, 3 ♀♀, P. Komzák leg. (JBBC). LT Václavský potok, spring area, 490 m (162), 23.v.2010, 1 ♀, P. Komzák leg. (JBBC). LT Rakové, spring areas and brooklets, 600–670 m (184), 20.v.2006, 7 ♀♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas and brooklets, 530–570 m (189), 20.v.2006, 9 ♀♀, P. Komzák leg. (JBBC). RT Brumovka, spring area, 450 m (193), 25.vi.2008, 1 ♀, P. Chvojka leg. (NMPC). Dešňanský potok, spring area, brooklet, 530–570 m (194), 20.v.2006, 5 ♀♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 20.iv.2006, 1 ♀, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 6.iv.–5.v.2010 (MT), 13 ♀♀; 5.v.–24.v.2010 (MT), 21 ♀♀; 24.v.–16.vi.2010 (MT), 86 ♀♀; 16.vi.–4.vii.2010 (MT), 19 ♀♀; 4.vii.–11.viii.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Vlárka, 530–550 m (239), 17.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). RT Vlárka, spring areas and brooks, 540–560 m (242), 5.vii.2010, 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 6.iv.–5.v.2010 (MT), 6 ♀♀; 5.v.–25.v.2010 (MT), 6 ♀♀; 25.v.–16.vi.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, 620–650 m (249), 8.vii.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 1 ♀; 24.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). LT Drietomice, wetland and brooklet, 438 m (256), 24.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Drietomice, 360–390 m (258), 4.vi.2007, 4 ♀♀, P. Komzák leg. (NMPC). Krátkovský potok, 450–485 m (261), 8.v.2008, 5 ♀♀; 31.v.2008, 5 ♀♀, P. Komzák leg. (JBBC). LT Krátkovský potok, spring area, 485 m (262), 31.v.2008, 8 ♀♀, P. Komzák leg. (JBBC). Krátkovský potok, 420 m (267), 4.vi.2007, 3 ♀♀, P. Komzák leg. (JBBC). Vlčí potok, 440 m (272), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 11.iv.–9.iv.2007 (MT), 2 ♀♀; 10.v.–29.v.2007 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Žitkovský potok, 360–380 m (281), 5.v.2009, 3 ♀♀, P. Komzák leg. (JBBC). LT Hrubár, spring brook, 655–660 m (290), 9.v.2008, 13 ♀♀; 1.vi.2008, 10 ♀♀, P. Komzák leg. (JBBC). Soliskový potok, 680–780 m (291), 28.vi.2008, 1 ♀, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 9.v.2008, 12 ♀♀; 1.vi.2008, 3 ♀♀; 22.v.2010, 5 ♀♀, P. Komzák leg. (JBBC). LT Soliskový potok, spring area, 590 m (293), 1.vi.2008, 1 ♀; 22.v.2010, 8 ♀♀, P. Komzák leg. (JBBC). Zlatný potok, 550–590 m (299), 9.v.2008, 1 ♀; 1.vi.2008, 4 ♀♀, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 1.vi.2008, 2 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, spring section, 650 m (311), 23.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 2.vi.2007, 1 ♀, P. Komzák leg. (JBBC); 5.v.–25.v.2010 (MT), 15 ♀♀; 25.v.–15.vi.2010 (MT), 10 ♀♀; 15.vi.–9.vii.2010 (MT), 7 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Svinárský potok, 560–590 m (314), 7.vi.–19.v.2005 (MT), 56 ♀♀; 19.v.–7.vi.2005 (MT), 153 ♀♀; 27.vii.–29.viii.2005 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Comments. The above cited material includes only females and larvae which could not be identified with certainty. The identification of females in the genus is ambiguous with the exception of *N. cinerea*.

***Nemurella pictetii* Klapálek, 1900**

Recent material examined. Kladenska, 390 m (22), 21.iv.–13.v.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Boršický potok, 320 m (55), 28.ix.2009, 2 ♀♀, P. Komzák leg. (JBBC). LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 1 ♂ 6 ♀♀; 12.v.–3.vi.2009 (MT), 6 ♀♀; 3.vi.–22.vi.2009 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 12.v.–2.vi.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 10.v.–29.v.2006 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 22.iv.–14.v.2008 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 6.vi.2005, 1 ♀, P. Chvojka leg. (NMPC); 9.v.–28.v.2007 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 1 ♀; 10.viii.–7.ix.2010 (MT), 2 ♀♀; 7.ix.–21.x.2010 (MT), 1 ♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 6.vi.–22.vi.2006 (MT), 1 ♂ 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, spring areas, 430–460 m (197), 5.vi.–23.vi.2006 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). LT Hrnčarův potok, spring area and brooklet, 490 m (269), 31.v.2008, 1 ♂, P. Komzák leg. (JBBC). LT Hrubár, spring brook, 655–660 m (290), 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC). LT Soliskový potok, spring area, 590 m (293), 22.v.2010, 3 ♂♂ 1 ♀, P. Komzák leg. (JBBC). Hrubár, 435 m (295), 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: A frequent but never abundant species. **Red List status:** –.

Comments. A Euro-Siberian species inhabiting various types of habitats, especially swampy springs, upper stream courses supplied by groundwater, drains, spring basins, but also lakes and strongly acid waters like outlets of bogs. It is sensitive to pollution.

***Protonemura aestiva* Kis, 1965**

Published records. BOJKOVÁ & ŠPAČEK (2006): unnamed springbrook in Bílé potoky NR, Valašské Klobouky (6874c3); unnamed springbrook near Hrubý Mechnáč, Lopeník (7072d2); spring area near Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Velička above Hubertova bouda hut, Nová Lhota-Vápenky (7171b4); Svinárský potok N of Velká Javořina Mt., Strání (7172a3).

Recent material examined. Nivnička, 480 m (38), 26.vi.2010, 1 ♂, P. Komzák leg. (JBBC). Velička, spring area, upper section, 850–900 m (58), 4.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, spring area, 570–620 m (64), 25.vii.–9.viii.2005 (MT), 3 ♀♀; 29.viii.–22.ix.2005 (MT), 11 ♂♂ 25 ♀♀; 22.ix.–27.x.2005 (MT), 4 ♂♂ 48 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Myjava, 580–650 m (130), 14.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). LT Myjava, 630 m (131), 14.vi.2010, 2 ♂♂ 1 ♀, P. Chvojka leg. (NMPC). Radošínský potok, 540–570 m (139), 18.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). Zápechová, 520–530 m (141), 18.vi.2010, 1 ♂, P. Chvojka leg. (NMPC). Křekovský potok, springs, 580 m (147), 17.vii.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 11.v.–6.vi.2006 (MT), 3 ♂♂; 6.vi.–22.vi.2006 (MT), 6 ♂♂; 22.vi.–13.vii.2006 (MT), 4 ♂♂; 13.vii.–31.vii.2006 (MT), 7 ♂♂, 3 ♀♀; 31.vii.–23.viii.2006 (MT), 1 ♂; 20.ix.–27.x.2006 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, spring areas and brooklets, 530–570 m (189), 31.vii.2004, 1 ♀, P. Chvojka leg. (NMPC). LT Brumovka, spring areas, 430–460 m (197), 11.v.–5.vi.2006 (MT), 2 ♂♂; 13.vii.–31.viii.2006 (MT), 2 ♂♂; 20.ix.–25.x.2006 (MT), 1 ♂ 7 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, 400–430 m (198), 23.viii.2006, 1 ♂, P. Chvojka leg. (NMPC). LT Bylnička, spring area, 600 m (215), 13.vii.2009, 1 ♂, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 24.v.–16.vi.2010 (MT), 1 ♂; 16.vi.–4.vii.2010 (MT), 1 ♂; 4.vii.–11.viii.2010 (MT), 7 ♂♂; 11.viii.–8.ix.2010 (MT), 1 ♂; 8.ix.–23.x.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, spring areas and brooks, 540–560 m (242), 5.vii.2010, 1 ♂, P. Chvojka leg. (NMPC). RT Vlárka, 430–470 m (243), 16.vi.–5.vii.2010 (MT), 1 ♂; 11.viii.–8.ix.2010 (MT), 1 ♀; 8.ix.–23.x.2010 (MT), 2 ♂♂ 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, 620–650 m (249), 8.vii.2010, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Soliskový potok, 680–780 m (291), 28.vi.2008, 1 ♂, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 1.vi.2008, 1 ♂, P. Komzák leg. (JBBC). RT Klanečnice, 460–500

m (312), 8.iv.–5.v.2010 (MT), 1 ♂ 1 ♀; 15.vi.–9.vii.2010 (MT), 2 ♂♂; 12.viii.–9.ix.2010 (MT), 1 ♂ 1 ♀; 9.ix.–22.x.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Svinárský potok, 670 m (313), 26.x.2005, 1 ♂, P. Chvojka leg. (NMPC). Svinárský potok, 560–590 m (314), 27.vii.–29.viii.2005 (MT), 2 ♀♀; 29.viii.–20.ix.2005 (MT), 11 ♂♂ 16 ♀♀; 20.ix.–26.x.2010 (MT), 50 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Svinárský potok, 700 m (316), 4.vi.2009, 3 ♂♂ 3 ♀♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A frequent and abundant species occurring predominantly in various spring habitats, including calcareous spring fens. **Red List status:** –.

Comments. A Balkan-Carpathian species inhabiting submontane and montane springs and brooks.

Protonemura auberti Illies, 1954

Recent material examined. LT Brumovka, spring areas, 430–460 m (197), 13.vii.–31.viii.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Bukový potok, spring area, 600 m (226), 4.vii.–11.viii.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 4.vi.2007, 1 ♂, P. Komzák leg. (JBBC). LT Drietomice, 435–440 m (255), 12.viii.2007, 1 ♂, J. Bojková leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: A rare species, found in the central and northern parts of the area. **Red List status:** –.

Comments. A central European species distributed in the Hercynian mountains, the Alps and the Carpathians, extending also to the Balkans. In the Czech Republic, it is common in montane and submontane springs and brooks, especially in Bohemia. It is often found in cold, small brooks with sandy bottom and a high proportion of coarse organic matter in the substratum (Bojková *et al.* 2010).

Protonemura spp.

Recent material examined. Pivný potok, spring brooks, 550–560 m (39), 26.vi.2010, 1 ♀, P. Komzák leg. (JBBC). LT Kamenný potok, 510–550 m (70), 29.vi.2005, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, spring of right branch, 675 m (74), 23.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 5.vi.2009, 1 ♀; 16.ix.2009, 3 ♀♀, P. Chvojka leg. (NMPC). LT Velička, left branch, 500 m (92), 15.ix.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Bylnička, 450–550 m (218), 13.vii.2009, 1 ♀, P. Chvojka leg. (NMPC). RT Vlára, source area, 420 m (222), 18.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). Drietomice, spring area, 590–620 m (247), 8.vii.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Svinárský potok, spring area, 630 m (317), 29.vi.2005, 2 ♀♀, P. Chvojka leg. (NMPC).

Comments. The above cited material probably includes a mix of females of *P. auberti* and *P. aestiva* which cannot be distinguished without doubt.

Protonemura intricata (Ris, 1902)

Recent material examined. Velička, 470–480 m (68), 7.vi.2005, 1 ♀, P. Chvojka leg. (JBBC). LT Velička, 435 m (82), 12.v.–3.vi.2009 (MT), 3 ♀♀; 3.vi.–22.vi.2009 (MT), 8 ♀♀; 22.vi.–15.vii.2009 (MT), 5 ♀♀; 15.vii.–5.viii.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 400–420 m (83), 3.vi.2009, 1 ♂, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 3.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). Vápenický potok, 360 m (180), 16.vii.2009, 1 ♂, P. Chvojka leg. (NMPC). Rakové, 440–450 m (186),

Stoneflies (Plecoptera)

11.vi.2005, 1 ♂, P. Chvojka leg. (NMPC). RT Nedašovka, 540 m (201), 1.viii.2004, 1 ♂, P. Chvojka leg. (NMPC). Vlárka, 530–550 m (239), 9.vi.2005, 2 ♀♀, P. Chvojka leg. (NMPC). LT Drietomice, wetland and brooklet, 438 m (256), 24.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). Drietomice, 360–390 m (258), 4.vi.2007, 2 ♀♀, P. Komzák leg. (JBBC). Krátkovský potok, 420 m (267), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Hrnčarův potok, 470–485 m (268), 30.v.2009, 1 ♀, P. Komzák leg. (JBBC). LT Hrnčarův potok, spring area and brooklet, 490 m (269), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 26.vi.2010, 1 ♂, P. Komzák leg. (JBBC). Svinárský potok, 560–590 m (314), 7.vi.–29.vi.2005 (MT), 1 ♂; 29.vi.–27.vii.2005 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A quite infrequent species found usually individually. **Red List status:** –.

Comments. A European species missing in the British Isles. It is generally very common and widespread; it inhabits various types of streams.

Protonemura praecox (Morton, 1894)

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 15.x.1958, 2 L, J. Raušer leg. (JRBC).

Recent material examined. LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 7.iv.–5.v.2010 (MT), 1 ♀; 5.v.–24.v.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). LT Žitkovský potok, spring areas, 460–520 m (275), 2.iv.2005 (MT), 1 ♂ 2 ♀♀, J. Bojková leg. (JBBC); 11.iv.–9.v.2007 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Found only at four sites; however, it can be easily overlooked due to the early and relatively short period of emergence. **Red List status:** –.

Comments. Distributed in southern and central Europe and the British Isles. It inhabits small brooks of various altitudes.

Family CAPNIIDAE

Capnia bifrons (Newman, 1839)

Published records. JURAJDA *et al.* (2000): Drietomica above confluence with Krátkovský potok (7073).

Recent material examined. RT Velička, 450 m (84), 7.iv.–12.v.2009 (MT), 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 5 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 355–360 m (108), 7.iv.–5.v.2010 (MT), 2 ♀♀; 5.v.–25.v.2010 (MT), 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 19.iv.–10.v.2006 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Mandát, 350 m (123), 27.iii.–22.iv.2008 (MT), 15 ♀♀; 22.iv.–14.v.2008 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Mandát, spring area, 400–415 m (124), 27.iii.–22.iv.2008 (MT), 4 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 12.iv.–9.v.2007 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). RT Klanečnice, 460–500 m (312), 7.v.2007, 4 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 8.iv.–5.v.2010 (MT), 2 ♀♀; 5.v.–25.v.2010 (MT), 7 ♀♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A common species which, however, may have been partly overlooked at some sites due to the early period of emergence. **Red List status:** –.

Comments. A European species; in the Czech Republic, it occurs largely in clear brooks in the colline zone.

Family LEUCTRIDAE

Leuctra albida Kempny, 1899

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 17.vii.1958, 1 ♂, J. Raušer leg. (JRBC).

Recent material examined. Kazivec, 390–410 m (90), 2.viii.2004, 2 ♂♂ 9 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 15.ix.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 15.vii.–5.viii.2009 (MT), 2 ♀♀; 5.viii.–24.viii.2009 (MT), 2 ♂♂ 3 ♀♀; 24.viii.–14.ix.2009 (MT), 1 ♀; 25.vi.–15.vii.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Hrubý potok, 340–370 m (101), 25.vii.2005, 2 ♀♀, P. Chvojka leg. (NMPC). Zápechová, 520–530 m (141), 18.vi.2010, 3 ♂♂ 4 ♀♀, P. Chvojka leg. (NMPC). Drietomice, 360–390 m (258), 5.viii.2007, 4 ♂♂ 2 ♀♀; 14.x.2007, 1 ♀, P. Komzák leg. (JBBC). Krátkovský potok, 420 m (267), 5.viii.2007, 2 ♂♂ 2 ♀♀; 14.x.2007, 2 ♀♀; P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 9.ix.–22.x.2010 (MT), 1 ♂, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: An infrequent species which occurs in streams flowing down from forested mountain slopes. **Red List status:** –.

Comments. Distributed in southern and central Europe, missing in the Iberian and Apennine Peninsulas. In the Czech Republic, it is common and abundant in mountain streams above 400–450 m a.s.l.

Leuctra braueri Kempny, 1898

Recent material examined. Nivnička, spring area, 580 m (37), 9.x.2010, 2 ♀♀, P. Komzák leg. (JBBC). Velička, spring area, upper section, 850–900 m (58), 17.ix.2009, 1 ♀; 27.x.2005, 1 ♂ 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, 700 m (62), 28.vii.2005, 3 ♂♂ 1 ♀, P. Chvojka leg. (NMPC). LT Velička, spring area, 570–620 m (64), 29.viii.–22.ix.2005 (MT), 18 ♂♂ 19 ♀♀; 3.viii.2004, 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Kamenný potok, 620–650 m (69), 26.x.2005, 1 ♂ 4 ♀♀, P. Chvojka leg. (NMPC). LT Velička, right branch, 600 m (75), 16.ix.2009, 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, left branch, 500 m (92), 15.ix.2009, 1 ♀, P. Chvojka leg. (NMPC). LT Hrubý potok, 550 m (98), 30.x.2007, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 10.ix.–3.x.2007 (MT), 1 ♂; 3.x.–30.x.2007 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Křekovský potok, springs, 580 m (147), 24.x.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Křekovský potok, 440–500 m (148), 24.x.2010, 2 ♀♀, P. Chvojka leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 31.vii.–23.viii.2006 (MT), 14 ♂♂ 1 ♀; 23.vii.–20.ix.2006 (MT), 4 ♂♂ 3 ♀♀; 20.ix.–27.x.2006 (MT), 3 ♂♂ 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 16.x.2006, 6 ♂♂ 4 ♀♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas and brooklets, 530–570 m (189), 23.viii.2006, 2 ♂♂, P. Chvojka leg. (NMPC); 15.x.2006, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Brumovka, 450 m (190), 30.x.2005, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Dešňanský potok, spring area, brooklet, 530–570 m (194), 25.x.2006, 1 ♂, P. Chvojka leg. (NMPC); 5 ♂♂ 6 ♀♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 30.x.2005, 1 ♀, P. Chvojka leg. (NMPC); 23.viii.–20.ix.2006 (MT), 1 ♂; 20.ix.–25.x.2006 (MT), 1 ♂ 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Brumovka, 400–430 m (198), 23.viii.2006, 3 ♂♂, P. Chvojka leg. (NMPC). LT Nedašovka, 490–570 m (206), 24.viii.2006, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). LT Nedašovka, spring area, 630 m (207), 24.viii.2006, 15 ♂♂ 12 ♀♀, P. Chvojka leg. (NMPC). Hlubočský potok, 440–460 m (224), 23.x.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Bukový potok, spring area, 600 m (226), 11.viii.–8.ix.2010 (MT), 34 ♂♂ 54 ♀♀; 8.ix.–23.x.2010 (MT), 2 ♂♂, P. Chvojka & J. Macek leg. (NMPC); 26.x.2006, 2 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). Uhlisko, right branch, 570 m (230), 26.x.2006, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Uhlisko, 420 m (231), 25.x.2006, 1 ♀, P. Chvojka leg. (NMPC).

Stoneflies (Plecoptera)

RT Vlárka, 430–470 m (243), 11.viii.–8.ix.2010 (MT), 3 ♂♂ 3 ♀♀; 8.ix.–23.x.2010 (MT), 1 ♂ 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 28.x.2010, 1 ♂ 6 ♀♀, P. Chvojka leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 5.viii.2007, 1 ♂; 14.x.2007, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Hrnčářův potok, spring area and brooklet, 490 m (269), 18.x.2008, 1 ♂, P. Komzák leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 2.ix.–2.x.2007 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Hrubár, spring brook, 655–660 m (290), 10.viii.2008, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). Soliskový potok, 680–780 m (291), 19.x.2008; 2 ♂♂ 3 ♀♀, P. Komzák leg. (JBBC). Soliskový potok, 580–590 m (292), 10.viii.2008, 4 ♂♂ 1 ♀; 19.x.2008, 2 ♂♂ 7 ♀♀, P. Komzák leg. (JBBC). LT Zlatný potok, 550–590 m (299), 11.viii.2008, 6 ♂♂ 2 ♀♀; 1.xi.2007, 1 ♀, P. Komzák leg. (JBBC). LT Zlatný potok, 590–600 m (301), 19.x.2008, 3 ♀♀; 1.xi.2007, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). Zlatný potok, 430–450 m (304), 1.xi.2007, 1 ♀, P. Chvojka leg. (NMPC). RT Klanečnice, 460–500 m (312), 9.ix.–22.x.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Svinářský potok, 670 m (313), 26.x.2005, 3 ♂♂ 10 ♀♀, P. Chvojka leg. (NMPC). Svinářský potok, 560–590 m (314), 27.vii.–29.viii.2005 (MT), 17 ♂♂ 23 ♀♀; 29.viii.–20.ix.2005 (MT), 1 ♂ 15 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 28.x.2005, 2 ♂♂ 3 ♀♀, P. Komzák leg. (JBBC). RT Svinářský potok, 700 m (316), 26.x.2005, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Svinářský potok, 390–420 m (320), 26.x.2005, 4 ♀♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A very common and abundant species, especially in springbrooks. In other faunistic districts of the Czech Republic, it is always much less frequent. **Red List status:** –.

Comments. A central European species which occurs predominantly in small brooks and springs at various altitudes.

Leuctra digitata Kempny, 1899

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 28.viii.1958, 1 L, J. Raušer leg. (JRBC).

Recent material examined. Olšava, 350–380 m (8), 12.x.2007, 1 ♀, J. Bojková leg. (JBBC). Koménka, 275 m (19), 24.ix.2009, 4 ♀♀, P. Chvojka leg. (NMPC). Kladenka, 390 m (22), 23.ix.–22.x.2009 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Pivný potok, 390 m (41), 9.x.2010, 1 ♀, P. Komzák leg. (JBBC). Borsický potok, 320 m (55), 28.ix.2009, 1 ♀, P. Komzák leg. (JBBC). Velička, 470–480 m (68), 3.viii.2004, 1 ♂ 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, 435 m (82), 24.viii.–16.ix.2009 (MT), 1 ♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 400–420 m (83), 16.ix.2009, 5 ♂♂ 6 ♀♀, P. Chvojka leg. (NMPC). LT Kazivec, 400 m (89), 25.ix.2009, 3 ♀♀, P. Chvojka leg. (NMPC). Kazivec, 390–410 m (90), 15.ix.2009, 2 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). LT Velička, left branch, 500 m (92), 15.ix.2009, 1 ♂ 3 ♀♀, P. Chvojka leg. (NMPC). LT Velička, 355–360 m (94), 14.ix.–22.x.2009 (MT), 1 ♂ 20 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 325–350 m (95), 14.ix.2009, 2 ♂♂ 2 ♀♀, P. Chvojka leg. (NMPC). Velička, 205 m (103), 15.ix.2009, 2 ♀♀, P. Chvojka leg. (NMPC). Radějovka, 355–360 m (108), 9.ix.–22.x.2010 (MT), 1 ♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Járkovec, 320–365 m (113), 21.viii.–18.ix.2006 (MT), 4 ♂♂ 4 ♀♀; 18.ix.–23.x.2006 (MT), 1 ♂ 15 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Radějovka, 270 m (117), 24.x.2006, 2 ♀♀, P. Chvojka leg. (NMPC). Rybnický potok, 410–445 m (135), 22.viii.–10.ix.2007 (MT), 2 ♂♂; 10.ix.–3.x.2007 (MT), 11 ♂♂ 14 ♀♀; 3.x.–30.x.2007 (MT), 4 ♂♂ 9 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 10.viii.–7.ix.2010 (MT), 1 ♂ 1 ♀; 7.ix.–21.x.2010 (MT), 1 ♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Vápenický potok, 360 m (180), 16.vii.2009, 1 ♀, P. Chvojka leg. (NMPC). Hlubočský potok, 440–460 m (224), 23.x.2010, 2 ♀♀, P. Chvojka leg. (NMPC). Vlárka, 380 m (240), 23.x.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Drietomice, spring areas and brooks, 550–600 m (251), 14.x.2007, 1 ♂ 1 ♀, P. Komzák leg. (JBBC). LT Drietomice, 435–440 m (255), 21.x.2007, 2 ♀♀, J. Bojková leg. (JBBC). Drietomice, 360–390 m (258), 14.x.2007, 1 ♀, P. Komzák leg. (JBBC). Krátkovský potok, 450–485 m (261), 18.x.2008, 1 ♂ 4 ♀♀, P. Komzák leg. (JBBC). Trstná, 450–480 m (264), 18.x.2008, 2 ♂♂ 7 ♀♀ 1 gynandromorph, P. Komzák leg. (JBBC). RT Trstná, spring area, 450–460 m (266), 10.viii.2008, 2 ♂♂ 1 ♀, P. Komzák leg. (JBBC). Krátkovský potok, 420 m (267), 14.x.2007, 3 ♂♂ 8 ♀♀, P. Komzák leg. (JBBC). LT Hrnčářův potok, spring area and brooklet, 490 m (269), 18.x.2008, 2 ♀♀, P. Komzák leg. (JBBC). Žitkovský

potok, 440–450 m (276), 31.x.2007, 1 ♀, P. Chvojka leg. (NMPC). LT Hrubár, 440 m (297), 9.x.2010, 2 ♂♂ 3 ♀♀, P. Komzák leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: A common species. **Red List status:** –.

Comments. A European species missing in the British Isles and eastern European lowlands. It inhabits various brooks and streams at a wide range of altitudes; it was found also in flowing swampy habitats, acidic brooks and Scandinavian lakes.

One specimen found in the Trstná brook near the village of Vápenice represents a bilateral gynandromorph. The occurrence of gynandromorphism is rare in the Plecoptera. In Europe, the gynandromorphism was reported in three *Leuctra* species (AUBERT 1958, KLOTZEK 1971) and one *Protonemura* species (SANCHEZ-ORTEGA 1992). The external morphology of a *Leuctra digitata* gynander was described by KLOTZEK (1971).

Leuctra fusca (Linnaeus, 1758)

Unpublished historical records. Klanečnice stream in Strání-Květná, 340 m a.s.l. (7172), 28.viii.1958, 1 L. Vlára river below Bylnice, 285 m a.s.l. (6974), 28.viii.1958, 1 L. Both J. Raušer leg. (JRBC).

Recent material examined. Velička, 205 m (103), 15.ix.2009, 1 ♀, P. Chvojka leg. (NMPC). Brumovka, 340–355 m (196), 24.x.2010, 1 ♀ 2 ♂♂, P. Chvojka leg. (NMPC). Vlára, 285 m (236), 23.x.2010, 3 ♂♂ 13 ♀♀, P. Chvojka leg. (NMPC). Vlárka, 380 m (240), 23.x.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Hrubár, 440 m (297), 9.x.2010, 1 ♀, P. Komzák leg. (JBBC).

Distribution and frequency in the Bílé Karpaty PLA: Although generally a very common species, in the Bílé Karpaty PLA it was found only in a few more or less polluted streams. **Red List status:** –.

Comments. A Palearctic species, widespread and numerous especially in medium and large streams and rivers, mainly at lower altitudes. It is less sensitive to organic pollution than many other Plecoptera.

Leuctra hippopus Kempny, 1899

Unpublished historical records. Olšava stream above Pitín, 375 m a.s.l. (6973), 23.iv.1958, 1 ♀, J. Raušer leg. (JRBC).

Recent material examined. LT Velička, 435 m (82), 7.iv.–12.v.2009 (MT), 15 ♂♂ 12 ♀♀; 12.v.–3.vi.2009 (MT), 2 ♂♂ 12 ♀♀; 3.vi.–22.vi.2009 (MT), 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Velička, 450 m (84), 7.iv.–12.v.2009 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 355–360 m (94), 6.iv.–12.v.2009 (MT), 71 ♂♂ 98 ♀♀; 12.v.–2.vi.2009 (MT), 4 ♂♂ 12 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Velička, 325–350 m (95), 3.vi.2009, 1 ♀, P. Chvojka leg. (NMPC). Hrubý potok, 455 m (97), 14.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). Járkovec, 320–365 m (113), 19.iv.–10.v.2006 (MT), 1 ♂; 10.v.–29.v.2006 (MT), 4 ♀♀; 29.v.–20.vi.2006 (MT), 3 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 410–445 m (135), 9.v.–28.v.2007 (MT), 2 ♂♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 7.iv.–5.v.2010 (MT), 7 ♂♂ 10 ♀♀; 5.v.–24.v.2010 (MT), 9 ♂♂ 19 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Vlárka, 380 m (240), 25.v.2010, 5 ♀♀, P. Chvojka leg. (NMPC). LT Drietomice, 435–440 m (255), 29.iv.2007, 1 ♂ 16 ♀♀, J. Bojková leg. (JBBC). LT Drietomice, 435–440 m (255), 29.iv.2007, 1 ♂ 16 ♀♀; 17.v.2007, 12 ♀♀, J. Bojková leg. (JBBC). Drietomice, 360–390 m (258), 4.vi.2007, 1 ♀, P. Komzák leg. (JBBC). Hrnčářův potok, 470–485 m (268), 30.v.2009, 1 ♀, P. Komzák leg. (JBBC). Vlčí potok, 440 m (272), 31.v.2008, 1 ♀, P. Komzák leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 11.iv.–9.iv.2007 (MT), 7 ♂♂ 7 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Žitkovský

Stoneflies (Plecoptera)

potok, 360–380 m (281), 5.v.2009, 1 ♂, P. Komzák leg. (JBBC). Hrubár, 435 m (295), 9.v.2008, 1 ♀; 1.vi.2008, 1 ♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 8.iv.–5.v.2010 (MT), 2 ♂♂; 5.v.–25.v.2010 (MT), 6 ♀♀; 25.v.–15.vi.2010 (MT), 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: A common species in brooks.
Red List status: –.

Comments. A western Palaearctic species, widespread and abundant in medium and small brooks, streams and rivers at various altitudes.

Leuctra major Brinck, 1949

Unpublished historical records. Radějovka stream above Radějov, 275 m a.s.l. (7170), 15.x.1958, 3 ♀♀, J. Raušer leg. (JRBC).

Distribution and frequency in the Bílé Karpaty PLA: The species has not been confirmed in the area recently. **Red List status:** –.

Comments. A central and southern European species. It inhabits brooks and streams mostly in the montane and submontane zones. Rare and scattered in the Czech Republic.

Leuctra nigra (Olivier, 1811)

Recent material examined. Gáborka, 280 m (35), 23.v.2010, 1 ♀, P. Komzák leg. (JBBC). Myjava, 580–650 m (130), 14.vi.2010, 1 ♀, P. Chvojka leg. (NMPC). LT Rybnický potok, spring area, 440 m (134), 6.vi.2005, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). Rybnický potok, 380–400 m (136), 5.v.–24.v.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). LT Lipovský potok, 500 m (156), 27.vi.2010, 2 ♂♂ 5 ♀♀, P. Komzák leg. (JBBC). Václavský potok, spring, 480 m (161), 23.v.2010, 1 ♂, P. Komzák leg. (JBBC). Bukový potok, spring area, 600 m (226), 24.v.–16.vi.2010 (MT), 1 ♂; 16.vi.–4.vii.2010 (MT), 1 ♂ 1 ♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: Much less frequent in the area investigated than in other mountain regions of the Czech Republic. It seems to be replaced by *L. braueri* in suitable habitats. **Red List status:** –.

Comments. A European species missing in the Iberian Peninsula and eastern European lowlands. Very common and abundant in small forest brooks and springs, especially at higher altitudes. It is also often found in slow-flowing, muddy brooks and acidic waters.

Leuctra prima Kempny, 1899

Unpublished historical records. Olšava above Pitín, 375 m a.s.l. (6973), 15.x.1958, 1 L, J. Raušer leg. (JRBC).

Recent material examined. Kladenka, 390 m (22), 26.iii.–21.iv.2008 (MT), 1 ♂ 9 ♀♀; 21.iv.–13.v.2008 (MT), 2 ♂♂ 1 ♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Rybnický potok, 380–400 m (136), 7.iv.–5.v.2010 (MT), 1 ♂ 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Bukový potok, spring area, 600 m (226), 6.iv.–5.v.2010 (MT), 4 ♀♀; 5.v.–24.v.2010 (MT), 13 ♀♀; 24.v.–16.vi.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). RT Vlárka, 430–470 m (243), 6.iv.–5.v.2010 (MT), 3 ♂♂ 9 ♀♀; 25.v.–16.vi.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC). Krátkovský potok, 450–485 m (261), 8.v.2008, 1 ♀, P. Komzák leg. (JBBC). Hrubár, 560–570 m (289), 2.iv.2005, 3 ♂♂ 1 ♀, J. Bojková leg. (JBBC). Zlatný potok, 430–450 m (304), 9.v.2008, 1 ♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 8.iv.–5.v.2010 (MT), 1 ♂ 1 ♀; 5.v.–25.v.2010 (MT), 1 ♀, P. Chvojka & J. Macek leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: An infrequent species found in clear brooks. **Red List status:** –.

Comments. A European species missing in Fennoscandia and the British Isles; it extends from the Pyrenees, over the Massif Central, the northern slopes of the Alps, the Jura, and the Vosges, to the Carpathians and western Russia (VINÇON & MURÁNYI 2007). It is generally frequent in small streams at various altitudes.

Leuctra pseudosignifera Aubert, 1954

Recent material examined. Velička, spring area, upper section, 850–900 m (58), 28.iv.–7.vi.2005 (MT), 14 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). LT Velička, 700 m (62), 7.vi.2005, 1 ♂ 1 ♀, P. Chvojka leg. (NMPC). LT Rakové, spring areas and brooklets, 600–670 m (184), 20.iv.–11.v.2006 (MT), 1 ♂, P. Chvojka, J. Ježek & J. Macek leg. (NMPC); 20.v.2006, 3 ♀♀, P. Komzák leg. (JBBC). LT Brumovka, spring areas, 430–460 m (197), 10.iv.2006, 1 ♂, J. Bojková leg. (JBBC). LT Brumovka, 400–430 m (198), 30.iv.2006, 1 ♀, J. Bojková leg. (JBBC). LT Žitkovský potok, spring areas, 460–520 m (275), 11.iv.–9.iv.2007 (MT), 2 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). Zlatný potok, 550–590 m (299), 9.v.2008, 1 ♂ 4 ♀♀, P. Komzák leg. (JBBC). RT Klanečnice, 460–500 m (312), 8.iv.–5.v.2010 (MT), 1 ♂ 2 ♀♀, P. Chvojka & J. Macek leg. (NMPC). Svinárský potok, 560–590 m (314), 19.v.2005 (MT), 62 ♀♀; 19.v.–7.vi.2005 (MT), 12 ♀♀, P. Chvojka, J. Ježek & J. Macek leg. (NMPC). RT Svinárský potok, 700 m (316), 4.vi.2009, 1 ♀, P. Chvojka leg. (NMPC).

Distribution and frequency in the Bílé Karpaty PLA: An infrequent species occurring in brooks and springs above 450–500 m a.s.l. **Red List status:** –.

Comments. Distributed in western and central Europe, missing in Fennoscandia and the British Isles. It extends from the French Massif Central, over the Alps, the Jura and the Vosges to the Carpathians (VINÇON & MURÁNYI 2007). It inhabits mountain springs and small streams.

Leuctra quadrimaculata Kis, 1963

Published records. BOJKOVÁ & ŠPAČEK (2006): Hrušovka below Kaňoury NM, Nedašov (6874d3).

Distribution and frequency in the Bílé Karpaty PLA: A very rare species known only from a single record. **Red List status:** –.

Comments. A Balkan-Carpathian species; it inhabits montane and submontane brooks and streams. In the Czech Republic, there are some additional records from the Moravskoslezské Beskydy [=Moravian-Silesian Beskids] and the Javorníky Mts. (KROČA 2011).

Discussion and conclusions

Altogether 37 Plecoptera species (37% of the fauna of the Czech Republic) from 12 genera and seven families have been recorded to date from the Bílé Karpaty PLA. The most remarkable records are the Carpathian, Carpathian-Balkan and Carpathian-Anatolian species *Leuctra quadrimaculata*, *Nemoura fusca*, *N. carpathica*, and *Protonemura aestiva*. These species are restricted in the Czech Republic to undisturbed

montane brooks and springs in the Carpathians at the Moravian-Slovak borderland and, except for *P. aestiva*, they are rare. They were found in the Czech Republic for the first time only recently (BOJKOVÁ & ŠPAČEK 2006); for this reason they are not included in the national Red List of threatened invertebrates (HELEŠIC *et al.* 2005), unlike the seven other species listed below. Four of these, *Isoperla sudetica*, *I. tripartita* (both classified in the Red List as “endangered”), and *Amphinemura standfussi* and *Nemoura sciurus* (both classified as “vulnerable”), are common in the Bílé Karpaty PLA. The records of *Isoperla tripartita* are remarkable from a zoogeographical point of view. This eastern Mediterranean species reaches the north-westernmost limit of its distribution in the Czech Republic (RAUŠER 1964) and the Bílé Karpaty Mts. are the only region in the Czech Republic where it is widespread and abundant. The unusually frequent occurrence of *Nemoura sciurus* may be explained by the species’ preference for waters rich in carbonate (ZWICK 2004), because the majority of streams in the area are typically mineral-rich. The remaining two red-listed species, *Perlodes dispar* and *Perla marginata* (both considered as “endangered” by HELEŠIC *et al.* 2005), and *Leuctra major* were found in the Bílé Karpaty PLA in 1958 and have not been re-collected recently at the sites of their earlier occurrence (the Radějovka, Olšava, and Klanečnice streams). These three species are sensitive to pollution and stream morphology degradation. Their disappearance may be due to these impacts, something that has also been observed in many other streams in the Czech Republic (SOLDÁN *et al.* 1998) and which is probably also the case in the Bílé Karpaty PLA.

In the Bílé Karpaty PLA, it is possible to distinguish several habitat types that host different stonefly species assemblages (taxocoenoses). The forest mountain springs and brooks, as well as calcareous treeless springs, were found to have the most species-rich Plecoptera taxocoenoses. They host some species of Nemouridae that are found almost exclusively in spring habitats (e.g. *Nemoura fusca*, *N. marginata*, and *Protonemura aestiva*), species of small brooks (e.g. *Siphonoperla neglecta*, *Protonemura auberti*, *Leuctra braueri*, *L. nigra*, and *L. pseudosignifera*), and in lower numbers some common rhithral species as well. Brooks and small streams flowing down from mountains are inhabited by rhithral species such as *Diura bicaudata*, *Isoperla sudetica*, *Brachyptera seticornis*, *Nemoura flexuosa*, *N. cambrica*, *Protonemura praecox*, and *Leuctra albida*, which are absent from slower-flowing streams at lower altitudes. The latter host some abundant species, such as *Isoperla tripartita*, *I. grammatica*, *Brachyptera risi*, *Amphinemura standfussi*, *Capnia bifrons*, *Leuctra hippopus*, and *L. digitata*. Many streams at lower altitudes exhibit highly fluctuating discharge and temperature. The Plecoptera assemblages in these habitats are especially dominated by *Nemoura cinerea*, *Isoperla tripartita*, and *Amphinemura standfussi*. Insolated streams flowing through urban or agricultural areas are inhabited only by *N. cinerea* or there are no stoneflies at all. The impacts on stoneflies of high discharge fluctuations and water warming during summer and early autumn were outlined by KRNO & HORNIK (2007) for the southern part of the Biele Karpaty Mts. in Slovakia. The watercourses of the area were inhabited predominantly by species tolerating high discharge fluctuations, such as *I. tripartita*, *I. grammatica*, *N. cinerea*, *C. bifrons*, and *L. digitata* (KRNO & HORNIK 2007).

The numbers of species recorded in the Bílé Karpaty PLA and in the Slovak part of the mountains (KRNO 1994, KRNO & HORNIÁK 2007) are almost identical. However, the species composition of the respective faunas is not the same. We did not record some of the mountain species living in cold and fast-flowing streams that are known to occur in the northern part of the Slovak Biele Karpaty Mts. (*Perlodes intricatus* (Pictet, 1841), *Protonemura nitida* (Pictet, 1835), *Nemoura uncinata* Despax, 1934, *Leuctra armata* Kempny, 1899, and *L. autumnalis* (Aubert, 1948)) and some other species common in medium-sized streams in Slovakia (*Isoperla difformis* (Klapálek, 1909), and *Amphinemura sulcicollis* (Stephens, 1835)). In contrast, five species we found in small brooks and spring areas (*Nemoura carpathica*, *N. fusca*, *N. sciurus*, *Protonemura aestiva*, and *Leuctra quadrimaculata*), one eurytopic species (*Leuctra fusca*), and two species recorded in the Moravian part of the White Carpathians only in the 1950's (*Perlodes dispar* and *Leuctra major*) have not been recorded from the Slovak part of the mountains.

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Souhrn

Pošvatky (Plecoptera) Chráněné krajinné oblasti a biosférické rezervace Bílé Karpaty.

Celkem bylo na území Chráněné krajinné oblasti a Biosférické rezervace Bílé Karpaty dosud zaznamenáno 37 druhů pošvatek ze 12 rodů a sedmi čeledí, což je zhruba třetina fauny pošvatek České republiky. Čtyři z nich jsou ohroženými druhy podle Červeného seznamu ohrožených bezobratlých České republiky (kategorie EN: *Isoperla sudetica*, *I. tripartita*, *Perlodes dispar* a *Perla marginata*) a tři jsou druhy zranitelnými (kategorie VU: *Perla abdominalis*, *Amphinemura standfussi* a *Nemoura sciurus*). Z faunistického hlediska je pozoruhodný zejména výskyt a velký počet nálezů druhů *Isoperla tripartita* a *Nemoura sciurus*. *I. tripartita* je východo-mediteránním prvkem, jehož severní hranice areálu prochází územím České republiky, a který se vyskytuje především v jihovýchodní části území. V Bílých Karpatech je široce rozšířeným a početným druhem. Středoevropský druh *N. sciurus* byl v České republice dosud znám pouze z několika nálezů. V Bílých Karpatech je též široce rozšířeným druhem, pravděpodobně díky jeho afinitě k vápenitým tokům. Z dalších druhů jsou významné nálezy čtyř karpatských, karpatsko-balkánských či karpatsko-anatolských druhů *Nemoura carpathica*, *N. fusca*, *Protonemura aestiva* a *Leuctra quadrimaculata*, které jsou v České republice vzácné. Tři druhy (*Perlodes dispar*, *Perla marginata* a *Leuctra major*) zaznamenané v Bílých Karpatech v roce 1958 nebyly během intenzivního faunistického výzkumu v oblasti v letech 2004–2011 znovu nalezeny a je pravděpodobné, že z historických lokalit zcela vymizely. Největší druhová diverzita pošvatek byla zjištěna v malých potocích a prameništích v horských oblastech Bílých Karpat. V těchto biotopech se vyskytuje většina z nalezených druhů pošvatek.

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