



An annotated checklist of the Greek Stonefly Fauna (Insecta: Plecoptera)

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Abstract

An overview of the Greek stonefly (Plecoptera) fauna is presented as an annotated index of all available published records. These records have resulted in an updated species list reflecting current taxonomy and species distributions of the Greek peninsula and islands. Currently, a total of 71 species and seven subspecies belonging to seven families and 19 genera are reported from Greece. There is high species endemism of the Leuctridae and Nemouridae, particularly on the Greek islands. The endemics known from Greece comprise thirty species representing 42% of the Greek stonefly fauna. The remaining taxa are typical Balkan and Mediterranean species.

Key words: Plecoptera, taxa list, endemic taxa, distribution, Greece

Introduction

As with many other aquatic invertebrate groups, the stonefly fauna of Greece has been poorly studied and remains largely unknown. Most studies of the Plecoptera of Greece are mostly based on sporadic and limited collections by various taxonomists. Aubert (1956, 1963, 1964), Berthélemy (1971), Joost (1970), Klapálek (1907, 1912, 1921, 1923), Kovács & Murányi (2008), Kovács *et al.* (2012), Malicky (1982), Mosely (1932), Murányi (2007, 2011a, 2011b), Navás (1924), Pardo & Zwick (1993, 2004), Ravizza (2002), Sivec (1997), Sivec & Stark (2002), Stein (1863), Theischinger (1975, 1979), Tierno de Figueroa & Fochetti (2001, 2007) and Zwick (1971, 1978a, 1978b, 1996) have reported species of stoneflies from Greece. Aubert (1956), Berthélemy (1971), Zwick (1978a, 1978b) and Tierno de Figueroa & Fochetti (2001) have contributed substantially to the knowledge of the Greek stonefly fauna.

Tierno de Figueroa & Fochetti (2001) listed 66 stonefly species from Greece. This list was added to by Pardo & Zwick (2004) recording at that time 74 species, 51 of these as occurring on mainland Greece. The total number of species however, is relatively small as compared to other Mediterranean and Balkan countries. Currently, 150 species are listed for the Italian Peninsula (not including the Italian islands) and 163 species for Italy including Sardinia, Sicily and other islands (Fochetti & Tierno de Figueroa, 2008; Fochetti & Vinçon, 2009; Vinçon & Graf, 2011). The Iberian Peninsula including both Spain and Portugal, but not the islands, is currently represented by 146 species (Sánchez-Ortega & Tierno 1996; Tierno de Figueroa *et al.*, 2003; Luzón-Ortega *et al.*, 2013; Tierno de Figueroa & Fochetti, 2014). A 100 species has been reported from the Republic of Macedonia (FYROM) (Murányi *et al.* 2014b) and 117 species representing 7 families and 24 genera have recently been recorded from Turkey (Kazancı 2012; Darilmaz *et al.*, 2016). Considering the limited knowledge of the stonefly fauna of Greece, it is anticipated that many more species remain to be discovered and recorded.

Due to sensitivity to various types of pollution and other impacts on aquatic habitats, stoneflies are one of the most threatened organisms of running waters (Graf *et al.*, 2009). Many species have been reduced to small isolated

populations and others have already become extinct. In the present study, all available data on the stonefly fauna of Greece were assembled and an annotated checklist is provided, including localities, ecological data and literature information. This work will be useful as a comprehensive reference when assessing the occurrence and conservation status of the Greek stonefly species in future studies.

Material and methods

The general distribution of each taxon was compiled from literature information as available from Plecoptera Species File (PSF) (DeWalt *et al.*, 2015). If otherwise not stated, the distribution in neighbouring countries refers to the following works: Albania: Raušer (1965b); Bulgaria: Braasch & Joost (1971a); Republic of Macedonia: Ikonov (1986); Turkey: Kazanci (2012); former Yugoslavia: Sivec (1980). References in sections 'Taxonomy' and 'Synonymy' refer only the Greek citations and 'Type material' is enumerated only if the type locality is Greece. Depositories of types of Greek stonefly species are abbreviated as follows: Collection of Claude Berthélemy, presently held in the Toulouse Museum, Toulouse (CCB), Collection of Gilles Vinçon, Grenoble (CGV), Collection of Isabel Pardo, Vigo (CIP), collection of the former Limnologische Fluss-Station des Max-Planck-Instituts für Limnologie, presently held by Prof. Peter Zwick, Schlitz (CPZ), Hungarian Natural History Museum, Budapest (HNHM), Museum Koenig, Bonn (MKB), Mátra Museum, Gyöngyös (MM), Museum National d'Histoire Naturelle, Paris (MNHN), Naturhistorisches Museum Basel, Basel (NMB), National Museum Prague, Prague (NMP), Slovenian Museum of Natural History, Ljubljana (PMSL), Oberösterreichischen Landesmuseum, Linz (OLL), Universidad de Granada, Granada (UDG), Università di Roma 'La Sapienza', Rome (URS), Zoological Museum of Lausanne, Lausanne (ZML).

Ecological associations of the Greek taxa are taken mostly from Graf *et al.* (2009).

Regions (Fig 1): Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, Euboea, Cycladic Islands, North Aegean Islands, Dodecanese, Crete, Ionian Islands.

It is important to note that in English the region of Central Greece is the area of "Sterea Ellada" which is the equivalent of Continental Greece, which includes the administrative regions of Central Greece and Attica, and the regional unit of Aetolia-Acarnania in the administrative region of West Greece. There are no any stonefly records from the Thrace Region.

Species list

TAENIOPTERYGIDAE

Brachyptera beali beali (Navás, 1924)

Taxonomy. Navás 1924: 156. (original description of female).

Berthélemy 1971: 26. (redescription of female, description of male and larva).

Synonymy: *Taeniopteryx beali* Navás, 1924: Navás 1924.

Brachyptera tristis Klapalek: Aubert 1956 (fide Berthélemy 1971).

Distribution. Balkan endemic: Bosnia & Herzegovina, Montenegro (Kačanski & Baumann 1981), Republic of Macedonia; **Greece:** Macedonia, Central Greece, Peloponnese, Euboea.

Type material. Holotype ♀: Macédoine, Mayadag (S. de Guevgueli), leg. Pharm. Beal, 05.1918 (MNHN).

Other Greek material. Aubert 1956: Peloponnese: Arcadia, Ladon, 3 Km upstream Vytina 950 m, 1♀, 24.05.1955; stream at 1150 m, on the path from Kalavrita to Khelmos Mt., 27.05.1955, 6♀; Berthélemy 1971: Central Greece: Fthiotida, Spercheios, Rachi Tymphrestou, 1200 m, 9.4.1967, 1150 m, 9.4.1967, 1♀; Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 1♂, 1♀, 4♂ ex., 4♀ ex., 1 larva; Asopos, rel. to Spercheios, route Lamia -Athens, 100 m, 10. 4.1967, 3 ex. ♂, 2 ex. ♀; Evritania, Acheloos, Rachi Tymphrestou and Karpenisi, 1000 m, 9.4.1967, 7♂ ex., 6♀ ex.; Euboea: Dirphys, Steni stream, 550 m, 1–2 km upstream of Steni, 15.4.1967, 1♀; Zwick 1978a: Macedonia: Karia, Olympus Mt., 22°26'E, 40°00'N, 750–800 m, 27.10.1972, 1♀; Central Greece: Eptalofos, Parnassus Mt., 22°29'E, 38°36'N, 720 m, 1.5.1976, 1♀; 29.5.1976, 1♀; Peloponnese:

About 60 miles west of Tripoli, 29.04.1971, 1♀; Euboea: N Amarynthos, 4–700 m, 8.5.1971, 1♂, 2♀; Stropones, 23°53'E, 38°36'N, 720–950 m, 23–24.05.1973, leg. Aspöck, Rausch, Ressler, 1♂, 2♀; Murányi 2011a: Peloponnese: Arcadia, Vytina, stream SW of the city, 3739.031' N, 2210.156' E, 960 m, 06.04.2009, 3♂, 8♀, 4 larvae; Arcadia, Magoulia, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 4♂, 7♀, 4 larvae; Arcadia, Tetrazi Mts, Agia Theodora, stream and karst springs, 3721.269' N, 2158.782' E, 490 m, 05.04.2009, 9♂, 9♀, 5 larvae; Messenia, Agioi Apostoloi, stream E of the village, 3704.158' N, 2147.275' E, 415 m, 05.04.2009, 1♀; further 18 not specified localities and data from the Peloponnese.

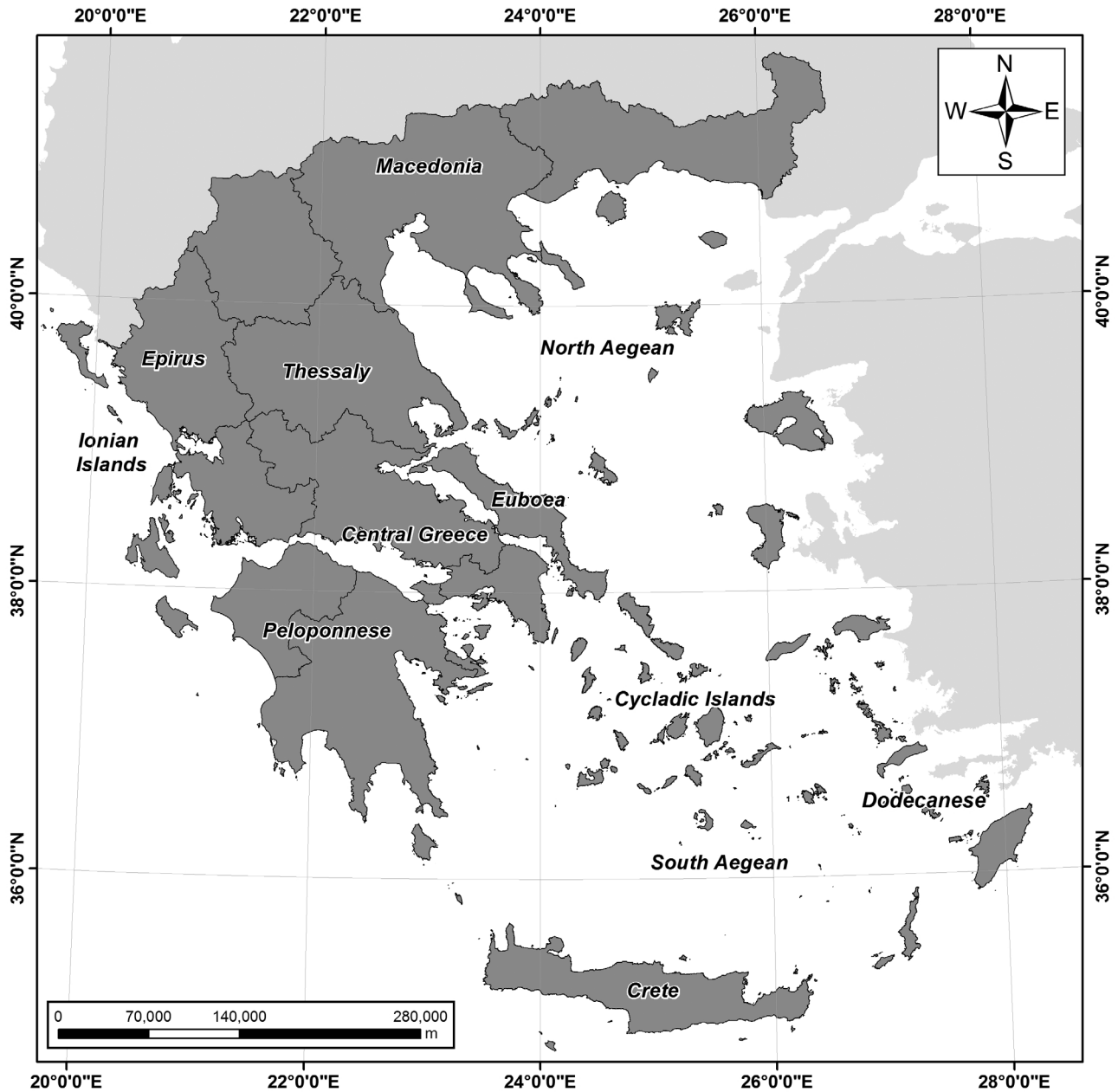


FIGURE 1. Map of Greece illustrating geographic regions.

Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, Euboea, Cycladic Islands, North Aegean Islands, Dodecanese, Crete, Ionian Islands.

In English, the region of Central Greece is the area of “Sterea Ellada” which is the equivalent of Continental Greece, which includes the administrative regions of Central Greece and Attica, and the regional unit of Aetolia-Acarnania in the administrative region of West Greece. There are no any stonefly records from the Thrace Region.

TABLE 1. Distribution of the stoneflies (Plecoptera) known from Greece.

	Epirus	Macedonia	Central Greece	Thessaly	Peloponnese	Euboea	Cycladic Islands	North Aegean islands	Dodecanese	Crete
TAENIOPTERYGIDAE										
<i>Brachyptera beali beali</i>		+	+		+	+				
<i>Brachyptera beali cretica</i>										+
<i>Brachyptera graeca</i>	+	+	+		+	+				
<i>Brachyptera helenica</i>	+	+	+	+	+					
<i>Brachyptera komischani</i>					+					
<i>Brachyptera plithiotica</i>			+			+				
<i>Brachyptera transcaucasica kykladica</i>							+			
<i>Brachyptera transcaucasica turcica</i>									+	
NEMOURIDAE										
<i>Amphinemura arcadia</i>			?		+					
<i>Amphinemura triangularis</i>		?								
<i>Amphinemura quadrangularis</i>	+		+		+					
<i>Amphinemura sperchiana</i>		+	+		+					
<i>Nemoura aetolica</i>			+		+					
<i>Nemoura apollo</i>			+		+					
<i>Nemoura caligula</i>										
<i>Nemoura cinerea cinerea</i>	+	+	+	+	+					
<i>Nemoura cinerea turcica</i>	+	+	+	+	+					
<i>Nemoura flaviscapa</i>					+					
<i>Nemoura marginata</i>		+	+			+				
<i>Nemoura taurica</i>							+			+
<i>Nemoura uncinata</i>	+	+	+			+				

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TABLE 1. (Continued)

	Epirus	Macedonia	Central Greece	Thessaly	Peloponnese	Euboea	Cyclades	North Aegean islands	Dodecanese	Crete
<i>Protonemura androsiana</i>							+			
<i>Protonemura aroania</i>			+		+					
<i>Protonemura autumnalis</i>			+		+					
<i>Protonemura beaumonti</i>	?		?		+					
<i>Protonemura bacuriana bithynica</i>								+		
<i>Protonemura cressa</i>										+
<i>Protonemura intricata intricata</i>	+	+	+							
<i>Protonemura intricata taygetiana</i>			+		+					
<i>Protonemura intricata pseudointricata</i>			+		+	+				
<i>Protonemura malickyi</i>							+			
<i>Protonemura mattheyi</i>	+	+	+	+	+	+			+	+
<i>Protonemura lagrecai</i>			+			+				
<i>Protonemura oilica</i>			+							
<i>Protonemura rauschi</i>			+							
<i>Protonemura praecox graeca</i>			+							
LEUCTRIDAE										
<i>Leuctra aegaeica</i>						+	+			
<i>Leuctra bronislawi</i>			+		+			+		+
<i>Leuctra candiae</i>										+
<i>Leuctra cretica</i>										+
<i>Leuctra fusca</i>		+	+		+			+		

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TABLE 1. (Continued)

	Epirus	Macedonia	Central Greece	Thessaly	Peloponnese	Euboea	Cyclades	North Aegean islands	Dodecanese	Crete
<i>Leuctra graeca</i>		+		+	+	+				
<i>Leuctra hippopus</i>	+	+	+	+	+	+				
<i>Leuctra hirsute</i>		+	+	+	+					
<i>Leuctra inermis</i>	?	+			+					
<i>Leuctra kykladica</i>							+			
<i>Leuctra major</i>		+	+	+	+	+				
<i>Leuctra marani</i>		+								
<i>Leuctra metsovonica</i>	+	+			+					
<i>Leuctra minoica</i>										+
<i>Leuctra moreae</i>			+		+					
<i>Leuctra olympia</i>			+		+					
<i>Leuctra rhodoica</i>		+							+	
CAPNIIDAE										
<i>Zwicknia bifrons</i>										
<i>Capnopsis schilleri balcanica</i>			+							
<i>Capnioneura balcanica macedonica</i>		+			+					
PERLODIDAE										
<i>Besdolus ventralis</i>		+								
<i>Perodes microcephalus</i>		+	+		+					+
<i>Perodes floridus floridus</i>		+	+	+						
<i>Perodes floridus peloponnesiacus</i>					+					

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TABLE 1. (Continued)

	Epirus	Macedonia	Central Greece	Thessaly	Peloponnese	Euboea	Cyclades	North Aegean islands	Dodecanese	Crete
<i>Bulgaroperla mirabilis nigrita</i>								+		
<i>Isoperla chiusi</i>								+		
<i>Isoperla grammatica</i>		+			?					
<i>Isoperla ikariae</i>							+			
<i>Isoperla lesbica</i>								+		
<i>Isoperla obliqua</i>		+	+		+	+				
<i>Isoperla tripartita tripartite</i>	+	+	+		+	+				
<i>Isoperla tripartita recta</i>								+		
PERLIDAE										
<i>Dinocras megacephala</i>	+		+		+	+				
<i>Eoperla ochracea*</i>	+	+			+					
<i>Helenoperla malickyi</i>	+									
<i>Marthamea vitripennis**</i>										
<i>Perla marginata</i>	+	+	+	+	+	+				+
<i>Perla pallida</i>	+	+	+	+		+				
CHLOROPERLIDAE										
<i>Chloroperla russevi</i>			+							
<i>Chloroperla tripunctata</i>	+		+		+					+
<i>Siphonoperla neglecta</i>										
<i>Siphonoperla graeca</i>	+									

Eoperla ochracea*: also know from Corfu (Ionian Islands)*Marthamea vitripennis*: unknown locality

Ecology. *Brachyptera b. beali* inhabits a wide range of lotic habitats from lowland rivers to montane brooks. Collection sites ranged from 10 to 1270 m, where it was abundant in most cases. The emergence period is long. Populations usually consisted of both emerged adults and still immature larvae.

Remarks. The type locality (Mayadag) refers to Turkish name of the Kožuf or Tzena Mts. on the borders of Greece and the Republic of Macedonia. As it was collected south of Gevgelija (=Guevgueli), most probably referring to present day territory of Greece. The redescription of *B. beali* by Aubert (1963) refers to *B. graeca* Berthélemy, 1971. The same applies for the data of *B. tristis* (Klapálek, 1901), and no valid records are known from Greece.

Brachyptera beali cretica Zwick, 1978

Taxonomy. Zwick 1978a: 26. (original description of male, female and larva).

Distribution. Endemic to Greece: Crete.

Type material. Holotype ♂, paratypes 9♂, 43♀, 14 larvae: Crete, Potami, 25°31'E, 35°13'N, 900 m, leg. H. Malicky, 10.04.1971 (CPZ).

Other Greek material. Zwick 1978a: Crete: Kakopetros, 23°45'E, 35°24'N, 400 m, 03.05.1971, 21♀; Agios Nikolaos at Xyloskalon, Samaria, 25°56'E, 35°18'N, 650 m, 05.05.1971, 1♀; Agios Vasilios, 24°28'E, 35°14'N, 300 m, 25.04.1971, 3 larvae; Spili, 24°33'E, 35°11'N, 420 m, 25.04.1971; and above Spili, 24°34'E, 35°12'N, 600–800 m, 26.04.1971; 6♂, 41♀; Moni Veniu, 24°35'E, 35°17'N, 380 m, 30.04.1971, 1♂, 7♀; 25.04.1975, 2♀, (Pieper); Moni Asomaton, 24°39'E, 35°14'N, 400 m, 30.04.1971, 18♀, 7 larvae; Agia Varvara, 25°00'E, 35°08'N, 600 m, 27.04.1971, Bach, 2♀, 1 larva; Topolia 23°41'E, 35°24'N, 24.03.1973 (Fischer), 2♂, 5♀; Strovles 23°40'E, 35°22'N, 450 m, 26.04.1975 (Pieper), 5♀; Palaeochora north 23°41'E, 35°14'N, (Pieper), 1♀; Malicky 1982: Crete: Mesa Potami, Lasithi.

Ecology. Malicky (1982) found it to be typical inhabitant of intermittent streams, diapausing eggs survive drought for at least five months from April to November.

Brachyptera graeca Berthélemy, 1971

Taxonomy. Aubert 1963: 224. (description of male and female as redescription of *B. beali*).

Berthélemy 1971: 36. (original description of male and female).

Zwick 2014: 19. (clarification of type status).

Synonymy: *Brachyptera seticornis* Klapálek: Aubert 1956 (fide Berthélemy 1971).

Brachyptera beali Navas: Aubert 1963, 1964 (fide Berthélemy 1971).

Distribution. Balkan endemic: Bosnia & Herzegovina, Montenegro (Kačanski & Baumann 1981), Republic of Macedonia; Greece: Epirus, Macedonia, Central Greece, Peloponnese, Euboea.

Type material. Holotype ♂: Oiti Mt, 1500 m, leg. Fr. Borchmann, 18–25.05.1956 (MKB).

Other Greek material. Aubert 1956: Peloponnese: stream at 1200m Anogia way to Taygetos, 20.05.1955, 2♀; Epirus: 2 streams on road to Metsovon, between 1600–1700 m, 09.06.1955, 3♀; Aubert 1963: Central Greece: Oiti Mt., 1500 m, 18–25.6.1956, 2♀, Prioni, Olympus, 1000 m, 03–13.06.1956; Peloponnese: Voïdia, 1500–1927 m, 2♀, 23.05.1929, leg. M. Beier (repeated in Aubert 1964); Taygetos, 20.5.1955, 2♀, leg. J. Aubert; Epirus: Col de Metsovon, 09.06.1955, 3♀, leg. J. Aubert; Berthélemy 1971: Central Greece: Fthiotida, Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.04.1967, 1♀; Evrytania, Acheloos, Rachi Tymphrestou and Karpenisi, 1000 m, 09.04.1967, 3♂ ex., 2♀ ex. Euboea: Dirphys, Steni stream, 550 m, 1–2 km upstream of Steni, 15.04.1967, 2♂, 1♀; Zwick 1978a: Peloponnese: Taygetos, below the summit, 22°23'E, 36°56'N, 1000 m, 13.05.1976, large creek and "Rieselquelle", 1♂, 2♀, 1 larva; Murányi 2011a: Peloponnese: three not specified localities and data from the Taygetos and two from Parnon Mts.

Ecology. *Brachyptera graeca* inhabits montane streams and brooks and has been collected from hilly to high mountain localities. It was not abundant and only mature larvae were found together with both teneral and fully colored adults suggesting a narrow emergence period.

Remarks. The data of *B. seticornis* (Klapálek, 1902) was corrected to *B. beali* by Aubert (1963). These

records, however, refer to *B. graeca* (fide Berthélemy 1971) and for *B. seticornis* no records are known from Greece.

***Brachyptera helenica* Aubert, 1956**

Taxonomy. Aubert 1956: 191. (original description of male and female).

Berthélemy 1971: 35. (complementary description of male and female, description of larva).

Synonymy. *Brachyptera helenica* Aubert, 1956: Berthélemy 1971 (misspelling).

Distribution. Balkan endemic: Bosnia & Herzegovina, Bulgaria, Kosovo, Montenegro, Republic of Macedonia; **Greece:** Epirus, Macedonia, Central Greece, Thessaly, Peloponnese.

Type material. Epirus: Holotype ♂, allotype ♀, paratypes 2♂, 31♀: captured in three streams and rivulets of epiroten side of neck Metsovo between 1600 and 1700m, 7–9.6.1955 (ZML).

Other Greek material. Aubert 1963: Central Greece: Oiti Mt., 1500 m, 18–25.6.1956, 2♀; Peloponnese: Stymphalia Lake, 16–19.5, 1♂; Berthélemy 1971: Fthiotida, Spercheios, Rachi Tymphrestou, 1200 m, 9.4.1967, 6 larvae; 1150 m, 9.4.1967, 2♂, 4♀, 2 larvae; Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 1♂, 1 ex.♂; Evrytania, Acheloos, Rachi Tymphrestou and Karpenisi, 1000 m, 9.4.1967, 1♀ ex., 4 larvae; Zwick 1978a: Macedonia: Katara-Pass, 21°13'E, 39°47'N, 1700 m, 4♂; Larissa, Ossa Mt., 22°40'E, 39°50'N, 900 m, 17.05.1973, leg. Aspöck, Rausch, Ressler, 1♂.

Ecology. Found in moderately high altitudes during spring and early summer.

Remarks. Braasch & Joost (1971b) also reported the female but with uncertainty.

***Brachyptera kotschani* Murányi, 2011**

Taxonomy. Murányi 2011a: 62. (original description of male and female).

Distribution. Endemic to **Greece:** Peloponnese.

Type material. Holotype ♂, paratype 1♀: Peloponnese: Arcadia, Vytina, stream SW of the city, 3739.031°N 2210.156° E, 960 m, 06.04.2009 (HNHM); paratypes 1♀: Arcadia, Magoulia, stream SE of the village, 3739.425° N, 2208.730° E, 1035 m, 06.04.2009 (HNHM); paratype 1♀: Arcadia, Elliniko, Gortis ruins, Lousios River, 3732.378°N, 2202.788°E, 320 m, 06.04.2009 (HNHM); paratypes 6♀: Arcadia, Tetrazi Mts, Agia Theodora, stream and karst springs, 3721.269° N, 2158.782° E, 490 m, 05.04.2009 (HNHM, CGV, CPZ).

Other Greek material. Murányi 2011a: Peloponnese: Messenia, Agioi Apostoloi, stream E of the village, 3704.158° N, 2147.275° E, 415 m, 05.04.2009, 1♀.

Ecology. Collected from streams ranging in width from 1.5–3.0 m and from a small river (10 m width) in the central and southwest Peloponnese. The localities are between 320 and 1035 m, and the specimens were caught in early April. All streams were swift flowing and moderately cold with coarse substrates mixed with sand. The bulk of the population probably emerges earlier than our collection records indicate since a preponderance of darkly pigmented female specimens were collected and no larvae attributable to this species were found in the stream.

***Brachyptera phthiotica* Berthélemy, 1971**

Taxonomy. Berthélemy 1971: 38. (original description of male and female).

Distribution. Balkan endemic: Albania (Murányi 2007); **Greece:** Central Greece, Peloponnese, Euboea.

Type material. Holotype ♂, paratypes 9♀: Central Greece: Spercheios, Rachi Tymphrestou, 1150 m, 09.04.1967 (CCB).

Other Greek material. Berthélemy 1971: Spercheios, Rachi Tymphrestou, 1200 m, 09.04.1967, 3 larvae; Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.04.1967, 4♂ ex., 1♀ ex., 1 larva; Evrytania, Acheloos, Rachi Tymphrestou and Karpenisi, 1000 m, 09.04.1967, 21♂ ex., 28♀ ex., 3 larvae; Zwick 1978a: Central Greece: Fthiotida, Polydroson, 1170 m, 17♀; Parnassos, Quelle 2232'E, 3835'N, 1300 m, 29.05.1976; Euboea: Stropones, 23°53'E, 38°36'N, 720–950 m, 23–24.05.1974, 3♀; Murányi 2011a: Peloponnese: Arcadia,

Tetrazi Mts, Agia Theodora, stream and karst springs, 3721.269' N, 2158.782' E, 490 m, 05.04.2009, 1♂; further two not specified localities and records from the Taygetos and Aroania Mts.

Ecology. Inhabitant of karst springs and coldwater streams at altitudes between 490 to 1600 m. It occurs usually in low numbers, never abundant.

Remarks. Berthélemy (1971) reported the larvae with uncertainty and only reported specimens collected with the holotype as paratypes.

***Brachyptera transcaucasica kykladica* Zwick, 1978**

Taxonomy. Zwick 1978a: 28. (original description of male, female and larva).

Distribution. Endemic to **Greece:** Naxos.

Type material. Holotype ♂, paratypes 27♂, 71♀; 1♂, 5♀ larvae or exuviae: Naxos, Koronis, 25°32'E, 37°08'N, 390–630 m, 21.5.1976 (CPZ).

Ecology. Hitherto known only from the type locality, where it may have a relatively long emergence period.

***Brachyptera transcaucasica turcica* Zwick, 1975**

Distribution. Anatolian endemic: Turkey; **Greece:** Dodecanese (Rhodos).

Greek material: Zwick 1978a: Rhodos, 4km SW Laerma, 4–5.5.1975, 1♀.

NEMOURIDAE

***Amphinemura arcadia* (Aubert, 1956)**

Taxonomy. Aubert 1956: 200. (original description of male and female).

Berthélemy 1971: 42. (comparison with *A. sperchiana*).

Zwick 1978a: 29. (complementary description).

Synonymy: *Nemoura* (*Amphinemura*) *arcadia* Aubert, 1956: Aubert 1956.

Distribution. Endemic to **Greece:** Central Greece (Parnassos, Oiti), Peloponnese.

Type material. Holotype ♂, allotype ♀: Ladon, 3 Km upstream Vytina, 950m, 24.6.1955 (ZML).

Other Greek material. Aubert 1963: Central Greece: Fthiotida, Gorgopotamos, Mount Oiti, 800 m, 26–29.5.1956, 1♀. Joost 1970: Peloponnese: Mega Spileon, 22°10'E, 38°05'N, 1500m, 26.5.1969, 1♂; Pendency, 22°05'E, 38°35'N, 900m, 4.6.1969, 1♂; Killini, 22°24'E, 37°58'N, 1500m, 28.5.1969, 2♀;

Remarks. Berthélemy (1971) noted that *A. arcadia* could be subspecies of *A. triangularis* (Ris). Zwick (1978a) noted that *A. sperchiana* Berthélemy could be a geographic race of *A. triangularis*, as reported by Berthélemy (1971). Consequently, records of *A. arcadia* from Central Greece probably refer to *A. sperchiana*. Records from Republic of Macedonia were corrected to *A. triangularis* (Ikononov 1986).

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

Taxonomy. Aubert 1956: 199. (complementary description).

Berthélemy 1971: 42. (comparison with *A. sperchiana*).

Zwick 1978a: 29. (complementary description).

Synonymy: *Nemoura* (*Amphinemura*) *triangularis* Ris: Aubert 1956

Distribution. European species, known from all the Balkan countries; **Greece:** Macedonia.

Greek material: Aubert 1956: Macedonia: Olympus, Mavrolongos, Agios Dionisos, 850m, 15.6.1956, 2♂; Prionia, 1100m, 15.6.1955, 1♂, 2♀, 19 larvae.

Remarks. According to Berthélemy (1971) and Zwick (1978a), the Greek records may refer to *A. sperchiana* and *A. triangularis* probably does not occur in Greece.

Amphinemura quadrangularis Zwick, 1978

Taxonomy. Zwick 1978a: 30. (original description of male and female).

Distribution. Balkan endemic: Albania (Murányi 2011b), Kosovo, Republic of Macedonia, Montenegro; Greece: Epirus, Central Greece, Peloponnese.

Type material. Holotype ♂, paratypes 49♂, 72♀: Central Greece, Fokida, Pendayi, southern Pindus Mountains, 22°04'E, 38°35'N, 950 m, 06.03.1975, large karst spring (CPZ); paratypes 6♂, 8♀: Epirus, Grevention, 2 km N, 21°01'E, 39°50'N, 970 m, 06.05.1975, side stream with cascades (CPZ); paratypes 9♂, 92♀: Central Greece, Parnassos, Polydrosos, 1170 m (CPZ).

Other Greek material. Tierno de Figueroa & Fochetti 2001: Peloponnese, stream near Kaloskopi, 21.5.1985, 1♂, 1♀ (the ♀ attributed with doubt), P. Nicolai leg.

Amphinemura sperchiana Berthélemy, 1971

Taxonomy. Berthélemy 1971: 42. (original description of male).

Zwick 1978a: 28. (complementary description of male, first mention of female).

Distribution. Endemic to Greece: Central Greece, Macedonia (Olympus).

Type material. Holotype ♂: Central Greece, Fthiotida, Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967 (CCB).

Other Greek material. Zwick 1978a: Macedonia, Pieria, Agios Dionysios on Mount Olympus, 22°25'E, 40°06'N, 900 m, 13.9.1972, 5♂, 6♀.

Protonemura androsiana Pardo & Zwick, 2004

Taxonomy. Pardo & Zwick 2004: 133. (original description of male and female).

Distribution. Endemic to Greece: Cyclades.

Type material. Holotype ♂, paratypes 6♂, 6♀, 3 larvae: Cyclades: Andros: Remmata, large stream, 170m, 24°50'E, 37°52'N, 17–19.4.1984 (CPZ).

Other Greek material. Pardo & Zwick 2004: Remmata, main stream, 220m, 37°52'E, 24°50'N, 1♂, 21.10.1980; Streamlet uphill from Sarisa, 460m 24°54'E, 37°51'N, 5♂, 1♀, 20.4.1984; Main stream downstream from Vurkoti, 150 m, 37°52'E, 24°55'N, 1♂, 1♀, 23.10.1980; Stream S of Varidion, 170 m, 24°46'E, 37°57'N, 1♂, 2♀, 10.3.1982; Streamlet uphill from Sarisa, 460m, 24°54'E, 37°51'N, 1♂, 1 larva, 12.3.1982; Main stream downstream from Sarisa, 310m, 24°54'E, 37°51'N, 1♂, 12.3.1982; Stream below Apikia, 300m, 24°54'E, 37°51'N, 2♂, 1♀, 20.4.1984; Spring and spring trickle W Agios Nikolaos, 280m, 37°52'E, 24°55'N, 3 larvae, 24.10.1984; Naxos: Spring run above Koronis, 660m, 37°08'E, 25°32'N, 1♀. All specimens collected by H. Malicky.

Protonemura aroania Tierno de Figueroa & Fochetti, 2001

Taxonomy. Tierno de Figueroa & Fochetti 2001: 210. (original description of male and female).

Distribution. Endemic to Greece: Peloponnese.

Type material. Holotype ♂, paratypes 8♂, 11♀: Peloponnese: River Ladon, Planiteron, 650–1000 m, 37°56'00"N, 22°09'59"E, 27.5.1985, PN leg. (URS, UDG, CPZ); paratypes 1♂, 1♀: same locality, 2.4.2000, RF & JMTF leg. (URS).

Other Greek material. Murányi 2011a: Peloponnese: Arcadia, Elliniko, Gortis ruins, Lousios River, 3732.378'N, 2202.788'E, 320 m, 06.04.2009, 1♂.

Ecology. This species seems associated with large karst sources.

***Protonemura autumnalis* Raušer, 1956**

Distribution. Central European and Balkanian species, in the Balkans it is known from Bosnia & Herzegovina, Bulgaria, Croatia (Popijač & Sivec 2009a), Montenegro (Kačanski & Baumann 1981), Republic of Macedonia; **Greece:** Peloponnese.

Greek material: Zwick 1978a: Peloponnese: Evrostini, stream with dense shrubbery shore, 22°23'E, 38°03'N, 1200 m, 20.10.1972.

***Protonemura beaumonti* (Aubert, 1956)**

Taxonomy. Aubert 1956: 193. (original description of male, female and larva).

Theischinger 1975: 123. (complementary description of male and female).

Synonymy: *Nemoura* (*Protonemura*) *beaumonti* Aubert, 1956: Aubert 1956.

Distribution. Balkan endemic: Bulgaria, Serbia; **Greece:** Epirus, Central Greece, Peloponnese.

Type material. Holotype ♂, allotype ♀, paratypes 8♂, 16♀: Peloponnese: Arcadia, Magouliana, Ladon River, 23.5.1955 (ZML).

Other Greek material. Aubert 1956: Epirus: stream in 1600m, road to Metsovon, 9.6.1955, 6 larvae (?); Central Greece: Region of Parnassos: Main River, north side of road to Gravia, 650m, 5.6.1955, 2 larvae (?); Peloponnese: Kakary, Anogia, 300m, 22.5.1955, 1♂, 5♀, 1 larva; part of a channel 600m, streams at 1200m and 1500m, Anogia route to Taygetos 20–21.5.1955, 7♀, 4 larvae (?); Arcadia, Landona, Magouliana, 1100m, 23.5.1955, 9♂, 17♀, 18 larvae, Ladon and tributaries; Vytina, 950m, 24.5.1955, 6♂, 8♀, 18 larvae; Creek behind the hotel Kalavrita, 700m, 26.5.1955, 1 larva; Achaia, stream at 1500m on way to Kalavrita Khelmos, 27.5.1955, 5♂, 6♀; Aubert 1963: Peloponnese: Laconia, Marathea, 100 m, near Gythion, 21–22.5.1955, 1♀; Joost 1970: Central Greece: Evrytania, Kalliakouda, 21°50'E, 38°50'N, 1000m, 7.6.1969, 1♂; Theischinger 1975: Peloponnese: Arcadia, Foloi Mt, 21°44'E, 37°45'N, 700m, 25.5.1974, 4♂, 14♀; Parnon Mt, 22°31'E, 37°17'N, 1050m, 23.5.1974, 1♀; Zwick 1978a: Peloponnese: Tripolis, 22°21'E, 37°31'N, 200–500m, 28.4.1971, 3♂, 5♀; Nemea, 26°45'E, 37°46'N, 300–800m, 27.4.1971, 1♂, 3♀; Taygetos Mt., stream at 22°23'E, 36°56'N, 1000m, 13.5.1976, 3♂, 5♀, spring 1♂, 1♀; Murányi 2011a: Peloponnese: Arcadia, Vytina, stream SW of the city, 3739.031' N 2210.156' E, 960 m, 06.04.2009, 3♂; Arcadia, Magouliana, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 2♂; Arcadia, Tetrazi Mts, Agia Theodora, stream and karst springs, 3721.269' N, 2158.782' E, 490 m, 05.04.2009, 5♂, 4♀; Messenia, Agioi Apostoloi, stream E of the village, 3704.158' N, 2147.275' E, 415 m, 05.04.2009, 7♂, 3♀, 5 larvae.

Remarks. Aubert (1956) enumerated the larvae from localities out of Peloponnese with doubts. Zwick (1978a) also questioned records from Peloponnese. These probably refer to the vicariant *P. rauschi* Theischinger and *P. beaumonti* is most probably a Peloponnesian endemic.

***Protonemura bacuriana bithynica* Aubert, 1964**

Synonymy: *Protonemura bithynica* Aubert: Zwick 1978a.

Distribution. West Anatolian subspecies: Turkey; **Greece:** Dodecanese (Rhodos).

Greek material: Zwick 1978a: Dodecanese: Lesbos: Megalochori-1 km SW, 26°21'E, 39°01'N, 280m, 24.5.1975, 8♂, 6♀; Neochorion, 26°19'E, 39°01'N, 250 m, 25.05.1975, 1♂; Ambeliko, 26°18', 39°04'N, 340 m, 25.5.1975, 13♂, 24♀; Plomari 7 km E, 26°26'E, 38°59'N, 110m, 31.5.1975, 2♂, 4♀.

***Protonemura cressa* Zwick, 1978**

Taxonomy. Zwick 1978a: 31, 34. (original description of female and larva).

Zwick 1996: 128. (description of male and complementary description of larva).

Synonymy: *Protonemura spec*: Zwick 1978a (verified as the larva of *P. cressa* by Zwick (1996)).

Distribution. Endemic to **Greece**: Crete.

Type material. Holotype ♀: Crete: Moni Veniu, 24°35'E, 35°17'N, 380 m (CPZ). **Other Greek material.** Zwick 1996: Crete: Road to Kefali, 23°36'E, 35°22'N; road to Perivolia, 23°37'E, 35°22'N; between Kakopetros and Kotsifiana, 23°36'E, 35°22'N; S Nea Rumata, 23°51'E, 35°22'N; Fassas-Valley, 23°53'E, 35°24'N; SE Meskla 23°57'E, 35°23'N; Moni Veniu 24°35'E, 35°17'N; E Ag. Ioannis, 23°53'E, 35°03'N.

Ecology. Adults were collected from mid-December to late February, considered to be a winter emerging species (Zwick, 1996).

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

Taxonomy. Theischinger 1975: 121. (complementary description of male and female).

Zwick 1978a: 37. (complementary description of the male).

Distribution. European species, in the Balkans it is known from all countries; **Greece**: Epirus, Macedonia, Central Greece.

Greek material: Aubert 1956: Epirus: various streams between 1600 and 1700 m, neck of Metsovo, 7–9.6.1955, 3♂; Macedonia: Olympus, Mavrolongos, Prionia, 1100m, 15.6.1955, 2♂, 3♀, 29 larvae; Mavroneri and tributaries, on way from Katerini to Ellassona, km 29, 600m, 1♂, 1♀; km 40, 900m, 1 larva; Aubert 1963: Olympus, Prioni, 1000m, 3–13.5.1956, 1♀; Aubert 1964: Parnassos, 1♂, 4.5.1955, coll. Kruper; Joost 1970: Peloponnese: Pendayi, 22°05'E, 38°35'N, 900m, 4.6.1969, 2♀; Zwick 1978a: Macedonia, Pindos, Katara-Pass, 1♂; Theischinger 1979: Voutouasi, NE Ioannina, 16.5.1978, 1♂; Korydalos, 12 km E of Metsovo, 16.5.1978, 1♀; Central Greece: Diakopion, 25km NW Amphissa, 14.5.1978, 1♂; Kovács et al. 2012: Central Greece: Phthiotis regional unit, Agios Georgios, Sperchios River W of the village, N38°57'00.5", E21°56'42.7", 365 m, 08.05.2011.

***Protonemura intricata taygetiana* (Aubert, 1956)**

Taxonomy. Aubert 1956: 198. (original description of male).

Theischinger 1975: 121. (complementary description of male).

Zwick 1978a: 38. (stat. nov. as subspecies, complementary description of male).

Synonymy: *Nemoura (Protonemura) taygetiana* Aubert, 1956: Aubert 1956.

Protonemura taygetiana (Aubert, 1956): Theischinger 1975.

Distribution. Endemic to **Greece**: Peloponnese.

Type material. Holotype ♂: Peloponnese: stream at 1200m, on Anogia way to Taygetos, 29.5.1955 (ZML).

Other Greek material. Zwick 1978a: Peloponnese: Taygetos Mt., 3♂, 7♀.

***Protonemura intricata pseudointricata* Theischinger, 1975**

Taxonomy. Theischinger 1975: 120. (original description of male and female).

Zwick 1978a: 38. (stat. nov. as subspecies, complementary description of male).

Synonymy: *Protonemura pseudointricata* Theischinger, 1975: Theischinger 1975.

Distribution. Balkan-Anatolian subspecies: Turkey; **Greece**: Central Greece, Peloponnese, Euboea.

Type material. Holotypus ♂, paratypes 3♂, 5♀: Fokida, S Pentagioi, 22°05'E, 38°35'N, 900m, 3.6.1974, leg. H. Rausch (OLL, CPZ).

Other Greek material. Zwick 1978a: Central Greece: Pendayi, 900m, 2.6.1973, 1♂, 2♀ (Aspöck, Rausch, Ressler); Pendayi, 1000m, 03.6.1975, 21♂, 29♀; Arachova, spring, 2♂, 1♀; Polydroson: 1060 m, 2♀; 1170m, spring creek, 24♂, 51♀; Peloponnese: W Karterion, 22°23'E, 37°51'N, 730m, 19.5.1974, 1♂, 3♀ larvae, 1♀; Alepochorion, 22°25'E, 37°21'N, 800m, 05.05.1976, 1♀; Euboea: Agios Dimitrios, 24°29'E, 38°06'N, 400m, 2♂, Stropones, 23°53'E, 38°36'N, 720m, 8♂, 4♀; Megadendron, 23°52'E, 38°35'N, 870 m, 24.5.1974, 1♀.

Protonemura malickyi Zwick, 1978

Taxonomy. Zwick 1978a: 32. (original description of male and female).

Distribution. Endemic to Greece: Cyclades.

Type material. Holotypus ♂, paratypes 1♂, 10♀: Cyclades: Naxos, Koronis, creek S and N, 25°32'E, 37°08'N, 390–630 m, 21.5.1976 (CPZ).

Ecology. Known only from the type locality.

Protonemura mattheyi (Aubert, 1956)

Taxonomy. Aubert 1956: 195. (original description of male, female and larva).

Berthélemy 1971: 42. (complementary description of male).

Zwick 1978: 36. (complementary description of male).

Synonymy: *Nemoura* (*Protonemura*) *mattheyi* Aubert, 1956: Aubert 1956.

Distribution. Balkan endemic: Bulgaria, Greece, Republic of Macedonia; Greece: Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, Euboea, Dodecanese, Crete.

Type material. Holotype ♂, allotype ♀, paratypes 66♂, 50♀: Peloponnese: stream on way to Kalavrita, in Khelmos, 1150m, 27.5.1955 (ZML).

Other Greek material. Aubert 1956: Peloponnese: stream at 1100m from Anogia route to Taygetos, 1♂, 4♀, 22 larvae; small streams tributaries of Ladon River, 2 Km upstream Vytina, 1000m, 24.5.1955, 1♂, 15 larvae; stream on way to Kalavrita, in Khelmos, 1150m, 27.5.1955, 67♂, 50♀, 25 larvae; Central Greece: Parnassos, main stream, north side of the road to Gravia, 650m, 5.6.1955, 1♀, 1 larva (?); Thessaly: streams at 1150m and 1350m on way to Metsovon, 6.6.1955, 3♂, 8♀; Epirus: streams at 1600–1700m, on way to Metsovon, 7–9.6.1955, 7♂, 2♀, 1 larva; Macedonia: Mount Neretschka, on way from Argos to Veve, 39 Km, 900m, 11.6.1955, 1♂, 2♀; Olympus, stream at 550m, on way from Katerini to Elasson, 16.6.1955, 2♂, 6♀, 1 larva; Aubert 1963: Euboea: Steni, 800m, 4–11.5.1955, 1♀; Peloponnese: Road to Kalamata, Taygetos, 1300 m, 26–27.6.1955, 1♀; Joost 1970: Peloponnese: Mega Spileon, 22°10'E, 38°05'N, 1500m, 26.5.1969, 1♂; Pendayi, 22°05'E, 38°35'N, 900m, 4.6.1969, 2♀♀; Berthélemy 1971: 22 km on way Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 3♂, 1♂ ex., 5 larvae; Euboea: Small stream 2–6m width at the entrance of Chania, route Chalcis-Kymi, 14.4.1967, 2♂ larvae; Dirphys, Tributary of Steni stream, 550 m, 15.4.1967, 7♂ larvae; Zwick 1971: Dodecanese: Karpathos, stream in Pinus forest 1km NE to Mt. Cimara, 250m, 27.3.1970, leg. Pieper, 12♂, 8♀, 15 larvae; Theischinger 1975: Arcadia, Foloji Mt, 21°44'E, 37°45'N, 700m, 3♂, 7♀, 25.5.1974; Central Greece: Fokida, S Pentagioi, 22°05'E, 38°35'N, 900m, 3.6.1974, 1♂; Zwick 1978a: Tristenon, 6♂, 3♀; Agrinion, 1♀; Limni Kremaston, 1♂, 3♀; Pendayi, 52♂, 66♀; Arachova, springs, 16♂, 14♀; Polydrosion, 1170 m, 6♂, 20♀; 1250 meters, 5♂, 4♀; Karia, 30.4.–1.5.1976, 1♂, 2♀; Taygetos, 3♂, 6♀; Taygetos, Panagia Giatriza above Kastania, 1040 m, 8.5.1974, 9♂, 1♀ (Hauser; Mus. Genf); Euboea: 1 km NW Dafni, 23°21'E, 38°49'N, 170m, 1.5.1975, 1♀; Vutas, several larvae, including 1 mature ♂; Stropones, 1♂; Megadendro, 1♂, 3♀; Paradision, 2♂, 3♀; Crete: Kamaraki, 24°56'E, 35°18'N, 540m, 4♀; Strovles, 2♂, 5♀; water basin above the Ida plateau, 24°53'E, 35°13'N, 1420m, 27.4.1975, 2♂, 2♀ (all Pieper leg.); Lassithi 25°29'E, 35°12'N, 870m, 11.4.1971, 5♂, 2♀; Gonia, 23°46'E, 35°40'N, 250–350m, 18.4.1971, 2♀; S Kandanos, 23°43'E, 35°20'N, 350m, 21.4.1971, 1♀ (all Wittmer; Mus. Basel); Sitanos, 26°10'E, 35°08'N, 620m, 18.4.1971, 11♂, 3♀, 41 larvae; Potami, 1, 30 larvae; Magula, 25°28'E, 35°09'N, 800m, 12.5.1971, 3♂, 5♀; Psichro 25°27'E, 35°10'N, 800m, 11.5.1971, 18♂, 17♀, 74 larvae; Kaminaki, 25°27'E, 35°09'N, 900m, 12.5.1971, 6♂, 19♀, 5 larvae; Parthenion, 25°10'E, 35°09'N, 450m, 28.4.1971, 3♂, 6♀, 4 larvae; Pigaidakia, 24°50'E, 34°57'N, 400m, 29.4.1971, 1♂, 3♀; Nithavris, 24°44'E, 35°10'N, 500m, 30.4.1971, 1♂, 4♀, 5 larvae; Moni Asomaton, 1♂, 3♀, many larvae; Moni Veniu, 1♂; Pantanasa, 24°35'E, 35°15'N, 360m, 21.4.1971, 1♀, 2 larvae; Spili, 420–800m, 4♂, 4♀, 20 larvae; Xyloskalon 23°53'E, 35°18'N, 870m, 5.5.1971, 5♂, 16♀, 3 larvae; Linoseli, 23°53'E, 35°18'N, 1450m, 6.5.1971, 9♂, 4♀, many larvae; Kakopetros, 379♂, 196♀; Agia Varvara 25°00'E, 35°08'N, 600 m, 27.4.1971, 4♂, 3♀, 5 larvae (all Maličský & Reisser); Theischinger 1979: Erimanthos, 1000m, 18.5.1974, 2♂, 3♀; Malicky 1982: Crete: Lasithi-Ebene, Magoula; Murányi 2011a: Peloponnese: Arcadia, Vytina, stream SW of the city, 3739.031' N, 2210.156' E, 960 m, 06.04.2009, 1♂; Arcadia, Magouliana, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 1♂, 2♀.

Ecology. Malicky (1982) found it to be a typical inhabitant of intermittent streams; diapausing eggs survive drought for at least five months from April to November.

***Protonemura lagrecai* (Aubert, 1954)**

Distribution. Mediterranean species known only from Italy; **Greece:** Central Greece, Euboea.

Greek material: Pardo & Zwick 2004: Central Greece: Pelion Mt, Chania, 1350m, 23°04'E, 39°23'N, 21.9–13.10.1980, 4♂; Euboea: Stropones, 700 m, 23°55'E, 38°36'N, 10–12.10.1980, 1♂, All leg., H. Malicky.

***Protonemura oitica* Aubert, 1963**

Taxonomy. Aubert 1963: 226. (original description of male).

Distribution. Endemic to **Greece:** Central Greece.

Type material. Holotype ♂: Central Greece: Mount Oiti, 1500 m, 13–25.5.1956 (MKB).

Other Greek material. Theischinger 1979: Central Greece, Diakopion, 25 km NW Amphissa, 14.5.1978, 3♂, 7♀.

***Protonemura rauschi* Theischinger, 1975**

Taxonomy. Theischinger 1975: 122. (original description of male and female).

Distribution. Balkan endemic: Republic of Macedonia, Serbia; **Greece:** Central Greece.

Type material. Holotypus ♂, paratypes 2♂, 7♀: Central Greece: Fokida, S Pentagioi, 22°05'E, 38°35'N, 900m, 3.6.1974, leg. H. Rausch (OLL, CPZ).

Other Greek material. Zwick 1978a: Pendayi, 22°04'E, 38°35'N, 1♂, 2♀ (Aspöck, Rausch, Ressler); Pendayi, 1000m, 03.06.1975, 22♂ 10♀; Polydroson, 1250m, 4♂; Eptalofos, Parnassos, 720m, 10♂, 12♀; Agrinion, 1♂.

***Protonemura praecox graeca* Berthélemy, 1971**

Taxonomy. Berthélemy 1971: 41. (original description of male and female).

Distribution. Endemic to **Greece:** Central Greece.

Type material. Holotype ♂, paratypes 1♂, 10♀: Central Greece: Fthiotida, Rachi Tymphrestou, 1150 m, 9.4.1967.

Other Greek material. Zwick 1978a: Polydroson, 22°34'E, 38°36'N, 1170 m, 3♀, 30–31.5.1976.

Remarks. Zwick (1978a) published his records under the name *P. praecox* (Morton), noting that it should belong to the subspecies *P. p. graeca*.

***Nemoura aetolica* Zwick, 1978**

Taxonomy. Zwick 1978a: 214. (original description of male).

Distribution. Endemic to **Greece:** Central Greece, Peloponnese.

Type material. Holotype ♂: Central Greece: Agrinion, Aetolia, 21°24'E, 38°38'N, 400 m, 05.04.1971, leg. Wittmer (NMB).

Other Greek material. Murányi 2011a: Peloponnese: Arcadia, Magoulia, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 1♂, 1♀.

Nemoura apollo Zwick, 1978

Taxonomy. Zwick 1978a: 217. (original description of male and female).

Distribution. Endemic to **Greece**: Central Greece (Parnassos), Peloponnese.

Type material. Holotype ♂, paratypes 1♂, 1♀: Central Greece: Parnassos, Polydroson, 22°34'E, 38°36'N, 1060 m (CPZ); paratypes 8♂, 13♀: Arachova, 22°32'E, 38°33'N, brook (1200 m) and spring (1300 m), 29.5.1976 (CPZ).

Other Greek material. Tierno de Figueroa & Fochetti 2001: Peloponnese: River Ladon, Planiteron, 650–1000 m, 37°56'00"N, 22°09'59"E, 2.4.2000, 1♂, RF & JMTF leg.

Nemoura caligula Zwick, 1978

Taxonomy. Zwick 1978a: 215. (original description of male).

Distribution. Balkan endemic: Albania (Murányi 2011b); **Greece**: Macedonia (Pindos).

Type material. Holotype ♂: Macedonia: Katara-Pass, 21°13'E, 39°47'N, 1700 m, 05.06.1975 (CPZ).

Nemoura cinerea cinerea (Retzius, 1783)

Taxonomy. Zwick 1978b: 214. (complementary description of male).

Distribution. Eurosiberian, covering most of the Palaearctic and known from all the Balkan countries; **Greece**: Epirus, Central Greece (Oiti), Thessaly, Peloponnese.

Greek material: Aubert 1956: Epirus: streams at 1650m, grazing creek at 1350m, road to Metsovon, 7–9.6.1955, 17♂, 18♀, 5 larvae; Thessaly: streams and wetlands at 1050 and 1150m on road to Metsovon, 6.6.1955, 2♂; Aubert 1963: Central Greece: Mount Oiti, 1500 m, 18–25.5.1956, 1♀; Peloponnese: Stymphalia lake, 18–19.5.1956, 2♀; Joost 1970: Peloponnese: Killini, 22°24'E, 37°58'N, 1500m, 28.5.1969, 1♂, 4♀; Theischinger 1975: Macedonia: Agkistrion, 23°23'E, 41°22'N, 420m, 7.5.1974, 1♀.

Remarks. According to Zwick (1978b), all the Greek records may refer to the subspecies *N. cinerea turcica* Zwick.

Nemoura cinerea turcica Zwick, 1972

Taxonomy. Zwick 1978b: 213. (complementary description of male).

Distribution. Balkan-Anatolian subspecies: Turkey; **Greece**: Epirus, Macedonia, Central Greece, Peloponnese, North Aegean Islands.

Greek material: Zwick 1978b: Epirus, Emin Aga bridge, after Arta, 360 m, 3.5.1973, 1♂ (Hauser, Mus. Genf); Macedonia: Katara-Pass, 750–1700 m, 2♂, 2♀; Tristenon, 1♀; Thessaly: Larisa: 2♂, 2♀; Central Greece: Parnassos, Polydroson, 1250 m, 4♂, 12♀; Kallidromo Mt. 22°36'E, 38°44'N, 900m, 4.6.1973, 39♂, 25♀ (Aspöck, Rausch, Ressler). Karia, 31.5.–1.6.1976, 2♂, 1♀ (Malicky); Peloponnese: 60 km W Tripolis, 29.4.1971, 3♂, 3♀ (Wittmer, Mus. Basel); Lesbos, W Lepetimnos, 1♂, 1♀, 5 larvae; Murányi 2011a: Peloponnese: Arcadia, Magouliana, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 2♂, 3♀, 2 larvae.

Ecology. The subspecies seems to occupy similar habitats like the nominal subspecies in more northern parts of the Balkans.

Nemoura flaviscapa Aubert, 1956

Taxonomy. Aubert 1956: 201. (original description of male and female).

Distribution. Endemic to **Greece**: Peloponnese.

Type material. Holotype ♂, allotype ♀, paratypes 2♂, 14♀: Peloponnese: Taygetos Mts., streams at 1200m and 1500m, on Anogia route to Taygetos, 21.6.1955 (ZML); 7 larvae (possibly).

Other Greek material. Aubert 1956: Peloponnese: same locality and data as types, 7 larvae (probables); Kakary, Anogia, 300m, 22.5.1955, 4 larvae (probables); Arcadia, brook in the woods, near Vytina, 24.5.1955, 1050m, 1♂; Joost 1970: Peloponnese: Taygetos, 22°15'E, 37°05'N, 1400 m, 21.5.1969, 1♂. **Ecology.** Seems to be a high mountain species restricted to the Peloponnese, and having early emergence period (Aubert 1956).

Remarks. Aubert (1956) reported the probable larvae with doubt and did not describe them. Berthlemy (1971) noted that a female *Nemoura* collected in Fthiotida may be *N. flaviscapa*, but he did not report it under that name.

Nemoura marginata Pictet, 1836

Distribution. European species, in the Balkans it is known from Bulgaria, Montenegro, Republic of Macedonia, Slovenia; **Greece:** Macedonia.

Greek material: Zwick 1978b: Macedonia: Petra between Olympus and Kokkinopilos, 1100 m, 14.4.1975, 1♂.

Remarks. Berthlemy (1971) mentioned larvae and a ♀ of the *N. marginata*-group from several locations in Central Greece and Euboea but without specific identification.

Nemoura taurica Zhiltzova, 1967

Distribution. Pontic-Anatolian species: Russia, Turkey; Greece: Cyclades (Naxos), North Aegean Islands (Lesbos, Chios), Dodecanese (Kos, Rhodos).

Greek material: Zwick 1978b: Lesbos: Akrassi, 2 km N, 26°19'E, 39°03'N, 370 m, 25.5.1975 1♂, 1♀; Ipsilometopo, 2 km E, 26°16'E, 39°19'N, 420 m, 27.5.1975, 1♀; Argennos, W. Lesbos, 25°16'E, 39°22'N, 370m, 28.5.1975, 2♀; Chios: 1 km W Karies, 26°05'E, 38°24'N, 350 m, 18.5.1975, 1♂, 1♀; SE Kaminia, 25°56'E, 38°32'N, 470 m, 18.5.1972, Bach springs, 2♂, 4♀; S. Keramos, 100 m, 1♂, E. Kosmados 25°53'E, 38°34'N, 260 m, 2♀; Wikion, 1♂, 1♀; Pelinaio-Massif (appr. 26°E, 38°30'N, 400–700 m, 17.5.1973, 5♂, 9♀ (Aspöck, Rausch, Ressler); Kos: Asfendiu springs, 350 m, 20.3.1970, 2 larvae (Pieper); upper Asfendiu, 27°13'E, 36°51'N, 230 m, 13.5.1975, 1♂, 1♀; 1 km W Lagoudi, 27°12'E, 36°51'N, 200 m, 12.5.1975, 3♂, 4♀; upper Agios Dimitrios, 27°14'E, 36°51'N, 400 m, 13.5.1975, 1♀; Rhodos: Laerma, 4 km SW, 220 m, 9♂, 39♀; 2 km NE Profitia, 27°52'E, 36°08'N, 230 m, 6.5.1975, 1♂, 3♀, 2 larvae; West Profiti Iliia, 27°56'E, 36°16'N, 420 m, 8.5.1975, 2♂, 2♀; Naxos: Koronis, 25°32'E, 37°08'N, 390–630 m, 21.5.1976, 2♂, 9♀.

Ecology. This species is relatively widespread and has a long emergence period on the Greek islands. It is not known to occur on the Greek mainland and Crete.

Nemoura uncinata Despax, 1934

Synonymy: *Nemoura fulviceps* Klapálek, 1902: Joost 1970b.

Nemoura fulviceps Klapálek: Zwick 1978b.

Distribution. South and Central European species, in the Balkans known from Bosnia and Herzegovina, Bulgaria, Republic of Macedonia, Serbia, Slovenia; **Greece:** Macedonia, Epirus, Central Greece, Euboea, Peloponnese.

Greek material: Zwick 1978b: Macedonia: Olympus, Litochoron, forest on the road to Agios Dionysios, 710 m, 13.4.1975, 1♂, 1♀ (Pieper); Pindos, Petra, 3♂, 5♀; Euboea: Stropones, 720 m, 1♂, 18♀; Epirus: near Elati, 20°45'E, 39°50'N, 990 m, 26.4.1973, 1♂ (G. Mahnert, Mus. Genf); Central Greece: Parnassos, Polydrosos, 1170 m, 3♂, 10♀.

LEUCTRIDAE

Leuctra aegaeica Pardo & Zwick, 1993

Taxonomy. Pardo & Zwick 1993: 423. (original description of male and female).

Distribution. Endemic to Greece: Euboea, Cyclades.

Type material. Holotype ♂, paratypes 5♂, 5♀: Cyclades: Andros: S Varidion, 37°57'N, 24°46'E, 70m, 10.3.1982 (CPZ, CIP); paratypes 2♀, 3 nymphs: Apikia, 37°52'N, 24°54'E, 300m, 24.10.1980 (CPZ); paratypes 3♂, 5♀: below Vurkoti, 37°52'N, 24°55'E, 150m 23.10.1980 (CPZ); paratypes 3♂, 1♀: S Varidion, 37°57'N, 24°46'E, 170m, 20.10.1980 (CPZ).

Other Greek material. Pardo & Zwick 1993: Andros, 20–24.10.1980: Varidion, 37°58'N, 24°47'E, 130m, 1♂; W Agios Nikolaos, 37°52'N, 24°55'E, 280m, 1♂, 3♀; above Apikia, 37°51'N, 24°54'E, 350m, 1♂; Euboea: S Komiton, 38°04'N, 24°32'E, 540m, 10–12.10.1980, 4♂, 3♀; Naxos: above Koronis, 25°32'N, 37°08'E, 660m, 3♂, 1♀; 640m, 2♂, 4♀; below Koronis, 410m, 2♂, 1 nymph; Moni Faneromeni, 25°28'N, 37°08'E, 20m, 2♂.

Ecology. The adults occur during the entire cold season with a rather long emergence period.

Leuctra bronislawi Sowa, 1970

Distribution. Carpatho-Balkanian species, in the Balkans known from Bosnia and Herzegovina, Bulgaria, Montenegro, Republic of Macedonia; **Greece:** Macedonia, Central Greece, Peloponnese, North Aegean Islands (Thasos).

Greek material: Zwick 1978b: Macedonia: E Karia, 800 m, 27.10.1972, 6♂, 20♀; Platamon, 23.10.1972, 7♂, 6♀; Central Greece: Pertuli, 1100 and 1300 m, 4♂, 24♀; Peloponnese: 9 km west of Sparti, 800m, 17.9.1972, 26♂, 20♀; E of Evrostini, 8♂, 15♀; Alepochorion, 15.9.1972, 2♂; Pardo & Zwick 1993: Thasos: near Maries, 40°42'N, 24°40'E, 15–17.10.1980, 5 Km E, 3♂, 5♀; above Maries, 460m, 28♂, 60♀; Thasos, above Prinos, 40°44'N, 24°39'E, 780m, 15–17.10.1980, 1♂, 2♀.

Leuctra candiae Zwick, 1978

Taxonomy. Zwick 1978b: 220. (original description of male and female).

Distribution. Endemic to **Greece:** Crete.

Type material. Holotype ♂: Crete, Potami, 25°31'E, 35°13'N, 900m, 10.4.1971 (CPZ); paratype ♂: Crete: Topolia (CPZ); paratype ♀: Kalamafka, 25°40'E, 35°04'N, 650m, 11.4.1971 (CPZ); paratype ♀: Kalonichtis, 24°23'E, 35°18'N, 300m, 24.4.1971 (CPZ); paratype ♀: Moni Veniu, 24°35'E, 35°17'N, 380m, 30.4.1971 (CPZ); paratype ♀: Agios Ioannis, 25°56'E, 35°03'N, 390m, 21.9.1972 (CPZ).

Leuctra cretica Zwick, 1978

Taxonomy. Zwick 1978b: 221. (original description of male and female).

Distribution. Endemic to **Greece:** Crete.

Type material. Holotype ♂: Crete: the main brook of the valley to the south 23°44'E, 35°23'N, Kakopetros, 450m, 10.1.1972 (CPZ); paratypes 2♂, 1♀: Kakopetros, 400 m, 10.1.1972 (CPZ); paratypes 15♂, 22♀, some larvae: Fassa-valley Skines W, 23°53'E, 35°24'N, 270m, 11–12.10. 1972 (CPZ); paratypes 2♀: Agios Nikolaos at Xyloskalon, Samaria, 25°56'E, 35°18'N, 650m, 5.5.1971.

Leuctra fusca fusca (Linnaeus, 1758)

Synonymy: *Leuctra cylindrica* de Geer: Stein 1863.

Distribution. Eurosiberian, covering all of the Palaearctic and known from most of the Balkan countries; **Greece:** Macedonia, Central Greece, Peloponnese, North Aegean Islands (Thasos).

Greek material: Stein 1863: 1 specimen, leg. Krüper, Peloponnese(?); Zwick 1978b: Macedonia: E Karia, 800 m, 27.10.1972, 4♂, 6♀; Central Greece: Pertuli, 1100m, 2♀; Peloponnese: Kefalari, 18.10.1972, 2♂; Pardo & Zwick 1993: Thasos, near Maries, 40°42'N, 24°40'E, 15–17.10.1980: 5 Km E, 600m, 1♂; above Maries, 460m, 8♂, 4♀, 2♂ nymphs; above Prinos, 40°44'N, 24°39'E, 780m, 15–17.10.1980, 1♂ and 1♀ nymphs.

Ecology. The species is known as an autumnal stonefly in most of its range, but early spring adult was recently reported from neighbouring area in FYROM (Murányi *et al.* 2014b).

Remarks. Aubert (1956) published several records of *Leuctra* larvae that probably belong to *L. fusca* from Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, and Crete. The latter records are probably not *L. fusca* but may be any of the three described Cretean endemic *Leuctra*. The specimen reported by Stein (1863) seems to be lost (Zwick 1978a).

Leuctra graeca Zwick, 1978

Taxonomy. Zwick 1978b: 222. (original description of male and female).

Distribution. Balkan endemic: Montenegro, Republic of Macedonia (Murányi *et al.* 2014b); **Greece:** Macedonia (Olympus), Thessaly, Peloponnese, Euboea.

Type material. Holotype ♂: Macedonia: south side of Mount Olympus, E Karia, 22 km west Leptokaria, 22°26'E, 40°00'N, 800m, 27.10.1972 (CPZ); paratypes 1♂, 2♀: Pertuli, the main brook of the valley (CPZ); paratypes 2♂: Platamon, 23.10.1972; paratypes 14♂, 4♀: Peloponnese: Kefalarion, 700m, 18.10.1972 (CPZ); paratype ♀: Evrostini, 750 m (CPZ); paratypes 5♂, 2♀: same locality but 1200m (CPZ).

Other Greek material. Pardo & Zwick 1993: Thessaly: Pelion, above Portaria, 39°23'N, 23°01'E, 830m, 21.9–13.10.1980, 1♂, 1♀; Euboea, above Stropones, 38°36'N, 23°53'E, 700m, 10–12.10.1980, 2♂, 2♀; Ano Steni, 38°35'N, 23°53'E, 550m, 10–12.10.1980, 21♂, 17♀.

Ecology. Adults of this species was reported to be active only in October (Pardo & Zwick 1993, Zwick 1978b), but recently found also during early spring (Murányi *et al.* 2014b).

Leuctra hippopus Kempny, 1899

Distribution. West Palaearctic species, known from all Balkan countries; **Greece:** Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, Euboea.

Greek material: Mosely 1932: Central Greece, Parnassos, 18.04.1966, 1♂, Kruper 1869 leg.; Aubert 1956: Epirus: stream at 1600m on road to Metsovo, 07.06.1955, 1♀; Aubert 1963: Central Greece: Mount Oiti, 1500m, 18–25.5.1956, 1♀; Zwick 1978b: Macedonia: Olympus, Petra, 1♂, 4♀; Olympus West, stream 10 km above Petras, 10.5.1975, 5♀ (Willmann); Thessaly: Ossa, 700m, 24.3.1972, 1♂, 2♀, (Heinz); Larissa, 1♀; Katara Pass, 1700 m, 1♀; Central Greece: Polydroson, 1170 m, 1♀; Peloponnese: Alepochorion, 22°25'E, 37°21'N, 800m, 05.05.1976, 1♂, 2♀; Taygetos Mt, stream and springs, 3♂, 6♀; Nemea, 3♂, 3♀ (Wittmer, Mus Basel); Euboea: Monokaria, 1♂; Tierno de Figueroa & Fochetti 2007: Peloponnese: Argolida, Kefalovriso, stream exiting from Kefalovriso cave, 820m, 37°41'51.0"N, 22°28'19.5"E.

Remarks. Mosely (1932) noted that the single male in WNHM from the Parnassos appears to be a teneral specimen. Berthélemy (1971) reported specimens from the Spercheios Basin in Fthiotida, Greece with uncertainty. Zwick (1978b) also noted the affinity of his Peloponnese specimens with the Dinaric endemic *L. hippopoides* Kačanski & Zwick 1970.

Leuctra hirsuta Bogoescu & Tabacaru, 1960

Distribution. Balkan endemic: Bosnia and Herzegovina, Bulgaria, Montenegro, Republic of Macedonia, Romania; **Greece:** Macedonia, Central Greece, Thessaly, Peloponnese.

Greek material: Zwick 1987b: E Karia, 22°26'E, 40°00'N, 750–800m, 10.27.1972, 6♂, 2♀; Pertuli, 21°27'E, 39°32'N, 1300 m, 26.10.1972, 21°31'E, 39°32'N, 1100 m, 26.10.1972, both sites, 3♂, 3♀; Evrostini, 22°24'E, 38°04'N, 750–1200m, 37♂, 35♀; Agios Dionysios, 22°25'E, 40°06'N, 900 m, 13.9.1971, 42♂, 36♀.

Remarks. Aubert (1956) published records of “hairy” *Leuctra* larvae of 'type *braueri* Kempny' from Epirus, Macedonia and Peloponnese. Most probably these refer to *L. hirsuta*.

***Leuctra inermis* Kempny, 1899**

Distribution. European species, in the Balkans it is known from Croatia (Popijač & Sivec 2009a), Bosnia and Herzegovina, Bulgaria, Montenegro, Republic of Macedonia; **Greece:** Epirus, Macedonia, Peloponnese.

Greek material: Aubert 1956: Macedonia: Olympus Mt, Mavrolongos, Agios Dionysos, 850m, 15.6.1955, 1♂; Prionia, 1100m, 15.6.1955, 7♂, 14♀, 7 larvae; Epirus: Metsovitiko, road to Metsovon, 600m, 8.6.1955, 1 larva (group *inermis*?); Peloponnese: stream in 1200m, from Anogia way to Taygetos, 21.5.1955, 3♂, 10♀; stream 3 km upstream of Vytina, 1050m, 24.5.1955, 8♂, 4♀, 5 larvae; Zwick 1978b: Macedonia, Olympus, Agios Dionysios, stream Enipeas, 2♂.

Remarks. Aubert (1956) reported larvae from Metsovo, Epirus with uncertainty and noted that these specimens probably belong to *L. metsovonica* Aubert.

***Leuctra kykladica* Pardo & Zwick, 1993**

Taxonomy. Pardo & Zwick 1993: 427. (original description of male and female).

Distribution. Endemic to **Greece:** Cyclades (Naxos).

Type material. Holotype ♂, paratypes 2♀: Naxos: above Koronis, 37°08'N, 25°32'E, 660m, 26–28.10.1980 (CPZ, CIP).

***Leuctra major* Brinck, 1949**

Distribution. European species, in the Balkans known from Croatia (Popijač & Sivec 2009a), Bosnia and Herzegovina, Bulgaria (Braasch & Joost 1976), Montenegro, Republic of Macedonia, Slovenia; **Greece:** Macedonia, Central Greece, Thessaly, Peloponnese, Euboea.

Greek material: Zwick 1978b: Central Greece: Pindos, 12km E Pertuli, 1♀; Peloponnese: Evrostini, 1200m, 2males, 6♀; 750m, 1♀; Pardo & Zwick 1993: Peloponnese: Ano Kastritsi, 38°16'N, 21°50'E, 500m, 26.9.1980, 2♂; Central Greece: Pelion Mt, E Chania, 39°25'N, 23°06'E, 930m, 21.9–13.10.1980, 2♀; Pelion, above Portaria, 39°23'N, 23°01'E, 830m, 13.10.1980, 1♂, 1♀; Euboea: Ano Steni, 38°35'N, 23°53'E, 550m, 10–12.10.1980, 1♂, 1♀.

Remarks. Aubert (1956) published records of *Leuctra* larvae of 'type *leptogaster* Aubert or *major* Brinck' from Epirus and Thessaly. Probably both refer to *L. major*.

***Leuctra marani* Raušer, 1965**

Distribution. Balkan endemic: Bulgaria (Raušer 1965a); **Greece:** Macedonia.

Greek material: Ravizza 2002: Macedonia: Mt. Vrontous at 1500m, several males and females.

***Leuctra metsovonica* Aubert, 1956**

Taxonomy. Aubert 1956: 204. (original description of male and female).

Distribution. Balkano-Appeninian species, known from Albania (Murányi 2007), Italy (Pardo & Zwick 1993), Republic of Macedonia; **Greece:** Epirus, Macedonia, Peloponnese.

Type material. Holotype ♂, allotype ♀, paratypes 29♂, 18♀: Epirus: streams on road to Metsovon, 1600m–1700m, 7–9.6.1955 (ZML).

Other Greek material. Aubert 1963: Macedonia: Prioni, Olympus, 1000m, 3–13.6.1956, 1♀; Zwick 1978b: Peloponnese: Taygetos, springs and brook, 22°23'E, 36°56'N, 1000m, 13.5.1976, 12♂, 13♀; Tierno de Figueroa & Fochetti 2007: Peloponnese: Argolida, Kefalovriso, stream exiting from Kefalovriso cave, 820m, 37°41'51.0"N, 22°28'19.5"E; Murányi 2011a: Peloponnese: Arcadia, Tetrasi Mts, Agia Theodora, stream and karst springs, 3721.269' N, 2158.782' E, 490 m, 05.04.2009, 1♀.

Remarks. Zwick (1978b) noted differences between his Peloponnesian specimens and the types. Albanian populations were reported also with uncertainty (Murányi 2007). Dubious records from Italy are based on females (Pardo & Zwick 1993).

***Leuctra minoica* Pardo & Zwick, 1993**

Taxonomy. Pardo & Zwick 1993: 429. (original description of male and female).

Distribution. Endemic to **Greece**: Crete.

Type material. Holotype ♂, paratypes 3♂, 17♀: Crete: E of Ag. Ioannis, 35°03'N, 25°53'E, 470m, 25.2.1982 (CPZ); paratypes 2♂, 6♀, 1 larva: E of Ag. Ioannis, 35°03'N, 25°53'E, 450m, 16.12.1981 (CPZ, CIP).

Ecology. Adults occur during the entire cold season having long emergence period.

***Leuctra moreae* Zwick, 1978**

Taxonomy. Zwick 1978b: 224. (original description of female).

Tierno de Figueroa & Fochetti 2001: 212. (description of male).

Distribution. Endemic to **Greece**: Central Greece, Peloponnese.

Type material. Holotype ♀: Peloponnese: Evrostini, 22°24'E, 38°04'N, 750m (CPZ); paratypes 21♀: Evrostini, 22°23'E, 38°03'N, 1200m (CPZ); paratypes 3♀: Kefalarion, 22°31'E, 37°54'N, 700m, 18.10.1972, 3♀ (CPZ).

Other Greek material. Pardo & Zwick 1993: Peloponnese: stream along road to Megaspoleon, 38°09'N, 22°14'E, 130m, 22.4.–21.5.1984, 1♀; Tierno de Figueroa & Fochetti 2001: Central Greece: Parnassos, Spring Kastalla, Delfi, 20.5.1985, 1♂, 1♀, PN leg.; Kovács et al. 2012: Central Greece: Phthiotis regional unit, Agios Georgios, Sperchios River W of the village, 38°57'00.5"N, 21°56'42.7"E, 365 m, 08.05.2011.

Ecology. Adults were collected in May and October, indicating a rather extended emergence period.

***Leuctra olympia* Aubert, 1956**

Taxonomy. Aubert 1956: 202. (original description of male, female and larva).

Distribution. Balkan endemic: Bosnia and Herzegovina, Montenegro, Republic of Macedonia; **Greece**: Macedonia (Olympus), Central Greece, Peloponnese.

Type material. Holotype ♀, paratypes 1♀, 1 pharate ♂ larva: Macedonia: Olympus Mt, Mavrolongos, Prionia, 1100m, 15.5.1955 (ZML).

Other Greek material. Berthélemy 1971: Central Greece: Fthiotida, Rachi Tymphrestou, 1150 m, 9.4.1967, 1♀; Zwick 1978b: Macedonia: Olympus Mt., Agios Dionysios, brook of Enipeas, 1♀; East Karia, 750–800 m, 26.5.1974, 1♀; Platamonas, 1♀; Central Greece: Pendayi, 1000 m, 1♀; Tierno de Figueroa & Fochetti 2001: Peloponnese: stream near Kaloskopi, 21.5.1985, 1♀, (P. Nicolai leg.); River Ladon, Planiteron, 650–1000m, 37°56'N, 22°09'E, 2.4.2000, 2♀, RF & JMTF leg.; Tierno de Figueroa & Fochetti 2007: Peloponnese: Argolida, Kefalovriso, stream exiting from Kefalovriso cave, 820m, 37°41'51.0"N, 22°28'19.5"E; Murányi 2011a: Peloponnese: Arcadia, Magouliana, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 3♀.

Leuctra rhodoica Pardo & Zwick, 1993

Taxonomy. Pardo & Zwick 1993: 425. (original description of male and female).

Distribution. Endemic to **Greece:** Dodecanese.

Type material. Holotype ♂, paratypes 2♂, 8♀: Dodecanese: Rhodes: Epta Piges, 36°15'N, 28°07'E, 60m, 4–6.11.1980 (CPZ, CIP).

CAPNIIDAE

Zwicknia bifrons (Newman, 1838)

Synonymy: *Capnia bifrons* Klapálek: Zwick 1978b.

Distribution. Reported originally from all of Europe including most of the Balkan countries, but recently confirmed only from Serbia (Murányi *et al.* 2014a); **Greece:** Central Greece.

Greek material: Zwick 1978b: Attica, E Kapandriti, 23.4.1974. 1♀ (Aspöck, Rausch, Ressler).

Remarks. A recent revision indicated that capniid specimens previously reported under the name *C. bifrons* from most of Europe represented several closely related species that were transferred into a new genus, *Zwicknia* Murányi (Murányi *et al.* 2014a). The presence of *Z. bifrons* in Attica is less likely, these populations probably belonging to another species. However, only a single female is available with males required for specific identification. *Zwicknia acuta* Murányi & Orci, 2014 (in: Murányi *et al.* 2014a) and a yet unnamed species have been reported from bordering areas of FYROM (Murányi *et al.* 2014b).

Capnopsis schilleri balcanica Zwick, 1984

Taxonomy. Zwick 1984a: 2. (original description of male and female).

Synonymy: *Capnodes schilleri* (Rostock 1892): Zwick 1978b (fide Zwick 1984a).

Distribution. Balkan endemic: Bosnia and Herzegovina (Zwick 1984a), Bulgaria (Zwick 1984a), Croatia (Murányi 2004), Republic of Macedonia (Zwick 1984a); **Greece:** Macedonia.

Greek material: Zwick 1984a: Macedonia: Olympus, E Karia, 22°26'E, 40°00'N, 750–800m, 30.4.1976, 1♀.

Ecology. This subspecies is an early spring emerger in contrast to the northern populations of the species.

Capnioneura balkanica macedonica Ikonov, 1978

Synonymy: *Capnioneura balkanica* Baumann & Kaçanski, 1975: Tierno de Figueroa & Fochetti 2007 (fide Murányi *et al.* 2014b).

Capnioneura balkanica balkanica Baumann & Kaçanski 1975: Murányi 2011a (fide Murányi *et al.* 2014b).

Distribution. Balkan endemic: Republic of Macedonia; **Greece:** Peloponnese.

Greek material: Tierno de Figueroa & Fochetti 2007: 1♀, 20.3.2005, Peloponnese, Argolida, Kefalovriso, stream exiting from Kefalovriso cave, 820m, 37°41'51.0'N, 22°28'19.5'E, V. Sbordoni leg.; same locality, 4♂, 8♀, 17.2.2007, Tierno de Figueroa, Fochetti & Sezzi leg.; Murányi 2011a: Peloponnese: Arcadia, Vytina, stream SW of the city, 3739.031' N, 2210.156' E, 960 m, 06.04.2009, 2♂, 5♀; Arcadia, Magoulia, stream SE of the village, 3739.425' N, 2208.730' E, 1035 m, 06.04.2009, 1♂, 5♀; Arcadia, Tetrazi Mts, Agia Theodora, stream and karst springs, 3721.269' N, 2158.782' E, 490 m, 05.04.2009, 4♀.

Ecology. Macedonian adults are active from February to April, whereas the Peloponnesian specimens were caught in March and April. All known populations occur in permanent streams and spring outlets.

PERLODIDAE

Besdolus ventralis (Pictet, 1841)

Distribution. A Balkanian and Central European species described from Bulgaria (Pictet 1841). The only recent available records are from Greece.

Greek material: Kovács & Murányi 2008: Macedonia: Kozani, Neopoli, Aliakmonas River, N 40°19.572'E, 21°24.421'N, 559m, 14.04.2006, 1 ex. László Dányi-Jenő Kontschán- Dávid Murányi.

Perlodes microcephalus (Pictet, 1833)

Synonymy: *Perlodes microcephala* Pictet: Aubert 1963, Zwick 1978b.

Perlodes microcephala (Pictet, 1841): Berthélemy 1971.

Distribution. A European species. In the Balkans it is known from Bosnia and Herzegovina, Bulgaria, Montenegro, Serbia, Republic of Macedonia; **Greece:** Macedonia, Central Greece, Peloponnese, Euboea.

Greek material: Klapálek 1912: Peloponnese: Kalavryta, Morea, 1♂, 1♀; Aubert 1963: Macedonia: Langadas, near Thessaloniki, 3–8.6, 1♀; Mount Oiti: 1500m, 18–25.5.1956, 2♂, 2♀; Berthélemy 1971: Spercheios at Ag. Georgios, bridge on the route Karpenisi-Lamia, 10.4.1967, 1♀; Zwick 1978b: Olympus: below Petras Sanatorium, 10.5.1975, 1♀ (Willmann); Euboea: Vutas, 1km W, 23°12'E, 38°55'N, 120 m, 1.5.1975, 1♀.

Perlodes floridus floridus Kovács & Vinçon, 2012

Taxonomy. Kovács & Vinçon 2012 (in: Kovács *et al.* 2012): 183. (original description of male, female, larva and egg).

Distribution. Balkan endemic: Albania (Kovács *et al.* 2012), Montenegro (Kovács *et al.* 2012); **Greece:** Macedonia, Central Greece, Thessaly.

Type material. Paratype ♀: West Macedonia: Grevena regional unit, Aetia, Venetikos River, N40°04'27.9", E21°12'06.0", 973 m, (2006/114), 14.05.2006, DL-KJ-MD (HNHM); paratype ♀: Eleftherohori, Venetikos River, 24.04.1989, HB-SI, (PMSL); paratypes 1♀, 1 exuviae: same locality, N40°03'06.6", E21°28'50.2", 475 m, (2006/111), 13.05.2006, DL-KJ-MD (HNHM); paratypes 1♂, 9 exuviae: Kipourio, Venetikos River, 24.04.1989, HB-SI (PMSL); paratypes 1♂, 1 larva: Zakas, Venetikos River, N40°02'19.3", E21°17'19.2", 699 m, (2006/112), 14.05.2006, DL-KJ-MD (HNHM); paratypes 6♂, 6♀, 9 exuviae: Thessaly, Trikala regional unit, Ambelia, Kalambaka, 20.04.1989, HB-SI (PMSL, CGV); paratypes 1♂, 7 exuviae: Kastania, Kalambaka, 20.04.1989, HB-SI (PMSL); paratypes 2♀: Kato Palagokaria, 19.04.1989, HB-SI (PMSL); paratypes 3♀: Longiai, 19.04.1989, HB-SI (PMSL); paratype ♂: Karditsa regional unit, Sarantaporo, small river S of the village, N39°09'13.9", E21°49'50.7", 700 m, (2011/39), 08.05.2011, KJ-MD-SzT-UZs (HNHM); paratypes 1♂, 1♀: Central Greece, Phthiotis regional unit, Agios Georgios, Sperchios River W of the village, N38°57'00.5", E21°56'42.7", 365 m, (2011/35), 08.05.2011, KJ-MD-SzT-UZs (HNHM); paratype ♀: Timfristos, Sperchios River, (207), 29.04.1989, HB-SI (PMSL); paratypes 1♀, 1 exuviae: Phocis regional unit, Vardousia Mts, Stromi, 26.04.1990, HB-SI (PMSL); paratypes 4♂, 2♀: Giona Mts, Lefkaditi, NW of Amfissa, 15.04.1987, Drosopoulos (PMSL).

Ecology. Specimens were found in different types of rivers between 35 and 975 m, with fast flows, even in the low altitudes with stony substrate. Larvae were found under large stones in the fastest current. The life cycle seems to be one-year as with other *Perlodes* species. Adults occurred between mid- March and end of May, near stones and vegetation close to river banks. Due to its wide habitat preferences, this species is commonly associated with many other stoneflies. The most species rich locality is the Sperchios River at Agios Georgios (Kovács *et al.* 2012).

Perlodes floridus peloponnesiacus Kovács & Vinçon, 2012

Taxonomy. Kovács & Vinçon 2012 (in: Kovács *et al.* 2012): 188. (original description of male, female, larva and egg).

Synonymy: *Perlodes dispar* (Rambur, 1842): Tierno de Figueroa & Fochetti 2001 (fide Kovács *et al.* 2012).

Distribution. Endemic to **Greece:** Peloponnese.

Type material. Holotype ♀, paratypes 6♂, 20 exuviae: Peloponnese: Achaia regional unit, Erimanthos Mt, 6

km W Agridi, 19.04.1990, HB-SI (PMSL, MM, HNHM); paratypes 1♂, 1♀: Ano Vlassia, Upstream of Selinous River, 37°57'N, 21°47'E, 1000 m, (GR 59), 25.05.1992, BC-GR (CGV); paratype ♀: Kalavrita, Vouraikos River, 23.05.1985, NP, SU (URS).

Other Greek material. Tierno de Figueroa & Fochetti 2001: Peloponnese: River Vouraikos, Kalavrita, 23.5.1985, 2♀, PN leg. (only one specimen designated as a paratype).

***Bulgaroperla mirabilis nigrata* Zwick, 1978**

Taxonomy. Zwick 1978b: 226. (original description of male, female and larva).

Distribution. Endemic to Greece: North Aegean Islands (Lesbos).

Type material. Holotype ♂: Lesbos: Chidira—left stream 1 km E, 26°02'E, 39°13'N, 210m, 28.5.1975 (CPZ); paratypes 1♂, 3♀, 6 larvae, 4 exuviae: Argennos, W Lesbos, 25°16'E, 39°22'N, 370m, 28.5.1975 (CPZ); paratypes 2♂: Ipsilometopo, 2 km E, 26°16'E, 39°19'N, 420m, 27.5.1975 (CPZ).

***Isoperla chius* Zwick, 1978**

Taxonomy. Zwick 1978b: 235. (original description of male, female and larva).

Distribution. Endemic to Greece: North Aegean Islands (Chios).

Type material. Holotype ♂, paratypes 36♂, 32♀: Chios: Keramos, 25°56'E, 38°34'N, 60–150m, 18–20.5.1975 (CPZ); paratypes 2♂, 2♀: S Kurunia 25°55'E, 38°34'N, 350m, 20.5.1975 (CPZ); paratype ♂: 5 km NE Pirama, 25°54'E, 38°31'N, 170m, 20.5.1975 (CPZ); paratypes 16♂, 9♀: SE Kaminia 38°33'N, 25°56'E, 470m, 18.5.1975 (CPZ); paratypes 2♂: 2 km N Fita, 26°00'E, 38°32'N, 510m (CPZ); paratypes 2♂, 4♀: Wikion (CPZ).

Other Greek material. Zwick 1978b: (larvae and exuviae from same locality and data as the types) many larvae: Chios: Keramos, 25°56'E, 38°34'N, 60–150m, 18–20.5.1975; many larvae: S Kurunia 25°55'E, 38°34'N, 350m, 20.5.1975; larvae: SE Kaminia 38°33'N, 25°56'E, 470m, 18.5.1975; 1 exuviae: Wikion.

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

Synonymy: *Chloroperla virescens* Pict: Stein 1863.

Distribution. West Palaearctic species, known from all the Balkan countries but Croatia (Murányi 2011b); Greece: Macedonia, Peloponnese(?).

Greek material: Stein 1863: 12 specimens, leg. Krüper, Peloponnese(?); Murányi 2011b: Macedonia: Grevena: Eleftherohori, Venetikos River, 4003'06.6N, 2128'50.2E, 475 m, 13.05.2006, leg. L. Dányi, J. Kontschán, D. Murányi: 1♂; Zakas, Venetikos River, 4002'19.3N, 2117'19.2"E, 700m, 14.05.2006, leg. L. Dányi, J. Kontschán, D. Murányi: 1♂, 4 larvae.

Remarks. Previous records of this species from Greece refer mostly to the misinterpretation of Museum Graecum in Pictet (1841) instead of Museum Graecensis (Poda 1761, fide Zwick 1978a). Identity of the old specimens published by Stein (1863) are questionable. Zwick (1978a) found several females and three *I. t. tripartita* males among specimens that can be attributed to belonging to the Stein collection.

***Isoperla ikariae* Zwick, 1978**

Taxonomy. Zwick 1978b: 235. (original description of male and female).

Distribution. Endemic to Greece: Cyclades (Ikaria).

Type material. Holotype ♂, paratypes 1♂, 3♀: Ikaria: Milopo-Monokampion, 280–650m, 26°20'E, 37°39'N, 22.5.1973 (Aspöck, Rausch, Ressler) (CPZ).

Isoperla lesbica Zwick, 1978

Taxonomy. Zwick 1978b: 232. (original description of male, female and larva).

Distribution. Anatolian endemic: Turkey; **Greece:** North Aegean Islands (Lesbos).

Type material. Holotype ♂, paratypes 22♂, 23♀, 1 larva: Lesbos: Megalochori 1 km SW, 2621'E, 3901'N, 280m (CPZ); paratypes 8♂, 6♀, larvae: Neochorion, 26°19'E, 39°01'N, 250m, 25.5.1975 (CPZ); paratypes 7♂, 3♀: Akrassi, 2 km N Lesbos, 26°19'E, 39°03'N, 370m, 25.5.1975 (CPZ); paratypes 6♂, 7♀: Ipsilometopo, 2 km E, Lesbos, 26°16'E, 39°19'N, 420m, 27.5.1975 (CPZ); paratypes 10♂, 5♀, 1 larva: Lepetimnos (CPZ); paratypes 1♂, 1♀, larvae: Argennos, W Lesbos, 25°16'E, 39°22'N, 370m, 28.5.1975 (CPZ); paratypes 5♂, 1♀: Chidira, 26°02'E, 39°13'N, 210m, 28.5.1975 (CPZ); paratypes 31♂, 19♀: Plomari, 26°26'E, 38°59'N, 110m, 31.5.1975 (CPZ).

Other Greek material. Zwick 1978b: (larvae and exuviae from same locality and data as the types) 1 larva: Lesbos: Megalochori 1 km SW, 26°21'E, 39°01'N, 280m; larvae: Neochorion, 26°19'E, 39°01'N, 250m, 25.5.1975; 1 larva: Lepetimnos; larvae: Argennos, W Lesbos, 25°16'E, 39°22'N, 370m, 28.5.1975.

Isoperla obliqua Zwick, 1978

Taxonomy. Zwick 1978b: 230.—(original description of male).

Murányi 2011b: 32. (complementary description of male, elevation to species status).

Synonymy: *Isoperla tripartita obliqua* Zwick 1978: Zwick 1978b.

Distribution. Endemic to Greece: Macedonia, Central Greece, Peloponnese, Euboea/Cyclades.

Type material. Holotype ♂, paratypes 34♂: Euboea: Mount. Ochi E Alexi, 24°20'E, 38°04'N, 22 m, 22.5.1975 (CPZ).

Other Greek material. Zwick 1978b: 21♀, many larvae: Euboea: Mount. Ochi E Alexi, 24°20'E, 38°04'N, 22 m, 22.5.1975 (same locality and data as the types); Paradision, 1♂, 1♀, Larvae, 450 m, 29.5.1973, 1♂, 7♀ (Aspöck, Rausch, Ressler); Dirfis, Ano Steni 23°51'E, 38°34'N, 520m, 24.5.1974, 1♂, 1♀, Larvae; Andros, Apikia, 29.5.1973, 3♂, Larvae (Malicky); Central Greece: Pendayi, 3♂, 4♀, Larvae; Eptalofos, 7♂, 4♀, 4 Ex; Lilaia, 22°30'E, 38°37'N, 300m, 29.–30.5.1976, 1♀, 50 larvae, incl. Karia, 30.4.–1.5.1976, 2♂, 2♀; Peloponnese: Agios Mammias 22°57'E, 36°37'N, 160m, 9♂, 5♀, 23 larvae; Taygetos Mt, 1♂, 2♀, 2 larvae; Murányi 2011b: Achaia prefecture: Ano Vlassia, Mts Erimanthos, Selinous Stream, 1000 m, 25.05.1992, leg. H. Malicky, det. G. Vinçon: 2♂ 2♀.

Ecology. The known localities are submontane streams and spring outlets. Adults active in May and usually in common with a diverse community of stoneflies.

Isoperla tripartita tripartita Illies, 1954

Taxonomy. Aubert 1956: 206. (original description of male and female of *I. graeca*).

Berthélemy 1971: 46. (complementary description of the larva).

Zwick 1978b: 229. (complementary description of male).

Tierno de Figueroa *et al.* 2001: 69. (description of egg).

Murányi 2011b: 23. (complementary description of male, female, larva and egg).

Synonymy: *Isoperla graeca* Aubert, 1956: Aubert 1956, Aubert 1963, Joost 1970.

Distribution. Balkanian and Central European species, known from all Balkan countries; **Greece:** Epirus, Macedonia, Central Greece, Peloponnese, Euboea.

Type material (of *I. graeca* Aubert, 1956): Holotype ♂, allotype ♀, paratypes 5♂, 7♀: creek in the woods, Peloponnese, Anogia route to Taygetos 1200m, 21.5.1955 (ZML).

Other Greek material. Aubert 1956: Peloponnese: Kakary, Anogia, 300m, 22.5.1955, 4♂, 2♀, 21 larvae; stream in 1200m, Anogia route to Taygetos, 21.5.1955, 6♂, 8♀, 16 larvae; Landonas, Magouliana, 1100m, 23.5.1955, 3♂, 6♀, 7 larvae; Ladon and tributaries, Vytina, 100m, 24.5.1955, 3♂, 23 larvae; Vouraikos, Kalavrita, 700m, 26.5.1955, 4 larvae; Epirus: stream on road to Metsovon, 1600–1700m, 9.6.1955, 6♂, 11♀, 15 larvae; Makedonia: Mounts Neretschka, road from Argos to Vevi, Km 39, 900m, 11.6.1955, 1♂; Olympos, Mavroneri, on

road from Katerini to Ellassona, Km 29, 600m, 16.6.1955, 1♂; Aubert 1963: Euboea: Steni, 800 m, 4–11.4, 1♂; Peloponnese: Mistras, near Sparti, 28.4.1956, 1♀; Joost 1970: Pendayi, 22°05'E, 38°35'N, 900m, 4.6.1969, 2♂; Berthélemy 1971: Central Greece: Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 2 larvae; Euboea: Iliá stream, small village by the sea 8 km east of Aedipsos, 3.4.1967, 1♀, 6 larvae. Kireus, 1.5 km before Prokopion, route Aedipsos–Chalcis; Dirphys, Steni stream, 550m, 1–2 km upstream of Steni, 15.4.1967, 1 larva; Small stream 3–10m width, 13.4.1967, 1 larva; Zwick 1978b: Macedonia: Katara-Pass, 1420m, 5♂, 10♀; Thessaly, Ossa, NE Omolion, 500–700 m, 21.4.1968, 1♂ (Heinz) Euboea: Stropones, 1♂; Prokopion, 1♂, 3♀, Monokaria, 3♂, 4♀, Larvae; Tierno de Figueroa et al. 2001: Peloponnese: Elisson, Davia, Tripoli, 26.5.1985, Kato Lousi, Khelmos Mt., 22.5.1985; Murányi 2011b: Florina prefecture: Pisoderi, Mts Verno, forest stream 3km W of the village, 4047'16.5N, 2113'26.7E, 1315 m, 15.05.2006, leg. L. Dányi, J. Kontschán, D. Murányi: 1♂, 1 exuviae; Ioannina prefecture: Milea, 5km SW of the village, 1300 m, 09.06.1992, leg. M. Gerecke, det. G. Vinçon: 3♂ 3♀.

Isoperla tripartita recta Zwick, 1978

Taxonomy. Zwick 1978b: 230. (original description of male)

Distribution. Endemic to Greece: North Aegean Islands.

Type material. Holotype ♂, paratype ♂: Lesbos: 7 km E of Plomari, 26°26' 38°59'N, 110 m, 31.5.1975 (CPZ); paratypes 2♂: 1 km SW of Megalochori, 26°21'E, 38°01'N, 280 m, 24.5.1975 (CPZ); paratype ♂: same locality, 31.5.1975 (CPZ); paratypes 2♂: Lepetimnos, 25°16'E, 39°22'N, 330–420 m, 27–28.5.1975 (CPZ); paratypes 3♂: Neochorion, 26°19'E, 39°01'N, 250 m, 25.5.1975 (CPZ); paratypes 2♂: Ambeliko, 26°18'E, 39°04'N, 340 m, 25.5.1975 (CPZ).

Other Greek material. Zwick 1978b: (larvae and exuviae from same locality and data as the types) 1♀, larvae: Lesbos: 7 km E of Plomari, 26°26'E, 38°59'N, 110 m, 31.5.1975; 1♀: 1 km SW of Megalochori, 26°21'E, 38°01'N, 280 m, 24.5.1975; 1♀: same locality, 31.5.1975; 5♀, larvae: Lepetimnos, 25°16'E, 39°22'N, 330–420 m, 27–28.5.1975; 3♀, larvae: Neochorion, 26°19'E, 39°01'N, 250 m, 25.5.1975; 2♀: Ambeliko, 26°18'E, 39°04'N, 340 m, 25.5.1975.

PERLIDAE

Dinocras megacephala (Klapálek, 1907)

Taxonomy. Klapálek 1907: 7. (original description of female).

Synonymy: *Perla megacephala* Klapálek, 1907: Klapálek 1907.

Distribution. A Balkanian and Central European species. In the Balkans known from Bosnia and Herzegovina, Bulgaria, Croatia, Kosovo, Montenegro, Republic of Macedonia, Serbia, Slovenia; **Greece:** Epirus, Central Greece, Peloponnese, Euboea.

Type material. Syntypes 3♀: Greece, leg. Krüper (NMP).

Other Greek material. Aubert 1963: Central Greece: Gorgopotamos at the foot of Mount Oiti, 800m, 26–28.6.1956, 4♀; Zwick 1978b: Fokida, Pendayi, 1♀, many larvae; Epirus: River Luros at Musiotitsa, 21°23'E, 39°31'N, 200m, 4.6.1975, 1♀; Parnassos, Polydroson, 1060m, 1♂, 1♀; Euboea: Monokaria, 2 larvae; Murányi 2011a: Peloponnese: Arcadia, Elliniko, Gortis ruins, Lousios River, N 3732.378', E 2202.788', 320 m, 06.04.2009, 2♂, 1 larva.

Remarks. In the original description the types were indicated to be deposited in Berlin (Klapálek 1907). However, two of the three specimens are in the NMP. The specimen bearing Cotype label was designated as lectotype by Zwick in 1980 but not formally published. Types probably belong to the same species that was published as *Perla bipunctata* by Stein (1863). *Dinocras* larval records published without specific identification by Aubert (1956) from Metsovo may refer to this species.

Eoperla ochracea (Kolbe, 1885)

Taxonomy. Klapálek 1921: 59. (original description of female of *Perla latisulcata*).

Synonymy: *Perla latisulcata* Klapálek, 1921: Klapálek 1921.

Distribution. Circum-Mediterranean species, in the Balkans it is known from Albania, Republic of Macedonia; **Greece:** Epirus, Macedonia, Peloponnese, Ionian Islands (Corfu).

Type material (of *P. latisulcata* Klapálek, 1921): Syntype ♀♀: Peloponnese: Kalavryta, Morea, leg. Holtz (NMP).

Other Greek material. Aubert 1956: Peloponnese: Evrotas, Sparti, 200m, 19.5.1955, 1♂, 1♀, 4 larvae; Vouraikos, Zalorou (Megaspoleon), 500m, 21.6.1955; Epirus: Dipotamos on road to Metsovo, 500m, 8.6.1955, 3♂, 1♀, 4 larvae; Macedonia: Aliakmonas, between Neapolis and Argos, 580m, 10.6.1955, 13 larvae; Zwick 1978b: Epirus: Kalamas River, W Menina, 21°23'E, 39°31'N, 10.6.1974, 4♂, 2♀, 1 larva; Peloponnese: Kalavrita, 27.5.1939, 1♂, 1♀ (E. Schmidt, coll. Flusstation Schlitz); Corfu: Mesaria, 19°44'E, 39°44'N, 12 larvae; NE Kapsochilades, 19°44'E, 39°45'N, 3 larvae; Platonas, 19°46'E, 39°46'N, 5♂, 1 exuvie, 6 larvae, 12.6.1977; Sivec 1997: 'several' unspecified localities.

Remarks. In the original description, syntypes were indicated to be deposited in the Sélys and Klapálek collections (Klapálek 1921). Seven specimens exist in the NMP, one of them was designated as lectotype by Zwick in 1980 but not formally published.

Helenoperla malickyi Sivec, 1997

Taxonomy. Sivec 1997: 474. (original description of male, female, larva and egg).

Distribution. Endemic to **Greece:** Epirus.

Type material. Holotype ♂, paratypes 34♂, 20♀: Epirus: 10 km N Louros, 39°14'20"N, 20°42'00"E, 200 m, 26.5.1994, leg. Sivec, I. & Horvat, B. (PMSL, CPZ); paratypes 2♂, 12♀, 36 larvae: same locality, 17.5.1994 (PMSL); paratypes 3♂, 2♀: same locality, 21.5.1987, leg. Malicky, H. (PMSL); paratypes 1♂, 1♀: stream N Archangelos, 39°07'N, 20°39'E, 80 m, 20.5.1987, leg. Malicky, H. (PMSL).

Marthamea vitripennis (Burmeister, 1839)

Distribution. European species, in the Balkans it is known from Albania (Zwick 1984b), Bulgaria (Zwick 1984b), Croatia (Popijač & Sivec 2009b), Serbia, Republic of Macedonia; **Greece:** without locality.

Greek material: Sivec 1997: Greece, without exact locality.

Perla marginata (Panzer, 1799)

Taxonomy. Aubert 1956: 210. (synonymy of *P. bureschi* Schönemund, 1926).

Berthélemy 1971: 51. (complementary description of larva, disregard of *P. marginata*-*P. bureschi* synonymy).

Zwick 1978b: 236. (notes on nomenclature and distinction from *P. pallida*).

Synonymy: *Perla barcinonensis* Ramb: Klapálek 1923.

Distribution. Central and West Europe, Balkanian records probably refer to *P. pallida* (Sivec & Stark 2002); **Greece:** Epirus, Macedonia, Central Greece, Thessaly, Peloponnese, Euboea, North Aegean Islands.

Greek material: Klapálek 1923: Parnassos, 1♀; Kalavryta, Morea, leg. Holtz, 3♀; Navás 1924: Macedonia: without exact locality (possibly FYROM), 1918, leg. Rivet; Veria, 5.1918; Edessa (Vodena), 7.1918, leg. Sergeant Candela; Aubert 1956: Macedonia: Mount Neretschka, road Argos to Vevi, km-24, 900m, 11.6.1955, 7 larvae; km-39, 1♂, 7 larvae; Olympus, Mavrolongos, Lithochoron, 300m, 16.6.1955, 2 larvae; Agios Dionysos, 850m, 15.6.1955, 1 larva, 1 ex.; Prionia, 13.6.1955, 1100m, 3♀, 6 larvae; Mavroneri, on road from Katerini to Ellassona, km-29, 600m, 16.6.1955, 1♂, 12 larvae; km-40, 900m, 16.6.1955, 2 larvae; Thessaly: Kalambaka, 300m, 10.6.1955, 1♂; on road to Metsovo in 650–750m, 6.6.1955, 7 larvae, 7 exuvies; Parnassos: Main river, N side of

the road to Gravia, 650m, 5.6.1955, 1 larva; Peloponnese: Kakary, Anogia, 300m, 22.5.1955, 1♂, 20 larvae; Landonas, Magoulia, 1100m, 23.5.1955, 1♂; Vytina, 950m, 24.5.1955, 2♂, 2♀, 32 larvae; Vouraikos, Zalorou (Megaspileon), 500m, 21.6.1955, 4 larvae; Vouraikos, Kalavrita, 700m, 26.5.1955, 1 larva; stream behind the hotel, Kalavrita, 700m, 26.5.1955, 2 larvae; Aubert 1963: Central Greece: Gorgopotamos, beneath Mt. Oiti, 800 m, 26–28.1956, 1♂; Joost 1970: Peloponnese: Killini, 22°24'E, 37°58'N, 1500m, 28.5.1969, 1♀; Zwick 1978b: Peloponnese: Kefalario, 9.5.1974, 1♂, many larvae; Euboea, Prokopion, 1♂, many larvae; Lesbos: Ambeliko, 1♂, 1♀, many larvae; 6 km E Ag.Paraskevi, 39°14'E, 26°19'N, 100m, 26.5.1975, 1♂, 1♀;

Remarks. According to Sivec & Stark (2002), the occurrence of *P. marginata* in Greece is not likely and reported records refer to any of the *P. pallida* types these authors described. However, we list the above records as *P. marginata*, noting that all specimens need to be reexamined for determination.

***Perla pallida* Guérin-Méneville, 1838**

Taxonomy. Berthélemy 1971: 50. (complementary description of larva).

Zwick 1978b: 236. (notes on nomenclature and separation from *P. marginata*).

Sivec & Stark 2002: 23. (redescription of egg, erection of four morphotypes).

Synonymy: *Perla marginata bureschi* Schoenemund: Aubert 1963 (fide Berthélemy 1971).

Perla pallida dacica Klapálek, 1907: Berthélemy 1971.

Perla pallida Guerin, 1838 Type 3–4: Sivec & Stark 2002.

Distribution. Caucasian-Anatolian species that dispersed into Central Europe. In the Balkans, this species has been recently confirmed from Bosnia and Herzegovina, Bulgaria, Croatia, Montenegro, Republic of Macedonia, Slovenia (Popijač & Sivec 2009b, Sivec & Stark 2002); **Greece:** Epirus, Macedonia, Central Greece, Thessaly, Euboea.

Greek material: Aubert 1963: Macedonia: Prioni, 1000 m, Olympus, 3–13.6.1956, 1♂ brachypter, 5♀; Berthélemy 1971: Central Greece: Fthiotida, torrent at Rachi Tymphrestou, 1150 m, 9.4.1967, 7 larvae; Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 4 larva; Zwick 1978b: Epirus: Grevenition, 1♂; Olympus: Karia, 26.5.1974, 5♂, 2♀, many larvae; 1.6.1976, 2♂, many larvae; Parnassos: Polydrosion, 1170 m, 2♂, 4♀, several larvae; Euboea: 3 km E Guves, 25.5.1974, 1♂, 2♀, some larvae; Sivec & Stark 2002: Type 3 eggs: Epirus, Mega Peristeri, 22.5.1988, I. Sivec, S. Uchida; Epirus, Thyamis River, Soulopoula, 21.5.1988, I. Sivec, S. Uchida; Type 4 eggs: Central Greece, Platanos, Klepa, 25.6.1990, I. Sivec; Kovács et al. 2012: Central Greece: Phthiotis regional unit, Agios Georgios, Sperchios River W of the village, 38°57'00.5"N, 21°56'42.7"E, 365 m, 08.05.2011.

Remarks. According to Sivec & Stark (2002), the Balkanian populations are probably not conspecific with *P. pallida* described from the Caucasus. They reported Greek specimens to represent “types 3 and “type 4”.

CHLOROPERLIDAE

***Chloroperla russevi* Braasch, 1969**

Distribution. Balkan endemic: Bosnia and Herzegovina, Bulgaria, Republic of Macedonia; **Greece:** Central Greece.

Greek material: Zwick 1978b: Aetolia, Limni Kremaston, 4♂, 3♀, 4.5.1971.

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

Distribution. European species, known from all Balkanian countries; **Greece:** Epirus, Central Greece, Peloponnese, Euboea.

Greek material: Aubert 1956: Peloponnese: Eurotas, Sparte, 200m, 19.5.1955, 1 female, 1 larve; Kakary Anogia, 22.5.1955, 1♂; Ladonas and tributaries, 3 km upstream of Vytina 950m, 24.5.1955, 11♂, 11♀; Vouraikos,

Kalavrita, 700m, 26.5.55, 20♂, 11♀; Epirus: Metsovitiko, on road to Metsovon, 600m, 8.6.1955, 1 male, 2 females, stream at 1650m, on road to Metsovon, 9.6. 1955, 1 female; Berthélemy 1971: Evritania: Acheloos, Rachi Tymphrestou and Karpenisi, 1000m, 9.4.1967, 3 larvae; Spercheios at Ag. Georgios, bridge of the route Karpenisi-Lamia, 10.4.1967, 6 larvae; Euboea: Ilia stream, small village by the sea 8 km east of Aedipsos, 3.4.1967, 1 larvae; Kireus, 1.5 km before Procopion, route Aedipsos - Chalcis. Small stream 3–10 m width, 13.4.1967, 1 larva; Dirphys, Tributary of Steni stream, 550m, 15.4.1967, 1 larva; Zwick 1978b: Euboea: Agios Dimitrios, 24°29'E, 38°06'N, 400m, 22.5.1974, 2♀; Prokopion, 23°30'E, 38°42'N, 250 m, 5♂, 2♀; 1.5.1975, 2♀, 2 larvae; Monokaria, 23°14'E, 38°57'N, 130m, 7♂, 8♀, 3 larvae.

Remarks. Berthélemy (1971) reported his larval specimens from Greece with doubt.

Siphonoperla neglecta (Rostock, 1881)

Distribution. A Balkanian and Central European species. In the Balkans it is known from Bosnia and Herzegovina, Bulgaria, Republic of Macedonia, Serbia, Slovenia; **Greece:** Macedonia.

Greek material: Murányi 2007: Macedonia, Florina, Verno Mountains, Pisoderi, stream in a beech forest 3 km W of the village, 40°47'16.5" N, 21°13'26.7" E, 1317m, 15.5.2006, leg. LD, JK, DM 3♂, 5♀.

Ecology. The Greek locality is a small forest stream in the Verno Mountains.

Siphonoperla graeca (Aubert, 1956)

Taxonomy. Aubert 1956: 211. (original description of male and female).

Synonymy: *Chloroperla neglecta graeca* Aubert, 1956: Aubert 1956.

Distribution. Balkan endemic: Albania (Murányi 2007), Bosnia and Herzegovina, Montenegro, Republic of Macedonia; **Greece:** Epirus.

Type material. Holotype ♂, allotype ♀, paratypes 4♂: Epirus: Metsovon stream at 1650m, on road to Metsovon, between the pass and the village of Metsovo, 9.6.1956 (ZML).

QUESTIONABLE RECORDS

Dictyogenus alpinus (Pictet, 1841)

Greek record: Aubert 1963: Central Greece, Oiti Mt, 1500m, 19–25.5.1956, 1♂.

Remarks. The genus *Dictyogenus* Klapálek, 1904 is restricted to the Alps (Zwick 2004) and the Greek records refer to other genera, most probably to the closely related *Besdolus* Ricker, 1952, with three species known from the Balkans (Kovács & Murányi 2008).

Isoperla rivulorum (Pictet, 1841)

Greek record: Navás 1924: Macedonia: environ of Thessaloniki, region of Mt. Illias, 786 m, 4–5.1918, leg. A. Berton.

Remarks. The southernmost recent Balkanian records of this Central European species is from Croatia (Popija & Sivec 2009a). There are only old and questionable records from the southern Balkans and its occurrence is in need of confirmation (Murányi 2011b).

Isoperlinae gen.? sensu Berthélemy 1971

Greek records: Berthélemy 1971: Euboea: Small stream 2–6m width at the entrance of Chania, route Chalcis-Kymi, 14.4.1967, 2 larvae; Dirphys, Steni stream, 550 m, 1–2 km upstream of Steni, 15.04.1967, 2 larvae.

Remarks. Berthélemy (1971) described these larvae as representing a probable new genus and species, but without associated adults he did not name it. Adults are still not apparently available. However, Zwick (1978b) supposed that the larvae may belong to an unknown species of the *I. lesbica* group sensu Zwick (1978b).

***Perla bipunctata* Pictet, 1833**

Greek record: Stein 1863: 2♂, 3♀, leg. Krüper, Peloponnese(?).

Remarks. Identity of the above specimens are questionable. Zwick (1978a) identified a male *P. marginata* among specimens that can be attributed to the Stein collection but probably not from a Greek locality. However, specimens probably belong to the types of *D. megacephala* (Klapálek 1907). According to Sivec & Stark (2002), occurrence of *P. bipunctata* in the Balkans is not likely.

Several other published Greek records are available for stoneflies, mostly referring to larvae or females not identified to the species level (Aubert 1956, Berthélemy 1971, Murányi 2011a, Stein 1863, Theischinger 1975, Zwick 1978a, 1978b). We do not report these records herein.

Discussion

Our review of the stonefly records published from Greece indicated a total of 71 species and seven subspecies belonging to seven families and 19 genera. The Greek endemics, or those taxa known presently only from Greece, comprise 30 species (42% of the Greek fauna). The remaining taxa are typical Balkan and Mediterranean species. High stonefly endemism occurs in the Nemouridae on the islands representing ten species and three subspecies. Most of the Nemouridae endemics are species of *Protonemura* followed by *Nemoura*. The vast majority of the Nemouridae endemics have been recorded from Central Greece. In contrast, the endemic species of Leuctridae are known from the Cycladic islands and Crete with six species recorded. *Brachyptera* is represented by seven species and 12 subspecies in Greece, including four endemics. The endemic species of Perlodidae are known from the North Aegean Islands (one species, two subspecies). Six endemics are known from the Cycladic islands, five from Crete, three from the North Aegean islands and one from Rhodos.

The stonefly fauna remains largely unexplored in many areas of mainland Greece and for many islands no collections are apparently currently available. Most of the above records come from a relative few studies conducted in Central Greece and the Peloponnese. Furthermore, there are no Plecoptera records from the region of Thraki (Thrace) or the Ionian Islands except from Corfu. Thus, it is anticipated that additional records and perhaps new species of stoneflies will be discovered with further collecting.

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