

First annotated checklist of Chironomidae of Rhodos, Greece

(Insecta, Diptera)

Arnold Móra & Zoltán Csabai

Móra, A. & Z. Csabai (2008): First annotated checklist of Chironomidae of Rhodos, Greece (Insecta, Diptera). – *Spixiana* 31/2: 223–231

Chironomid fauna of Greek Aegean islands, an essential part of the biogeographically important Mediterranean region, is almost unexplored, with only 36 species recorded prior to the present study. It is especially true for Dodecanese islands (6 recorded species). In 2007, chironomid larvae and exuviae were collected in Rhodos, the largest member of the Dodecanese islands. Thirty-four taxa were identified (8 Tanypodinae, 10 Orthocladiinae, 16 Chironominae). None of the previously recorded taxa were found; thus all collected species proved to be new for the fauna of Rhodos. An actualized checklist for the Chironomidae of Rhodos is given based on the literature and results of recent investigations.

Keywords: Dodecanese islands, distribution, larvae, pupal exuviae

Arnold Móra, Hungarian Academy of Sciences, Balaton Limnological Research Institute, Klebelsberg Kuno 3., H-8237 Tihany, Hungary; e-mail: marnold@tres.blki.hu

Zoltán Csabai, University of Pécs, Department of General and Applied Ecology, Ifjuság útja 6., H-7624 Pécs, Hungary; e-mail: csabai@ttk.pte.hu

Introduction

As regards the Chironomidae, the Mediterranean region constitutes a link between the Palaearctic and Afrotropical, and maybe the Oriental biogeographical regions (Laville & Reiss 1992). In spite of this biogeographical significance, the chironomid fauna of Aegean islands, an essential part of Mediterranean region, is very poorly known (Sæther & Spies 2004).

Similar to other Aegean islands, the chironomid fauna of the Dodecanese islands (including Rhodos) is nearly totally unexplored; only sporadic data have been published (Contreras-Lichtenberg 1986, Cranston 1989, Langton 1991, Laville & Reiss 1992, Reiss 1987, Rossaro 1990). Most recently, in the catalogue of Fauna Europaea 6 species are listed for this area (Sæther & Spies 2004).

In 2007 a collecting tour was carried out by the Aquatic Macroinvertebrates Research Group of the University of Pécs (Hungary) to explore the aquatic

macroinvertebrate fauna of Rhodos, the largest of the Dodecanese islands. During this expedition chironomid larvae and pupal exuviae were also collected. The aims of this paper are to present new faunistical data on the basis of those recent collections, and to compile an inventory of the Chironomidae species of Rhodos.

Material and methods

The expedition visited 57 aquatic sampling sites (mainly rivers and streams, but also lakes, temporary water bodies and some extreme habitats, e.g. water-filled barrels and fountain pools) in Rhodos, Greece, between 12 and 26 February 2007. At 46 of these localities chironomid specimens were collected.

During the collecting period aquatic macroinvertebrates (including chironomid larvae and pupal exuviae) were captured by sweeping with a long-handled pond net (mesh size 0.5 mm) just above the

substrate, on the water surface, and among the submerged or emergent vegetation. In running waters aquatic insects were captured by a “kick and sweep” technique. In addition, single specimens were hand-picked selectively from the surfaces of submerged stones, wood, etc. All chironomid larvae and pupal exuviae have been slide-mounted in Euparal.

The list of sampling sites which yielded chironomid specimens is given in Table 1. The sites are listed in alphabetical order, sorted by Municipalities of Rhodos, and with corresponding coordinates (WGS 84), collecting methods and abbreviations of the collectors’ names.

Results and discussion

541 chironomid specimens (465 larvae and 76 pupal exuviae) of 34 species-level taxa were identified (8 Tanyptodinae, 10 Orthoclaadiinae, 16 Chironominae). None of the previously recorded taxa were found; thus, all collected species proved to be new for the fauna of Rhodos. In some cases larvae and/

or pupal exuviae could not be identified to species level due to lack of adequate differentiating features, which caused loss of important information on the distribution of certain species. For example in the case of *Zavrelimyia*, one of the most common chironomid genera on Rhodos, which may contain two or more species due to the geographical distribution of the members of the genus (see Sæther & Spies 2004).

All found taxa are Palaearctic, Holarctic or cosmopolitan, and widely distributed in Europe. Accordingly, the known chironomid fauna of Rhodos does not show transitional features between the Palaearctic, Afrotropical and Oriental regions. However, further investigations, considering adults, pupal exuviae and larvae alike, are necessary to completely explore the chironomid fauna of Rhodos.

Checklist of the Chironomidae of Rhodos

In the following list, all chironomid species known from Rhodos are presented, based on the literature and the recent collections (abbreviations: 1=larvae,

Table 1. List of localities where Chironomidae specimens were collected. Abbreviations in headline: Lon.(N): northern longitude (N); Lat.(E): eastern latitude (E); leg.: abbreviations of collectors’ name. Abbreviations in “Method” column: KS: kick and sweep water netting; WN: water netting above substrate and among the vegetation; MS: manual selection. Abbreviations in “leg.” column: CsZ: Zoltán Csabai; KA: András Kálmán; KZ: Zoltán Kálmán; PZs: Zsuzsanna Pap; SN: Nándor Soós).

Collecting sites	Lon.(N)	Lat.(E)	Method	leg.
Municipality of Afandou				
Arhipoli: River Loutanis 1.	36°16'52"	28°04'45"	KS, MS	CsZ-KA-KZ-SN
Arhipoli: River Loutanis 2.	36°16'03"	28°04'08"	KS, MS	CsZ-KA-KZ-SN
Arhipoli: River Loutanis 3.	36°15'59"	28°03'30"	KS, MS	CsZ-KA-PZs-SN
Arhipoli: River Loutanis 4.	36°15'34"	28°06'01"	KS, MS	CsZ-KA-KZ-SN
Arhipoli: stream	36°15'51"	28°04'23"	KS, MS	CsZ-KA-KZ-SN
Kolympia: River Loutanis 1.	36°15'24"	28°06'55"	KS, MS	CsZ-KA-KZ-SN
Kolympia: River Loutanis 2.	36°15'39"	28°08'24"	KS, MS	CsZ-KA-KZ-SN
Kolympia: River Loutanis 3.	36°15'42"	28°08'08"	KS, MS	CsZ-KA-KZ-SN
Municipality of Arhangelos				
Arhangelos: stream 1.	36°12'52"	28°07'37"	KS, MS	CsZ-KA-KZ-SN
Arhangelos: stream 2.	36°12'42"	28°08'11"	KS, MS	CsZ-KA-KZ-SN
Arhangelos: stream 3.	36°12'39"	28°08'27"	KS, MS	CsZ-KA-KZ-SN
Charaki: River Gadouras	36°09'23"	28°03'53"	KS, MS	CsZ-KA-KZ-SN
Epta Piges (Seven Springs): concrete water channel	36°15'21"	28°06'58"	WS, MS	CsZ-KA-KZ-SN
Epta Piges (Seven Springs): lake 1.	36°15'15"	28°06'57"	WN, MS	CsZ-KA-KZ-SN
Epta Piges (Seven Springs): lake 2.	36°15'16"	28°06'56"	WN, MS	CsZ-KA-KZ-SN
Epta Piges (Seven Springs): stream 2.	36°15'20"	28°06'58"	KS, MS	CsZ-KA-KZ-SN
Epta Piges (Seven Springs): stream 3.	36°15'17"	28°06'50"	KS, MS	CsZ-KA-KZ-SN
Municipality of Ataviros				
Emponas: Grill House Taverna, barrels	36°13'41"	27°51'19"	MS	CsZ-KA-KZ-SN
Kamiros Skala: River Linero	36°16'23"	27°50'13"	KS, MS	CsZ-KA-KZ-SN
Municipality of Kalithea				
Kalithea spa: bath pool	36°22'41"	28°14'16"	WN, MS	CsZ-KA-KZ-SN
Kalithea spa: stone basin	36°22'39"	28°14'14"	MS	CsZ-KA-KZ-SN

e=exuviae). Nomenclature and distributional informations are based on Fauna Europaea (Sæther & Spies 2004).

Tanypodinae

Ablabesmyia (Ablabesmyia) longistyla Fittkau, 1962

Larvae: Fittkau & Roback (1983), Janecek (1998), Valenduuk & Moller Pillot (2007)

Pupal exuviae: Langton & Visser (2003)

Widespread in Europe, including Greek mainland and Crete. Previously unknown from Rhodes.

Collecting sites: Apollona: River Gadouras 1., 17/02/2007, 1l; Arhangelos: stream 2., 24/02/2007, 1l+1e; Arhipoli: River Loutanis 2., 19/02/2007, 2l; Arhipoli: River Loutanis 4., 19/02/2007, 1l; Kolympia: River Loutanis 3., 19/02/2007, 2l+1e; Lardos: River Lardos, 17/02/2007, 1l.

Ablabesmyia (Ablabesmyia) monilis (Linnaeus, 1758)

Larvae: Fittkau & Roback (1983), Janecek (1998), Valenduuk & Moller Pillot (2007)

Widespread in Europe, but previously unrecorded from Greece.

Collecting sites: Lardos: River Lardos, 17/02/2007, 1l.

Conchapelopia pallidula (Meigen, 1818)

Larvae: Pankratova (1977)

Pupal exuviae: Langton & Visser (2003), Michiels & Spies (2002)

Widespread in Europe. Not yet recorded from mainland Greece, but from Crete and the North Aegean Islands. The collected pupal exuviae conform with the keys mentioned above. The collected larvae fit to Pankratova's (1977) description, but a recent revision of the genus suggests that species in that species group appear to be inseparable as larvae (Michiels & Spies 2002).

Table 1. (continued).

Collecting sites	Lon.(N)	Lat.(E)	Method	leg.
Municipality of Kamiros				
Apollona: dry stream bed, pool	36°11'58"	27°58'00"	WN, MS	CsZ-KA-PZs-SN
Apollona: River Gadouras 1.	36°10'29"	27°57'23"	KS, MS	CsZ-KA-KZ-SN
Apollona: River Gadouras 2.	36°11'31"	27°57'43"	KS, MS	CsZ-KA-KZ-SN
Apollona: River Gadouras 3.	36°12'58"	27°57'35"	KS, MS	CsZ-KA-PZs-SN
Apollona: River Gadouras 4.	36°13'23"	27°57'31"	KS, MS	CsZ-KA-PZs-SN
Dimylia: stream	36°17'05"	28°00'30"	KS, MS	CsZ-KA-KZ-SN
Eleousa: stream	36°16'17"	28°02'23"	KS, MS	CsZ-KA-PZs-SN
Profitis Ilias: St. Nicholas Foundoukli, fountain	36°16'27"	27°59'51"	KS, MS	CsZ-KA-KZ-SN
Salakos: River Argiros 1.	36°18'43"	27°56'19"	KS, MS	CsZ-KA-KZ-SN
Salakos: River Argiros 2.	36°17'52"	27°57'20"	KS, MS	CsZ-KA-KZ-SN
Municipality of Lindos				
Lardos: River Kontari	36°03'59"	27°59'08"	KS, MS	CsZ-KA-KZ-SN
Lardos: River Lardos	36°05'07"	28°01'01"	KS, MS	CsZ-KA-KZ-SN
Laerma: River Lardos 1.	36°08'48"	27°54'58"	KS, MS	CsZ-KA-KZ-SN
Laerma: River Lardos 2.	36°08'25"	27°54'58"	KS, MS	CsZ-KA-KZ-SN
Municipality of Petaloudes				
Kremasti: River Kremastinos	36°24'32"	28°06'41"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 1.	36°20'03"	28°03'49"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 2.	36°20'05"	28°03'47"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 3.	36°20'06"	28°03'47"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 4.	36°20'07"	28°03'47"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 5.	36°20'11"	28°03'45"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 7.	36°20'15"	28°03'42"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies), stream 8.	36°20'17"	28°03'38"	KS, MS	CsZ-KA-KZ-SN
Petaloudes (Valley of butterflies): stream 9.	36°20'22"	28°03'36"	KS, MS	CsZ-KA-KZ-SN
Municipality of South Rhodes				
Apolakkia: dam-lake	36°06'08"	27°47'55"	WN, MS	CsZ-KA-KZ-SN
Apolakkia: River Apolakkias	36°05'09"	27°47'48"	KS, MS	CsZ-KA-KZ-SN

Collecting sites: Apollona: River Gadouras 2., 17/02/2007, 11; Arhipoli: River Loutanis 1., 19/02/2007, 21; Arhipoli: River Loutanis 2., 19/02/2007, 11; Arhipoli: River Loutanis 3., 22/02/2007, 1e; Arhipoli: River Loutanis 4., 19/02/2007, 11+2e; Arhipoli: stream, 19/02/2007, 11; Charaki: River Gadouras, 24/02/2007, 11; Dimylia: stream, 25/02/2007, 11+1e; Kolympia: River Loutanis 1., 19/02/2007, 1e; Kolympia: River Loutanis 3., 19/02/2007, 11; Lardos: River Lardos, 17/02/2007, 21; Petaloudes (Valley of Butterflies): stream 5., 21/02/2007, 11; Salakos: River Argiros 1., 20/02/2007, 11, Salakos: River Argiros 2., 20/02/2007, 51+1e.

***Macropelopia nebulosa* (Meigen, 1804)**

Larvae: Vallenduuk & Moller Pillot (2007)

Pupal exuviae: Langton & Visser (2003), Pankratova (1977)

Widespread in Europe. Previous records were from Crete only.

Collecting sites: Arhipoli: River Loutanis 2., 19/02/2007, 11; Arhipoli: River Loutanis 3., 22/02/2007, 1e; Kolympia: River Loutanis 2., 19/02/2007, 21; Kolympia: River Loutanis 3., 19/02/2007, 21+1e; Lardos: River Lardos, 17/02/2007, 101; Salakos: River Argiros 2., 20/02/2007, 211+1e.

***Paramerina cingulata* (Walker, 1856)**

Pupal exuviae: Langton & Visser (2003)

Widespread in Europe. Previously unrecorded from Greece.

Collecting sites: Kolympia: River Loutanis 2., 19/02/2007, 1e; Petaloudes (Valley of Butterflies): stream 4., 21/02/2007, 1e.

***Procladius (Holotanypus) choreus* (Meigen, 1804)
*Procladius (Holotanypus) sp.***

Larvae: Fittkau & Roback (1983), Janecek (1998), Sæther et al. (2000), Vallenduuk & Moller Pillot (2007)

Pupal exuviae: Langton & Visser (2003)

Procladius choreus is widespread in Europe, including mainland Greece (Kagalou et al. 2006). Larvae and pupal exuviae of species within the subgenus are almost indistinguishable. Distinguishing the adult males is extremely difficult as well, and the subgenus has not been revised yet (Vallenduuk & Moller Pillot 2007). The collected pupal exuviae morphologically conform with the description by Langton & Visser (2003), but larvae could not be identified to species level.

Collecting sites: Arhipoli: River Loutanis 2., 22/02/2007, 21; Arhipoli: River Loutanis 3., 22/02/2007, 11; Epta Piges (Seven Springs): lake 2., 14/02/2007, 11; Kamiros Skala: River Linero, 20/02/2007, 11; Kolympia: River Loutanis 2., 19/02/2007, 21+1e; Kolympia: River Loutanis 3., 19/02/2007, 11; Lardos: River Lardos, 17/02/2007, 41+1e; Petaloudes (Valley of Butterflies): stream 3., 21/02/2007, 11; Petaloudes (Valley of Butterflies): stream 4., 21/02/2007, 21; Petaloudes (Valley of Butterflies): stream 5., 21/02/2007, 11; Petaloudes (Valley of Butterflies): stream 7., 21/02/2007, 51; Petaloudes (Valley of Butterflies): stream 8., 21/02/2007, 11+1e.

***Thienemannimyia laeta* (Meigen, 1818)/
lentiginosa (Fries, 1823)
*Thienemannimyia sp.***

Larvae: Fittkau & Roback (1983), Janecek (1998), Sæther et al. (2000), Vallenduuk & Moller Pillot (2007)

Pupal exuviae: Langton & Visser (2003), Pankratova (1977)

Most species of *Thienemannimyia* are not known as larvae (Vallenduuk & Moller Pillot 2007); thus the collected specimens could not be identified to species level. The collected pupal exuviae belong to *Th. laeta* or *Th. lentiginosa*, which cannot be separated on the basis of diagnoses by Langton & Visser (2003) and Pankratova (1977). Although the genus is widely distributed in Europe, there are no previous records from Greece.

Collecting sites: Kolympia: River Loutanis 2., 19/02/2007, 11; Laerma, River Lardos 1., 17/02/2007, 11; Lardos: River Lardos, 17/02/2007, 1e; Petaloudes (Valley of Butterflies): stream 3., 21/02/2007, 11.

***Zavrelimyia barbatipes* (Kieffer, 1911)
*Zavrelimyia sp.***

Larvae: Fittkau & Roback (1983), Janecek (1998), Sæther et al. (2000), Vallenduuk & Moller Pillot (2007)

Pupal exuviae: Langton & Visser (2003)

The larvae of *Zavrelimyia* species are indistinguishable by morphological characters; thus the collected larvae cannot be identified to species. The genus is widely distributed in Europe, but was previously unknown from Greece. *Zavrelimyia barbatipes* probably can be found all over Europe, as the present first southeastern record suggests.

Collecting sites: Lardos: River Lardos, 17/02/2007, 5e; Apolakkia: River Apolakkias, 16/02/2007, 11; Apollona: River Gadouras 1., 17/02/2007, 21; Arhipoli: River Loutanis 2., 19/02/2007, 21; Arhipoli: River Loutanis 4., 19/02/2007, 11; Eleousa: stream, 22/02/2007, 11; Epta Piges (Seven Springs): lake 2.,

14/02/2007, 4l; Kalithea spa: bath pool, 14/02/2007, 1l; Kamiros Skala: River Linero, 20/02/2007, 1l; Laerma: River Lardos 1., 17/02/2007, 1l+1e; Laerma: River Lardos 2., 17/02/2007, 1l; Lardos: River Kontari, 17/02/2007, 1l; Lardos: River Lardos, 17/02/2007, 3l; Petaloudes (Valley of Butterflies): stream 1., 21/02/2007, 1l; Petaloudes (Valley of Butterflies): stream 3., 21/02/2007, 3l; Petaloudes (Valley of Butterflies): stream 4., 21/02/2007, 1l; Petaloudes (Valley of Butterflies): stream 5., 21/02/2007, 1l; Salakos: River Argiros 1., 20/02/2007, 1l; Salakos: River Argiros 2., 20/02/2007, 1l.

Orthoclaadiinae

Corynoneura lobata Edwards, 1924

Larvae: Cranston (1982), Cranston et al. (1983), Janecek (1998)

Widespread species in Europe. Previously, no species of *Corynoneura* had been recorded from Greece. The collected larval head capsule was found in the gut of a *Zavrelimyia* larva.

Collecting sites: Arhipoli: River Loutanis 4., 19/02/2007, 1l (head capsule).

Cricotopus (Cricotopus) albiforceps (Kieffer, 1916)

Larvae: Cranston (1982), Hirvenoja (1973)

Widespread in Europe, but recorded from Greece for the first time here.

Collecting sites: Arhangelos: stream 3., 24/02/2007, 2l; Arhipoli: River Loutanis 2., 19/02/2007, 5l; Arhipoli: River Loutanis 3., 22/02/2007, 1l.

Cricotopus (Cricotopus) flavocinctus (Kieffer, 1924)

Larvae: Cranston (1982), Hirvenoja (1973)

Widespread in Europe, but the present record is the first one from Greece.

Collecting sites: Arhipoli: River Loutanis 4., 19/02/2007, 2l.

Cricotopus (Cricotopus) triannulatus (Macquart, 1826)

Larvae: Cranston (1982), Hirvenoja (1973)

Widespread species in Europe, but previously unrecorded from Greece.

Collecting sites: Salakos: River Argiros 2., 20/02/2007, 2l.

Limnophyes sp.

Larvae: Cranston (1982), Janecek (1998), Sæther et al. (2000)

Larvae in this genus cannot be reliably identified at species level, because many species are unknown in this life stage. The genus had not been recorded from Greece before.

Collecting sites: Arhipoli: River Loutanis 3., 22/02/2007, 1l.

Orthocladius (Eudactylocladius) fuscimanus (Kieffer, 1908)

Pupal exuviae: Langton & Visser (2003)

Widely distributed in Europe. Previously known from the Greek mainland and some Aegean islands, but not from Rhodos or other Dodecanese Islands.

Collecting sites: Profitis Ilias: St. Nicholas Fountoukli, fountain, 16/02/2007, 14e.

Orthocladius (Orthocladius) excavatus Brundin, 1947

Pupal exuviae: Rossaro et al. (2003)

Because of a recent change in taxonomic interpretation and nomenclature (Rossaro et al. 2003), reliable distributional data for this species are available from few European countries only (Spies & Sæther 2004). For the same reason, the previous record from Greece would have to be reviewed as well.

Collecting sites: Kolympia: River Loutanis 3., 19/02/2007, 1e.

Orthocladius (Orthocladius) cf. wetterensis Brundin, 1956

Larvae: Cranston (1982)

Many species of *Orthocladius (Orthocladius)* are unknown as larvae. Thus, although morphological characters of our larvae conform with those given for *O. wetterensis* by Cranston (1982), positive identification beyond doubt is impossible.

Collecting sites: Laerma: River Lardos 1., 17/02/2007, 4l.

Paratrichocladius micans (Kieffer, 1918)

Data in literature: Rossaro (1990), Sæther & Spies (2004)

An Afrotropical species that also occurs throughout the Mediterranean region, including in mainland Greece, on Crete and the Dodecanese Islands.

It was not collected during the present investigation.

***Psectrocladius (Psectrocladius) limbatellus*
(Holmgren, 1869)**

Larvae: Cranston (1982)

Pupal exuviae: Langton & Visser (2003)

Widespread in Europe; previously unknown from Greece. Some collected final-stage larvae revealed features of the developing pupa, which served to confirm the identification.

Collecting sites: Arhipoli: River Loutanis 2., 19/02/2007, 1l; Lardos: River Lardos, 17/02/2007, 10l.

***Rheocricotopus (Rheocricotopus) fuscipes*
Kieffer, 1909**

Larvae: Cranston (1982), Janecek (1998)

Widespread in Europe; previously unrecorded from Greece.

Collecting sites: Arhangelos: stream 3., 24/02/2007, 1l; Petaloudes (Valley of Butterflies): stream 9., 21/02/2007, 1l; Salakos: River Argiros 2., 20/02/2007, 1l.

Chironominae

***Chironomus (Chironomus) balatonicus*
Dévai, Wülker & Scholl, 1983 /
prasinus Meigen, 1804**

Pupal exuviae: Langton & Visser 2003

According to Langton & Visser (2003), the pupal exuviae of the species treated under these two names are inseparable. However, the taxonomic identity of *C. prasinus* Meigen with material reported under this name by recent authors is questionable (see Spies & Sæther 2004); thus, corresponding distribution records are doubtful. *Chironomus balatonicus* has a wide distribution in Europe. Until the present work, neither species name was applied to material from Greece.

Collecting sites: Apolakkia: dam-lake, 16/02/2007, 16e; Arhangelos: stream 2., 24/02/2007, 1e; Lardos: River Lardos, 17/02/2007, 4e.

***Chironomus (Chironomus) bernensis* Klötzli, 1973**

Pupal exuviae: Langton & Visser (2003)

Known from many countries in Europe; previously unrecorded from Greece.

Collecting sites: Arhangelos: stream 1., 24/02/2007, 1e.

***Chironomus (Chironomus) luridus* Strenzke, 1959**

Larvae: Kiknadze et al. (1991), Webb & Scholl (1985)

Pupal exuviae: Langton & Visser (2003)

Widespread in Europe; previously unrecorded from Greece.

Collecting sites: Epta Piges (Seven Springs): lake 2., 14/02/2007, 2l+1e; Petaloudes (Valley of Butterflies): stream 9., 21/02/2007, 1l.

***Chironomus (Chironomus) riparius* group**

Larvae: Kiknadze et al. (1991), Webb & Scholl (1985)

Pupal exuviae: Langton & Visser (2003)

Collected larvae closely resemble those of *C. riparius* Meigen, 1804 / *C. piger* Strenzke, 1956 (in many cases, the outer hooks on the ventromental plates cannot be counted). Associated pupal exuviae are more similar to those of *C. commutatus* Keyl, 1960. In the absence of adult males and/or karyological investigations, the collected specimens cannot be identified reliably; they may belong to more than a single species.

Collecting sites: Apollona: River Gadouras 3., 22/02/2007, 8l+9e; Apollona: River Gadouras 4., 22/02/2007, 25l; Arhipoli: River Loutanis 3., 22/02/2007, 36l+1e; Dimylia: stream, 25/02/2007, 69l+3e; Emponas: Grill House Taverna, barrels, 16/02/2007, 3l+1e; Epta Piges (Seven Springs): lake 2., 14/02/2007, 1l; Kalithea spa: bath pool, 14/02/2007, 31l; Kalithea spa: stone basin, 14/02/2007, 7l; Kamiros Skala: River Linero, 20/02/2007, 2l; Lardos: River Kontari, 17/02/2007, 4l; Lardos: River Lardos, 17/02/2007, 1l;

***Chironomus (Chironomus) salinarius* Kieffer, 1915**

Pupal exuviae: Langton & Visser (2003)

Widespread in Europe; previously unrecorded from Greece.

Collecting sites: Arhangelos: stream 1., 24/02/2007, 1e.

***Cryptochironomus psittacinus* (Meigen, 1830)**

Larvae: Klink & Moller Pillot (2003), Morozova (2000)

The species occurs in many European countries. The present record is the first from Greece.

Collecting sites: Epta Piges (Seven Springs): concrete water channel, 15/02/2007, 2l; Epta Piges (Seven Springs): lake 2., 14/02/2007, 1l.

***Cryptochironomus rostratus* Kieffer, 1921**

Larvae: Klink & Moller Pillot (2003)

Widespread in Europe; not previously found in Greece.

Collecting sites: Arhipoli: River Loutanis 4., 19/02/2007, 2l; Epta Piges (Seven Springs): stream 2., 15/02/2007, 1l; Kolympia: River Loutanis 1., 19/02/2007, 1l; Kolympia: River Loutanis 3., 19/02/2007, 1l.

***Demicryptochironomus (Irmakia) latior* Reiss, 1988**

Data in literature: Laville & Reiss (1992), Sæther & Spies (2004)

This species is known only from Austria, Germany, Lithuania, and Greece (including the mainland, Crete, and Rhodos).

It was not collected during the present investigation.

***Dicrotendipes nervosus* (Stæger, 1839)**

Data in literature: Contreras-Lichtenberg (1986), Sæther & Spies (2004)

One of the most common species in Europe. It also has been recorded from mainland Greece and the Dodecanese Islands (Rhodos).

It was not collected during the present investigation.

***Harnischia curtilamellata* (Malloch, 1915)**

Larvae: Pankratova (1983)

Widespread in Europe, but previously unrecorded from Greece.

Collecting sites: Kolympia: River Loutanis 3., 19/02/2007, 1l.

***Kiefferulus (Kiefferulus) tendipediformis* (Goetghebuer, 1921)**

Larvae: Janecek (1998), Pankratova (1983), Pinder & Reiss (1983)

Known from many countries in Europe, but previously unrecorded from Greece.

Collecting sites: Apollona: dry stream bed, pool, 22/02/2007, 1l; Kalithea spa: bath pool, 14/02/2007, 2l.

***Paratendipes albimanus* (Meigen, 1818)**

Larvae: Klink & Moller Pillot (2003), Pankratova (1983), Pinder & Reiss (1983)

Widespread in Europe, but not previously found in Greece.

Collecting sites: Arhipoli: River Loutanis 2., 19/02/2007, 1l; Epta Piges (Seven Spring): lake 2., 14/02/2007, 6l; Kolympia: River Loutanis 2., 19/02/2007, 3l; Petaloudes (Valley of Butterflies): stream 7., 21/02/2007, 1l.

***Phaenopsectra flavipes* (Meigen, 1818)**

Larvae: Pinder & Reiss (1983)

Widely distributed in Europe. In Greece it was previously known from Crete only.

Collecting sites: Arangelos: stream 2., 24/02/2007, 2l; Arangelos: stream 3., 24/02/2007, 2l; Arhipoli: River Loutanis 2., 19/02/2007, 6l; Arhipoli: River Loutanis 3., 22/02/2007, 1l; Charaki: River Gadouras, 24/02/2007, 2l; Epta Piges (Seven Spring): lake 1., 14/02/2007, 1l; Epta Piges (Seven Spring): lake 2., 14/02/2007, 3l; Laerma: River Lardos 1., 17/02/2007, 1l.

***Polypedilum (Polypedilum) nubeculosum* (Meigen, 1804)**

Larvae: Janecek (1998), Klink & Moller Pillot (2003), Pinder & Reiss (1983)

One of the most common species in Europe, but previously unrecorded from Greece.

Collecting sites: Apollona: River Gadouras 1., 17/02/2007, 1l; Kremasti: River Kremastinos, 21/02/2007, 34l.

***Polypedilum (Tripodura) elongatum* Albu, 1980**

Data in literature: Sæther & Spies (2004)

This species has been reported only from France, Germany, Romania, Greece (all mainland and island regions, including Rhodos), Cyprus, and from the Near East.

It was not collected during the present investigation.

***Polypedilum (Tripodura) malickianum* Cranston, 1989**

Data in literature: Cranston (1989), Sæther & Spies (2004).

Known only from the Mediterranean and the Middle East (Cranston 1989, Laville & Reiss 1992, Sæther &

Spies 2004). A male adult collected in Rhodos was designated as one of the paratypes (Cranston 1989). In Greece it has also been found in Crete.

It was not collected during the present investigation.

Polypedilum (Tripodura) sp.

Larvae: Janecek (1998), Sæther et al. (2000)

Many species of the subgenus are unknown or inadequately described as larvae. There are two species known from Rhodos: *P. (T.) elongatum* and *P. (T.) malickianum*; see above. The collected specimens can belong to either of these, as well as to another species in the subgenus.

Collecting sites: Kremasti: River Kremastinos, 21/02/2007, 11.

***Polypedilum (Uresipedilum) convictum*
(Walker, 1856)**

Larvae: Janecek (1998), Klink & Moller Pillot (2003), Pinder & Reiss (1983)

Widely distributed in Europe. In Greece it was previously known from Crete only.

Collecting sites: Arhangelos: stream 3., 24/02/2007, 11; Arhipoli: River Loutanis 1., 19/02/2007, 11; Arhipoli: River Loutanis 2., 19/02/2007, 21; Arhipoli: River Loutanis 4., 19/02/2007, 21; Arhipoli: stream, 19/02/2007, 11.

Stictochironomus sp.

Larvae: Janecek (1998), Pinder & Reiss (1983), Sæther et al. (2000)

The larvae of most species in this genus are unknown, unassociated or inadequately described. Previously, the genus was not reliably recorded from Greece.

Collecting sites: Eleousa: stream, 22/02/2007, 11; Epta Piges (Seven Spring): lake 2., 14/02/2007, 21; Epta Piges (Seven Spring): stream 3., 15/02/2007, 11; Laerma: River Lardos 1., 17/02/2007, 21; Lardos: River Lardos, 17/02/2007, 41; Petaloudes (Valley of Butterflies): stream 1., 21/02/2007, 21; Petaloudes (Valley of Butterflies): stream 2., 21/02/2007, 21; Petaloudes (Valley of Butterflies): stream 3., 21/02/2007, 11; Salakos: River Argiros 2., 20/02/2007, 131.

Paratanytarsus sp.

Larvae: Janecek (1998), Pinder & Reiss (1983), Sæther et al. (2000)

Many species in this genus are unknown unassociated or inseparable as larvae. Previously, no member

of the genus was recorded from the Dodecanese Islands.

Collecting sites: Arhipoli: River Loutanis 4., 19/02/2007, 11.

***Tanytarsus cretensis* Reiss, 1987**

Data in literature: Reiss (1987), Sæther & Spies (2004).

The species is known from Austria, France, Germany, Greece (all regions except the northern Aegean islands), and from North Africa.

It was not collected during the present investigation.

***Tanytarsus pe14* Langton, 1991**

Data in literature: Langton 1991, Langton & Visser 2003.

This pupal exuvial morphotype was described from Rhodos and Crete. It is clearly distinguishable from the pupa of *T. cretensis* and those of other scientifically named *Tanytarsus* species for which the pupa has been associated (Langton & Visser 2003)

It was not collected during the present investigation.

Acknowledgements

Investigations were financially supported by the Student Union of the Faculty of Sciences, University of Pécs (Pécs, Hungary) and by Post-Bau Ltd. (Pécs, Hungary). Many thanks to anonymous reviewer for his valuable comments and suggestions.

References

- Contreras-Lichtenberg, R. 1986. Revision der in der Westpaläarktis verbreiteten Arten des Genus *Dicrotendipes* Kieffer, 1913 (Diptera, Nematocera, Chironomidae). Annalen des Naturhistorischen Museums in Wien, Serie B 88/89, 663-726.
- Cranston, P. S. 1982. A key to the larvae of the British Orthoclaadiinae (Chironomidae). Freshwater Biological Association Scientific Publications 45, 152 pp.
- – 1989. New species of Chironominae (Diptera: Chironomidae) from Saudi Arabia and the adjacent Middle East. Fauna of Saudi Arabia 10, 225-235.
- Cranston, P. S., Oliver, D. R. & Sæther, O. A. 1983. 9. The larvae of Orthoclaadiinae (Diptera: Chironomidae) of the Holarctic region – keys and diagnoses. Entomologica Scandinavica Supplement 19, 149-291.
- Fittkau, E. J. & Roback, S. S. 1983. 5. The larvae of Tanypodinae (Diptera: Chironomidae) of the Holarctic region – keys and diagnoses. Entomologica Scandinavica Supplement 19, 33-110.

- Hirvenoja, M. 1973. Revision der Gattung *Cricotopus* van der Wulp und ihrer Verwandten (Diptera, Chironomidae). *Annales Zoologici Fennici* 10, 1-363.
- Janecek, B. F. R. 1998. Diptera: Chironomidae (Zuckmücken). Bestimmung von 4. Larvenstadien mitteleuropäischer Gattungen und österreichischer Arten. In: *Fauna Aquatica Austriaca V. Kursmaterial*, Universität für Bodenkultur, Abteilung Hydrobiologie, Wien, 116+16 pp., appendix.
- Kagalou, I., Economidis, G., Leonardos, I. & Papaloukas, C. 2006. Assessment of a Mediterranean shallow lentic ecosystem (Lake Pamvotis, Greece) using benthic community diversity: Response to environmental parameters. *Limnologia* 36, 269-278.
- Kiknadze, I. I., Shilova, A. I., Kerkis, I. E., Shobanov, I. A., Zelentsov, I. I., Grebenyuk, L. P., Istomina, A. G. & Prasolov, V. A., 1991. Kariotipy i morfologiya lichinok triby Chironomini. Atlas. Akademiya Nauk SSSR, Novosibirsk, 115 pp.
- Klink, A. G. & Moller Pillot, H. K. M. 2003. Chironomidae larvae. Key to the higher taxa and species of the lowlands of Northwestern Europe. In: *World Biodiversity Database CD-ROM Series. Multimedia Interactive Software 1.0.*, Expert Center for Taxonomic Identification, University of Amsterdam, Amsterdam.
- Langton, P. H. 1991. A key to pupal exuviae of West Palaearctic Chironomidae. P. H. Langton, Huntingdon, Cambridgeshire, 386 pp.
- Langton, P. H. & Visser, H. 2003. Chironomidae exuviae. Key to pupal exuviae of the West Palaearctic Region. In: *World Biodiversity Database CD-ROM Series. Multimedia Interactive Software 1.0.*, Expert Center for Taxonomic Identification, University of Amsterdam, Amsterdam.
- Laville, H. & Reiss, F. 1992. The chironomid fauna of the Mediterranean region reviewed. *Netherlands Journal of Aquatic Ecology* 26, 239-245.
- Michiels, S. & Spies, M. 2002. Description of *Conchapelopia hittmairorum*, spec. nov., and redefinition of similar western Palaearctic species. *Spixiana* 25, 251-272.
- Morozova, E. E. 2000. The Volga region species of *Cryptochironomus* ex gr. *defectus* Kieffer (Diptera, Chironomidae): problems of diagnostics. In: Hofrichter, O. (Ed.). *Late 20th Century Research on Chironomidae: an Anthology from the 13th International Symposium on Chironomidae*. Shaker Verlag, Aachen, pp. 193-196.
- Pankratova, V. Ya. 1977. Lichinki i kukolki komarov podsemeistv Podonominae i Tanypodinae fauny SSSR (Diptera, Chironomidae = Tendipedidae). *Opredeliteli po Faune SSSR* 112, 1-152.
- – 1983. Lichinki i kukolki komarov podsemeistva Chironominae fauny SSSR (Diptera, Chironomidae = Tendipedidae). *Opredeliteli po Faune SSSR* 134, 1-295.
- Pinder, L. C. V. & Reiss, F. 1983. 10. The larvae of Chironominae (Diptera: Chironomidae) of the Holarctic region – keys and diagnoses. *Entomologica Scandinavica Supplement* 19, 293-435.
- Reiss, F. 1987. *Tanytarsus cretensis* sp. n., eine neue west-palaeartische Chironomidenart aus Fließgewässern (Diptera, Insecta). *Nachrichtenblatt der bayerischen Entomologen* 36, 26-30.
- Rossaro, B. 1990. Revision of the genus *Paratrichocladius* Santos-Abreu. 2nd note: description of 4 new species (Diptera Chironomidae Orthoclaadiinae). *Bollettino della Societa Entomologica Italiana* 122, 58-60.
- Rossaro, B., Lencioni, V. & Casalegno, C. 2003. Revision of West Palaearctic species of *Orthoclaadius* s. str. van der Wulp, 1874 (Diptera: Chironomidae: Orthoclaadiinae), with a new key to species. *Studi Trentini di Scienze Naturali, Acta Biologica* 79, 213-241.
- Sæther, O. A., Ashe, P. & Murray, D. A. 2000. A.6. Family Chironomidae. In: Papp, L. & Darvas, B. (eds). *Contribution to a manual of Palaearctic Diptera*. Appendix. *Science Herald*, Budapest, pp. 113-334.
- Sæther, O. A. & Spies, M. 2004. *Fauna Europaea: Chironomidae*. In: de Jong, H. (ed.). *Fauna Europaea: Diptera, Nematocera*. *Fauna Europaea version 1.3*. World Wide Web electronic publication. www.faunaeur.org [accessed 07.08.2008]
- Spies, M. & Sæther, O. A. 2004. Notes and recommendations on taxonomy and nomenclature of Chironomidae (Diptera). *Zootaxa* 752, 1-90.
- Vallenduuk, H. J. & Moller Pillot, H. K. M. 2007. Chironomidae larvae. General ecology and Tanypodinae. KNNV Publishing, Zeist, The Netherlands, 144 pp.
- Webb, C. J. & Scholl, A. 1985. Identification of larvae of European species of *Chironomus* Meigen (Diptera: Chironomidae) by morphological characters. *Systematic Entomology* 10, 353-372.