Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae) of Greece: species richness, distribution and description of five new species

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Abstract

All records of aquatic dance flies (37 species in subfamily Clinocerinae and 10 species in subfamily Hemerodromiinae) from the territory of Greece are summarized, including previously unpublished data and data on five newly described species (Chelifera horvati Ivković & Sinclair, sp. n., Wiedemannia iphigeniae Ivković & Sinclair, sp. n., W. ljerkae Ivković & Sinclair, sp. n., W. nebulosa Ivković & Sinclair, sp. n. and W. pseudobertheleymi Ivković & Sinclair, sp. n.). The new species are described and illustrated, the male terminalia of Clinocera megalatlantica (Vaillant) are illustrated and the distributions of all species within Greece are listed. The aquatic Empididae fauna of Greece consists of 47 species, with the following described species reported for the first time: Chelifera angusta Collin, Hemerodromia melangyna Collin, Clinocera megalatlantica, Kowarzia plectrum (Mik), Phaeobalia dimidiata (Loew), W. (Chamaedipsia) beckeri (Mik), W. (Philolutra) anghieri Vaillant and W. (P.) chvali Joost. A key to species of aquatic Empididae of Greece is provided for the first time. Information related to the European Ecoregions in which species were found is given. Compared to the other studied countries in the Balkans, the Greek species assemblage is most similar to that of the Former Yugoslav Republic of Macedonia.

Keywords

Clinocerinae, Hemerodromiinae, new species, key to species, faunistics, European Ecoregions, Greece
Introduction

The aquatic dance flies of the family Empididae (Diptera) comprise the subfamilies Clinocerinae and Hemerodromiinae. Larvae mostly live in aquatic habitats and both larvae and adults are predators, primarily feeding on Simuliidae (Vaillant 1952, 1953, Werner and Pont 2003) and Chironomidae (Vaillant 1967, Harkrider 2000, Ivković et al. 2007). Adult Hemerodromiinae are distinguished by raptorial forelegs and live and hunt in riparian vegetation. On the other hand, adult Clinocerinae are primarily found on the surface of emergent wet stones or in moss mats (Wagner 1997, Ivković et al. 2007).

The aquatic dance fly fauna of Greece has been sporadically investigated during the last few decades. The first records were noted by Vaillant and Wagner (1990), Wagner (1981, 1990, 1995), Wagner and Horvat (1993), and recently by Ivković et al. (2012).

Distribution and diversity studies are of immense importance in studying factors that influence and determine diversity hotspots (Ivković and Plant 2015, Schmidt-Kloiber et al. 2017). The present paper is based on detailed analysis of all publications on Greek aquatic dance flies known to the authors. The authors have also contributed additional records of Greek aquatic dance flies resulting from the examination of specimens collected by colleagues who surveyed 258 sites sampled in the late 1980s and early 1990s. In addition, one new species of Chelifera Macquart and four new species of Wiedemannia Zetterstedt are herein described.

Material and methods

Specimen records. This paper is based on a review of the literature, and primarily on unpublished data and specimens from Bogdan Horvat’s study of the aquatic dance fly fauna of Greece. Wherever possible, each literature record and specimen record was georeferenced as precisely as possible using ArcGIS software. The names of taxa reflect current nomenclature and classifications (Sinclair 1995, Yang et al. 2007). The literature used for identifications included Engel (1939, 1940), Vaillant and Wagner (1990), Wagner (1981, 1990, 1995), Wagner and Horvat (1993) and Ivković et al. (2012). Locality records are listed for each species. A list of locality names including latitude, longitude, altitude and number codes (site ID) for the localities is presented in Table 1 and a map showing the locations of all the georeferenced sites is also provided (Fig. 1). Specimens were collected using sweep nets and by aspirator. They were preserved in 80% ethanol (EtOH). For the purpose of determination, male terminalia were dissected, boiled in 10% KOH and afterwards neutralized with acetic acid, rinsed in water and identified to species level; or they were macerated in hot 85% lactic acid and stored in 80% ethanol along with the remaining body parts in the same tube. In the genitalia illustrations, only the sockets of the setae are shown on the epandrium; the setae are not drawn. All specimens listed in the material examined sections were collected by Bogdan Horvat, Ignac Sivec, Hans Malicky and
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

Table 1. List of sampling sites in Greece. European Ecoregions are taken from Illies (1978): Hellenic Western Balkan (6) and Eastern Balkan (7).

| Site ID | Site name                                                                 | Latitude          | Longitude          | Altitude (m) | Ecoregion |
|---------|---------------------------------------------------------------------------|-------------------|--------------------|--------------|-----------|
| 1       | Thrace, E of Mega Derio                                                   | N41°13′10″        | E26°03′03″         | 200          | 7         |
| 2       | Thrace, W of Mega Derio                                                   | N41°11′29″        | E25°57′30″         | 710          | 7         |
| 3       | Thrace, Leitise Mts.                                                      | N41°07′28″        | E25°57′04″         | 760          | 7         |
| 4       | Thrace, E of Sapka Mts., big stream in the valley                         | N41°08′           | E25°57′            | 600          | 7         |
| 5       | Thrace, N of Avas                                                         | N41°00′07″        | E25°55′36″         | 200          | 7         |
| 6       | Thrace, Sapka Mts. 1                                                      | N41°09′56″        | E25°55′17″         | 735          | 7         |
| 7       | Thrace, 3 km N of Alexandroupoli                                          | N40°54′           | E25°55′            | 100          | 7         |
| 8       | Thrace, Sapka Mts. 2                                                      | N41°11′02″        | E25°54′40″         | 545          | 7         |
| 9       | Thrace, Sapka Mts., Nea Sanda 1                                           | N41°07′28″        | E25°50′02″         | 200          | 7         |
| 10      | Thrace, Anatoliki Rodopi, E od Drimi                                       | N41°13′26″        | E25°35′35″         | 240          | 7         |
| 11      | Thrace, Anatoliki Rodopi, Drimi                                           | N41°12′52″        | E25°34′34″         | 180          | 7         |
| 12      | Thrace, Anatoliki Rodopi, E of Gratini 1                                  | N41°10′10″        | E25°34′29″         | 100          | 7         |
| 13      | Thrace, Anatoliki Rodopi, E of Gratini 2                                  | N41°10′10″        | E25°34′29″         | 160          | 7         |
| 14      | Thrace, Samothrace, hygropetric at the church of Kremintotissa            | N40°25′           | E25°34′            | 400          | 7         |
| 15      | Thrace, Miki                                                              | N41°14′           | E24°55′            | 340          | 7         |
| 16      | Thrace, 8 km N of Sminthi                                                 | N41°14′49″        | E24°51′44″         | 300          | 7         |
| 17      | Thrace, N of Xanthi                                                       | N41°11′39″        | E24°51′08″         | 200          | 7         |
| 18      | Thrace, N of Dipotama 1                                                   | N41°24′28″        | E24°40′10″         | 1430         | 7         |
| 19      | Thrace, N of Dipotama 2                                                   | N41°24′50″        | E24°38′51″         | 1310         | 7         |
| 20      | Thrace, Dit. Rodopi, N of Dipotama 1                                      | N41°25′07″        | E24°38′22″         | 1290         | 7         |
| 21      | Thrace, N of Dipotama 3                                                   | N41°23′53″        | E24°38′06″         | 1030         | 7         |
| 22      | Thrace, N of Dipotama 4                                                   | N41°24′47″        | E24°37′56″         | 1340         | 7         |
| 23      | Thrace, N of Dipotama 5                                                   | N41°24′24″        | E24°37′19″         | 1400         | 7         |
| 24      | Thrace, Dit. Rodopi, N of Dipotama 2                                      | N41°23′           | E24°37′            | 1000         | 7         |
| 25      | Thrace, Dit. Rodopi, N of Dipotama 3                                      | N41°24′14″        | E24°36′45″         | 1415         | 7         |
| 26      | Thrace, S of Dipotama                                                     | N41°21′22″        | E24°36′20″         | 440          | 7         |
| 27      | Thrace, S of Silli                                                        | N41°20′40″        | E24°33′50″         | 315          | 7         |
| 28      | Thrace, Rodopi, Skaloti                                                   | N41°24′           | E24°17′            | 1090         | 7         |
| 29      | Thrace, Rodopi 1                                                          | N41°33′00″        | E24°16′25″         | 1400         | 7         |
| 30      | Thrace, N of Sidironero 1                                                 | N41°26′42″        | E24°14′46″         | 930          | 7         |
| 31      | Thrace, Rodopi 2                                                          | N41°28′48″        | E24′14′40″         | 945          | 7         |
| 32      | Thrace, N of Sidironero 2                                                 | N41°22′50″        | E24′13′04″         | 910          | 7         |
| 33      | Thrace, W of Sidironero                                                   | N41°23′13″        | E24′12′03″         | 500          | 7         |
| 34      | Thrace, Rodopi, E of Mikromelia                                           | N41°25′22″        | E24′10′04″         | 670          | 7         |
| 35      | Thrace, Unspecified                                                       |                  |                    |              |           |
| 36      | Macedonia, Dit. Rodopi, Elatia forest                                     | N41°29′           | E24′19″            | 1450         | 7         |
| 37      | Macedonia, E of Mikroklisounara                                           | N41°23′14″        | E24′03′48″         | 370          | 7         |
| 38      | Macedonia, N of Stavros                                                  | N40°40′           | E23′39′            | 100          | 7         |
| 39      | Macedonia, R. Mavroneri, 10 km W of Katerini                              | N40°11′           | E22′24′            | 160          | 6         |
| 40      | Macedonia, Olympus Mts. above Agios Dyonyos, Prionia                      | N40°04′           | E22′22′            | 1050–1700    | 6         |
| 41      | Macedonia, Pieria Mts., 2 streams on Ritini                              | N40°17′           | E22′16′            | 800          | 6         |
| 42      | Macedonia, N of Agios Dimitrios                                          | N40°10′           | E22′16′            | 660          | 6         |
| 43      | Macedonia, Pieria Mts., S of Elatohori                                   | N40°15′           | E22′15′            | 1010         | 6         |
| 44      | Macedonia, Pieria Mts., S of Elatohori                                   | N40°15′           | E22′15′            | 1010         | 6         |
| Site ID | Site name | Latitude | Longitude | Altitude (m) | Ecoregion |
|--------|-----------|----------|-----------|--------------|-----------|
| 45     | Macedonia, S of Agios Dimitrios | N40°08'37" | E22°13'07" | 860 | 6 |
| 46     | Macedonia, Pieria Mts., E of Fteri | N40°11'52" | E22°12'42" | 840 | 6 |
| 47     | Macedonia, Pieria Mts., E of Fteri | N40°11' | E22°09' | 1080 | 6 |
| 48     | Macedonia, Pieria Mts., W of Fteri | N40°11'49" | E22°08'20" | 1440 | 6 |
| 49     | Macedonia, W of Daskio | N40°19'32" | E22°08'14" | 460 | 6 |
| 50     | Macedonia, Pieria Mts., E of Velventos | N40°14'05" | E22°07'51" | 1330 | 6 |
| 51     | Macedonia, Pieria Mts., 1 | N40°10'35" | E22°06'54" | 1500 | 6 |
| 52     | Macedonia, Pieria Mts., 2 | N40°13'42" | E22°06'37" | 1270 | 6 |
| 53     | Macedonia, Pieria Mts., 3 | N40°11'35" | E22°05'31" | 1480 | 6 |
| 54     | Macedonia, E of Velventos | N40°16'54" | E22°05'11" | 420 | 6 |
| 55     | Macedonia, Phalacro Mts., N of Livadero | N40°03' | E21°53' | 690 | 6 |
| 56     | Macedonia, Grevena, Milea | N40°08' | E21°31' | 480 | 6 |
| 57     | Macedonia, Grevena, 6 km S of Milea | N40°07' | E21°30' | 470 | 6 |
| 58     | Macedonia, Grevena, stream S of R. Aliakmon by Kamilas Pigi | N40°02' | E21°27' | 600 | 6 |
| 59     | Macedonia, Kozani, Polilako (Paraveti), Neapolis | N40°18' | E21°25' | 550 | 6 |
| 60     | Macedonia, Grevena, R. Venetikos, Kipourio | N39°59' | E21°22' | 500 | 6 |
| 61     | Macedonia, Vernon, influx of Aliakmon between Gavros and Aposkepos | N40°39' | E21°11' | 450 | 6 |
| 62     | Macedonia, Kastoria, Nestorio | N40°24' | E21°04' | 800 | 6 |
| 63     | Macedonia, Smokilas Mts., main stream near the bridge, 2 km E of Agia Paraskevi | N40°08' | E21°00' | 1100 | 6 |
| 64     | Macedonia, Kastoria, Grammos Mts., 7 km S Chrissi | N40°14' | E20°52' | 650 | 6 |
| 65     | Macedonia, Kastoria, Grammos Mts., 6 km N Pefkofito | N40°19' | E20°50' | 1500 | 6 |
| 66     | Macedonia, Chalkidiki, Chlomon Oros., Paleokastron, Vatonia P. 1 | Unspecified | 550 | / |
| 67     | Macedonia, Chalkidiki, Chlomon Oros., Paleokastron, Vatonia P. 2 | Unspecified | 1500 | / |
| 68     | Macedonia, Chalkidiki, Chlomon Oros., valley on the southern slope | Unspecified | 650 | / |
| 69     | Macedonia, Xanthi, NE Pass Str. Xanthi-Stavroupolis | Unspecified | 800 | 7 |
| 70     | Thessaly, Portaria | N39°23' | E23°01' | 700 | 6 |
| 71     | Thessaly, Ossa Mts., stream Apataniana | N39°50' | E22°42' | 1200 | 6 |
| 72     | Thessaly, Karya | N40°00' | E22°26' | 750–800 | 6 |
| 73     | Thessaly, S of Kallithea | N39°58'35" | E22°12'49" | 510 | 6 |
| 74     | Thessaly, Pieria Mts., S of Livadi | N40°06'20" | E22°10'11" | 800 | 6 |
| 75     | Thessaly, 5 km W of Palaia Giannitou | N39°03' | E22°01' | 500 | 6 |
| 76     | Thessaly, Deskiti | N39°56'53" | E21°54'30" | 690 | 6 |
| 77     | Thessaly, Trikala, Longia | N39°34' | E21°45' | 100 | 6 |
| 78     | Thessaly, S of Asproklisias | N39°49'56" | E21°42'48" | 500 | 6 |
| 79     | Thessaly, Trikala, Moshoftio, Avra | N39°42' | E21°42' | 200 | 6 |
| 80     | Thessaly, Kalambaka, Agios Nikolaos | N39°43' | E21°35' | 200 | 6 |
| 81     | Thessaly, Trikala, Stournareika | N39°26' | E21°31' | 400 | 6 |
| 82     | Thessaly, Trikala, Kato Palagokaria | N39°25' | E21°30' | 600 | 6 |
| 83     | Thessaly, Kalambaka, 5 km E of Paleochori | N39°37' | E21°28' | 600 | 6 |
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

| Site ID | Site name                                      | Latitude  | Longitude | Altitude (m) | Ecoregion |
|---------|-----------------------------------------------|-----------|-----------|--------------|-----------|
| 84      | Thessaly, Kalambaka, Paleochori               | N39°36'   | E21°25'   | 1000         | 6         |
| 85      | Thessaly, Kalambaka, Trigona                  | N39°46'   | E21°24'   | 400          | 6         |
| 86      | Thessaly, Kalambaka, Koridallos               | N39°46'   | E21°22'   | 450          | 6         |
| 87      | Thessaly, Trikala, Arta, Pahtouri             | N39°27'   | E21°16'   | 600          | 6         |
| 88      | Thessaly, Trikala, Arta, R. Ahelos, Kapsala   | N39°22'   | E21°16'   | 500          | 6         |
| 89      | Thessaly, Trikala, Arta, Korifi               | N39°25'   | E21°15'   | 600          | 6         |
| 90      | Thessaly, Trikala, 9 km S of Chrisomilea      | Unspecified |          |              | 6         |
| 91      | Thessaly, Kalambaka, 4 km S of Ambelia        | Unspecified |          |              | 6         |
| 92      | Epirus, Metsovo, 14 km S of Milea             | N39°44'   | E21°17'   | 900          | 6         |
| 93      | Epirus, Metsovo, Lakmos Mts., Anilio (5 km S bellow river) | N39°43'   | E21°16'   | 1300         | 6         |
| 94      | Epirus, Pindus Mts., Metsovo, meadow source easthang | N39°46'   | E21°12'   | 1350         | 6         |
| 95      | Epirus, N of Katara pass, 1 km SW Milea       | N39°50'   | E21°11'   | 1300         | 6         |
| 96      | Epirus, Metsovo, Katara Pass                  | N39°48'   | E21°10'   | 1350         | 6         |
| 97      | Epirus, Metsovo, Lakmos Mts., 2 km S of Anilio (bellow left tributary) | N39°44'   | E21°10'   | 840          | 6         |
| 98      | Epirus, Metsovo, 12 km W Milea                | N39°51'   | E21°09'   | 1250         | 6         |
| 99      | Epirus, Metsovo, R. Metsovitikos              | N39°44'   | E21°09'   | 800          | 6         |
| 100     | Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) | N39°44'   | E21°08'   | 780          | 6         |
| 101     | Epirus, Lakmos Mts., 10 km S of Anilio        | N39°36'   | E21°07'   | 1150         | 6         |
| 102     | Epirus, Metsovo, Lakmos Mts., Anilio (15 km S influx) | N39°33'   | E21°06'   | 500          | 6         |
| 103     | Epirus, Metsovo, 14 km W of Milea             | N39°55'   | E21°03'   | 1000         | 6         |
| 104     | Epirus, Ioannina, Megalo Peristeri            | N39°44'   | E21°03'   | 600          | 6         |
| 105     | Epirus, Xerovouni Mts., Plaka, R. Arachthos, u. Agnatha | N39°20'   | E21°02'   | 200          | 6         |
| 106     | Epirus, Ioannina, R. Zagoritikos, Karies      | N39°44'   | E20°56'   | 500          | 6         |
| 107     | Epirus, Konitsa, Smolikas Mts., Pournia       | N40°08'   | E20°54'   | 1100         | 6         |
| 108     | Epirus, Konitsa, R. Saradaporos, Drosopigi    | N40°08'   | E20°53'   | 900          | 6         |
| 109     | Epirus, Konitsa, Asimohori                    | N40°02'   | E20°44'   | 450          | 6         |
| 110     | Epirus, 10 km N of Louros                     | N39°14'22" | E20°42'05" | 200         | 6         |
| 111     | Epirus, S of Seritziana                       | N39°17'07" | E20°41'37" | 200         | 6         |
| 112     | Epirus, Ioannina, R. Voidomatis, Aristi       | N39°56'   | E20°41'   | 400          | 6         |
| 113     | Epirus, Preveza, Zalongu, stream 2 km E of Mirsini | N39°07'   | E20°39'   | 180          | 6         |
| 114     | Epirus, W of Kriopigi                         | N39°09'30" | E20°38'18" | 170         | 6         |
| 115     | Epirus, R. Aheron, N of Gliki                 | N39°21'34" | E20°37'52" | 200         | 6         |
| 116     | Epirus, Kanallaki, Skepaston                  | N39°13'   | E20°37'   | 100          | 6         |
| 117     | Epirus, Mirsini                               | N39°08'   | E20°37'   | 120          | 6         |
| 118     | Epirus, R. Aheron, Gliki                      | N39°19'   | E20°36'   | 50           | 6         |
| 119     | Epirus, R. Kokitos, W of Gardiki              | N39°21'   | E20°33'   | 50           | 6         |
| 120     | Epirus, R. Kokitos, Themelo                   | N39°15'   | E20°31'   | 40           | 6         |
| 121     | Epirus, Igoumenitsa, Thespriota, R. Thiamis, Neohori | N39°31'   | E20°22'   | 30           | 6         |
| 122     | Epirus, Igoumenitsa, R. Thiamis, Souloupolou  | N39°33'   | E20°12'   | 5           | 6         |
| 123     | Epirus, Ioannina, V. Vardas, Abelin          | Unspecified |          |              | 6         |
| 124     | Epirus, Ioannina, Balindouma                  | Unspecified |          |              | 6         |
| Site ID | Site name                                                                 | Latitude   | Longitude  | Altitude (m) | Ecoregion |
|--------|---------------------------------------------------------------------------|------------|------------|--------------|-----------|
| 125    | North Aegean islands, Samos, below Manolates                              | N37°47'    | E26°49'    | 160          | 6         |
| 126    | North Aegean islands, Samos, E of Pirgos                                 | N37°43'    | E26°49'    | 300          | 6         |
| 127    | North Aegean islands, Lesbos, 7 km E of Plomari                           | N38°59'    | E26°26'    | 110          | 6         |
| 128    | North Aegean islands, Lesbos, 1 km W of Ippion                            | N39°08'    | E26°24'    | 70           | 6         |
| 129    | North Aegean islands, Lesbos, 1 km SW of Megalochori                      | N39°01'    | E26°21'    | 280          | 6         |
| 130    | North Aegean islands, Lesbos, 3 km NW of Agiasos                          | N39°06'    | E26°20'    | 320          | 6         |
| 131    | North Aegean islands, Lesbos, 4 km W of Agiasos                           | N39°06'    | E26°20'    | 400          | 6         |
| 132    | North Aegean islands, Lesbos, 2 km N of Akrassi                          | N39°03'    | E26°19'    | 370          | 6         |
| 133    | North Aegean islands, Lesbos, S of Neochorion                            | N39°01'    | E26°19'    | 270          | 6         |
| 134    | North Aegean islands, Lesbos, Ambeliko                                   | N39°04'    | E26°18'    | 340          | 6         |
| 135    | North Aegean islands, Lesbos, E of Lepetimnos                            | N39°22'    | E26°16'    | 330          | 6         |
| 136    | North Aegean islands, Icaria, W of Chrisostomos                          | N37°35'    | E26°13'    | 270          | 6         |
| 137    | North Aegean islands, Chios, 2 km N of Fita                              | N38°32'    | E26°00'    | 510          | 6         |
| 138    | North Aegean islands, Chios, N of Keramos                                | N38°34'    | E25°56'    | 60           | 6         |
| 139    | North Aegean islands, Chios, 5 km N of Pirama                            | N38°32'    | E25°54'    | 170          | 6         |
| 140    | North Aegean islands, Icaria                                             | Unspecified| Unspecified|              | 6         |
| 141    | North Aegean islands, Lesbos                                             | Unspecified| Unspecified|              | 6         |
| 142    | Central Greece, Euboea, S of Komiton                                     | N38°30'    | E24°00'    | 540          | 6         |
| 143    | Central Greece, Euboea, Steni Dirfyos (former Ano Steni)                 | N38°35'    | E23°49'    | 550          | 6         |
| 144    | Central Greece, Polydrosos                                               | N38°36'    | E22°34'    | 1060–1250    | 6         |
| 145    | Central Greece, Etolia, Lamia, Ieraklia                                  | N38°49'    | E22°26'    | 25           | 6         |
| 146    | Central Greece, Parnassus Mts., above Polydrosos                          | N38°33'    | E22°26'    | 1000         | 6         |
| 147    | Central Greece, Oeta Mts., between Kastanea and Katafygio                | N38°50'    | E22°17'    | 1400         | 6         |
| 148    | Central Greece, Etolia, Vardousia Mts., Stromi                          | N38°42'    | E22°15'    | 820          | 6         |
| 149    | Central Greece, Etolia, Vardousia Mts., Mousonitsa                       | N38°41'    | E22°12'    | 650          | 6         |
| 150    | Central Greece, Etolia, Vardousia Mts., Athanasios Diakos                | N38°42'    | E22°11'    | 830          | 6         |
| 151    | Central Greece, Etolia, Vardousia Mts., Paleovraha                       | N38°55'    | E22°04'    | 170          | 6         |
| 152    | Central Greece, Etolia, Naftpaktos, 9 km S of Krokilio                   | N38°28'    | E22°04'    | 1000         | 6         |
| 153    | Central Greece, Etolia, Vardousia Mts., 5 km N of Grammeni Oxia          | N38°45'    | E22°00'    | 1150         | 6         |
| 154    | Central Greece, Etolia, Vardousia Mts., R. Evinos, Grammeni Oxia         | N38°43'    | E22°00'    | 800          | 6         |
| 155    | Central Greece, Etolia, Vardousia Mts., 9 km N of Grammeni Oxia          | N38°47'    | E21°59'    | 1050         | 6         |
| Site ID | Site name | Latitude | Longitude | Altitude (m) | Ecoregion |
|--------|-----------|----------|-----------|--------------|-----------|
| 156    | Central Greece, E. Var., 7 km N of Grammeni Oxia | N38°46' | E21°59' | 1400 | 6 |
| 157    | Central Greece, E. Var., 7 km S of Gardiki | N38°45' | E21°59' | 1300 | 6 |
| 158    | Central Greece, E. Var., Terpsihe | N38°33' | E21°59' | 570 | 6 |
| 159    | Central Greece, E. Var., Nafpaktos, R. Mornos, Limnitsa | N38°30' | E21°59' | 200 | 6 |
| 160    | Central Greece, E. Var., Elatovrisi | N38°39' | E21°58' | 750 | 6 |
| 161    | Central Greece, E. Var., 6 km S of Lefkada | N38°52' | E21°57' | 500 | 6 |
| 162    | Central Greece, E. Var., Gardiki | N38°51' | E21°57' | 580 | 6 |
| 163    | Central Greece, E. Var., 13 km S of Gardiki | N38°43' | E21°57' | 700 | 6 |
| 164    | Central Greece, E. Var., Pougkakia | N38°51' | E21°56' | 600 | 6 |
| 165    | Central Greece, E. Var., 2 km W of Gardiki | N38°49' | E21°56' | 1100 | 6 |
| 166    | Central Greece, E. Var., Grigorio | N38°38' | E21°56' | 1400 | 6 |
| 167    | Central Greece, Tymfristos Mts., Sperhios, Lamia | N38°54' | E21°55' | 550 | 6 |
| 168    | Central Greece, E. Var., Ano Chora | N38°36' | E21°55' | 700 | 6 |
| 169    | Central Greece, E. Var., Panaitoliko Mts., Klepa | N38°41' | E21°54' | 700 | 6 |
| 170    | Central Greece, E. Var., Panaitoliko Mts., R. Evinos, Klepa | N38°40' | E21°54' | 500 | 6 |
| 171    | Central Greece, E. Var., 3 km W of Kryoneri | N38°38' | E21°54' | 1100 | 6 |
| 172    | Central Greece, E. Var., Kato Chora | N38°36' | E21°53' | 600 | 6 |
| 173    | Central Greece, E. Var., Nafpaktos, Anthofito | N38°28' | E21°52' | 100 | 6 |
| 174    | Central Greece, Karpenisi, Agios Nikolaos | N38°53' | E21°51' | 1000 | 6 |
| 175    | Central Greece, E. Var., Nafpaktos, tributary of R. Evinos, 6 km N of Pokista | N38°35' | E21°51' | 460 | 6 |
| 176    | Central Greece, E. Var., R. Mornos, Nafpaktos | N38°23' | E21°51' | 10 | 6 |
| 177    | Central Greece, E. Var., R. Evinos, Agios Dimitrios | N38°39' | E21°49' | 400 | 6 |
| 178    | Central Greece, E. Var., Kalesmeno | N38°34' | E21°48' | 350 | 6 |
| 179    | Central Greece, E. Var., Simos | N38°30' | E21°48' | 350 | 6 |
| 180    | Central Greece, E. Var., Nafpaktos, Pokista | N38°34' | E21°47' | 370 | 6 |
| 181    | Central Greece, E. Var., Perista, 1 km S of Perkos | N38°38' | E21°45' | 300 | 6 |
| 182    | Central Greece, E. Var., Kato Hrisovitsa, Diasellaki | N38°34' | E21°43' | 230 | 6 |
| 183    | Central Greece, E. Var., Panaitoliko Mts., R. Tavropos, Kalesmeno | N38°56' | E21°40' | 300 | 6 |
| Site ID | Site name | Latitude | Longitude | Altitude (m) | Ecoregion |
|--------|-----------|----------|-----------|--------------|-----------|
| 185    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., R. Trikeriotis, Dermatio | N38°47' | E21°40' | 400 | 6 |
| 186    | Central Greece, Etolia, Panaitoliko Mts., Prousos | N38°44' | E21°39' | 660 | 6 |
| 187    | Central Greece, Etolia, Panaitoliko Mts., Chaliki, Ladikon | N38°41' | E21°39' | 900 | 6 |
| 188    | Central Greece, Etolia, Panaitoliko Mts., Chaliki, Nerositis | N38°40' | E21°39' | 750 | 6 |
| 189    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., Anatoliki Frangista | N38°56' | E21°37' | 800 | 6 |
| 190    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., Potamoula | N38°44' | E21°26' | 200 | 6 |
| 191    | Central Greece, Etolia, Agrinio, Agia Soufia | N38°36' | E21°26' | 100 | 6 |
| 192    | Central Greece, Etolia, Lamia, Pavliani | N38°44' | E21°21' | 100 | 6 |
| 193    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., Megali Chora | N38°38' | E21°21' | 40 | 6 |
| 194    | Central Greece, Etolia, Giona Mts., Sikia | N38°38' | E21°11' | 510 | 6 |
| 195    | Central Greece, Oeta Mts., stream Valorema, Pavliani | Unspecified | 1600 | 6 |
| 196    | Central Greece, Etolia, Agrinio, Ahlavokastro | Unspecified | 6 |
| 197    | Central Greece, Etolia, Arta, Loutraki | Unspecified | 6 |
| 198    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., Houni | Unspecified | 6 |
| 199    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., Palagohori | Unspecified | 6 |
| 200    | Central Greece, Etolia, Nafpaktos, Avorema bridge | Unspecified | 6 |
| 201    | Central Greece, Central Euboea | Unspecified | 6 |
| 202    | Central Greece, Etolia, Agrinio, Panaitoliko Mts., 3 km N of Hani Lioliou | Unspecified | 6 |
| 203    | Central Greece, Etolia, Nafpaktos, Koutsopanneika | Unspecified | 6 |
| 204    | Dodecanese islands, Rhodes, 3 km E of Archipolis | N36°15' | E28°06' | 100 | 6 |
| 205    | Dodecanese islands, Rhodes, near Archipolis | N36°15' | E28°03' | 200 | 6 |
| 206    | Cyclades islands, Naxos, S of Koronis | N37°08' | E25°32' | 630 | 6 |
| 207    | Cyclades islands, Andros, Apikia | N37°51' | E24°54' | 220 | 6 |
| 208    | Cyclades islands, Andros | Unspecified | 6 |
| 209    | Peloponnese, Taygetos Mts. (below summit) | N36°56' | E22°23' | 900 | 6 |
| 210    | Peloponnese, village Akrata | N38°09' | E22°18' | 80 | 6 |
| 211    | Peloponnese, R. Krathis, Voutsimos | N38°08' | E22°16' | 160 | 6 |
| 212    | Peloponnese, Aroania Mts., 2 km S of Zarouchla | N37°58' | E22°16' | 1200 | 6 |
| 213    | Peloponnese, 3 km N of Agia Varvara | N38°01' | E22°15' | 900 | 6 |
| 214    | Peloponnese, R. Krathis, 7 km N of Peristera | N38°05' | E22°14' | 600 | 6 |
| 215    | Peloponnese, tributary of R. Krathis, 7 km N of Peristera | N38°03' | E22°14' | 720 | 6 |
| 216    | Peloponnese, 2 km N of Peristera | N38°02' | E22°14' | 800 | 6 |
| 217    | Peloponnese, R. Krathis, Peristera | N38°00' | E22°14' | 1000 | 6 |
### Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)

| Site ID | Site name                                           | Latitude | Longitude | Altitude (m) | Ecoregion |
|---------|----------------------------------------------------|----------|-----------|--------------|-----------|
| 218     | Peloponnese, Aroania Mts., 4 km S of Solos        | N37°59’  | E22°14’   | 1250         | 6         |
| 219     | Peloponnese, Ano Potames, Kalivitis                | N38°07’  | E22°13’   | 670          | 6         |
| 220     | Peloponnese, Aroania Mts., Zarouhla                | N37°59’  | E22°13’   | 1100         | 6         |
| 221     | Peloponnese, Aroania Mts., below Xelmos, Vatos, Zarelia | N37°55’  | E22°12’   | 830          | 6         |
| 222     | Peloponnese, Likouria (below village)              | N37°51’  | E22°12’   | 700          | 6         |
| 223     | Peloponnese, Aroania Mts., Kalivia                 | N37°50’  | E22°10’   | 470          | 6         |
| 224     | Peloponnese, Aroania Mts., Krinofita               | N37°49’  | E22°10’   | 460          | 6         |
| 225     | Peloponnese, Pagrati                               | N37°49’  | E22°09’   | 450          | 6         |
| 226     | Peloponnese, Aroania Mts., Kastra                  | N37°56’  | E22°08’   | 670          | 6         |
| 227     | Peloponnese, Kato Klitoria                         | N37°53’  | E22°08’   | 500          | 6         |
| 228     | Peloponnese, Aroania Mts., Xelmos (above)          | N38°02’  | E22°06’   | 700          | 6         |
| 229     | Peloponnese, Labia Mts., Amigdalia                 | N37°49’  | E22°06’   | 440          | 6         |
| 230     | Peloponnese, R. Piro, Elliniko                     | N37°30’  | E22°02’   | 220          | 6         |
| 231     | Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio                | N38°06’  | E21°56’   | 700          | 6         |
| 232     | Peloponnese, Panachaiko Mts., Leontio              | N38°06’  | E21°55’   | 640          | 6         |
| 233     | Peloponnese, Erymanthos Mts., Lechouri             | N37°54’  | E21°55’   | 660          | 6         |
| 234     | Peloponnese, Panachaiko Mts., Veteika              | N38°08’  | E21°54’   | 970          | 6         |
| 235     | Peloponnese, Erymanthos Mts., Kato Vlasia          | N38°00’  | E21°54’   | 740          | 6         |
| 236     | Peloponnese, Panachaiko Mts., Kounaveika (near village) | N38°08’  | E21°53’   | 950          | 6         |
| 237     | Peloponnese, Panachaiko Mts., Moira                | N38°09’  | E21°51’   | 750          | 6         |
| 238     | Peloponnese, Panachaiko Mts., Moira (after village) | N38°08’  | E21°51’   | 800          | 6         |
| 239     | Peloponnese, Erymanthos Mts., Profitis Ilias       | N38°02’  | E21°51’   | 480          | 6         |
| 240     | Peloponnese, Ano Kastritsi, stream                 | N38°16’  | E21°50’   | 500          | 6         |
| 241     | Peloponnese, Erymanthos Mts., Stavrophori, Eliniko | N38°03’  | E21°50’   | 380          | 6         |
| 242     | Peloponnese, Panachaiko Mts., Souli                | N38°11’  | E21°48’   | 380          | 6         |
| 243     | Peloponnese, Erymanthos Mts., S of Sparta         | N37°58’  | E21°46’   | 800          | 6         |
| 244     | Peloponnese, Erymanthos Mts., Manesi               | N37°59’  | E21°43’   | 350          | 6         |
| 245     | Peloponnese, Stavrodromi                           | N37°56’  | E21°40’   | 280          | 6         |
| 246     | Peloponnese, Abelokipi                             |          |           |              | 6         |
| 247     | Peloponnese, E, of Olympia, Eliniko                |          |           |              | 6         |
| 248     | Peloponnese, Panachaiko Mts., Kristalovrisi (stream) |          |           |              | 6         |
| 249     | Peloponnese, Erymanthos Mts., Kalamata             |          |           |              | 6         |
| 250     | Crete, E of Agios Ioannis                          | N35°03’  | E25°50’   | 400          | 6         |
| 251     | Crete, E of Ieropetra                              | N35°00’  | E25°47’   | 0            | 6         |
| 252     | Crete, stream next to Sises                        | N35°24’  | E24°54’   | 50           | 6         |
| 253     | Crete, Passas valley near Pass                      | N35°12’  | E24°54’   | 1300         | 6         |
| 254     | Crete, S of Retimnon                               | N35°20’  | E24°27’   | 230          | 6         |
| 255     | Crete, Georgioupolis                               | N35°22’  | E24°15’   | 0            | 6         |
| 256     | Crete, Xyloskalon                                  | N35°18’  | E23°56’   | 620          | 6         |
| 257     | Crete, stream near Kotsifiana                       | N35°24’  | E23°45’   | 500          | 6         |
| 258     | Laschtabend (Alpen)                                |          |           |              | /         |
Reinhard Gerecke. Taxonomic diversity is considered at the level of subfamily, genus, subgenus and species. The European Ecoregions are those of Limnofauna Europaea (Illies 1978), where they are defined at a large European scale and based on the biogeography of aquatic macroinvertebrates.

Label data for primary types are cited from the top of the pin downward, with the data from each label in quotation marks. Labels are cited in full, with original spelling, punctuation, and dates, and label lines are delimited by a slash (/). Additional information is included in square [ ] brackets. The repository of each type is given in parentheses. Secondary type data are abridged and listed alphabetically. This study is based on material housed in the following institutions: Canadian National Collection of Insects, Ottawa, Canada (CNC); col. M. Ivković, University of Zagreb, Croatia (UZC); col. Empididae, Slovenian Museum of Natural History, Ljubljana, Slovenia (SMNH). Terms used for adult structures primarily follow those of Cumming and Wood (2009), except for the antenna and wing venation, where the terminologies of Stuckenberg (1999) and Saigusa (2006) are used, respectively. In the system outlined by Saigusa (2006), the dipteran wing vein A1 (as used in McAlpine 1981) is homologized with the mecopteran vein CuP; and consequently CuA1 (of McAlpine) is termed M4, whereas CuA2 is CuA, the anal cell is cell cua and the anal vein (A1+CuA2) is CuA+CuP. Homologies of the male terminalia follow those of Sinclair and Cumming (2006). Species of Wiedemannia described herein will not be assigned to a subgenus because we consider current subgeneric concepts confused and mostly not monophyletic (Ivković et al. 2012).

Data analysis. A list of species was compiled from all specimen data (Table 2). Comparison of species richness and assemblage composition with published records from studied countries in the Balkans (Slovenia, Croatia, Bosnia & Herzegovina, Montenegro and Former Yugoslav Republic of Macedonia) was conducted by compiling species lists for those countries taken from Wagner (1981, 1995), Horvat (1993, 1995a, 1995b, 1997) and Ivković et al. (2013a, 2013b, 2014). A species by country matrix was constructed and the Sørensen Index of Similarity of each pairwise comparison (Table 3) was calculated using the Primer v6 software (Clarke and Gorley 2006).

Taxonomy

Clinocerinae

Wiedemannia iphigeniae Ivković & Sinclair, sp. n. http://zoobank.org/584FDF48-D85B-4953-9F7E-079DF489B9C5 Figs 1, 6, 7

Type locality. Greece: Peloponnese, Aroania Mts., Krinofita, 37°49’00”N, 22°10’00”E.
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

Figure 1. Sampling sites of aquatic Empididae recorded from Greece (see Table 1 for codes).

**Type material. Holotype ♀,** labelled: “GREECE, Peloponnese/ Aroania Mts., Krinofita/ 37°49’00”N, 22°10’00”E/ 20.iv.1990/ leg. B. Horvat, I. Sivec”; “HOLOTYPE/ Wiedemannia iphigeniae/ Ivković & Sinclair” (CNC, dried from alcohol).

**Diagnosis.** This species of *Wiedemannia* is distinguished by the apically pointed unilobed cercus with small basal projection and a narrow pterostigma on the wings.

**Description. Male.** Body length approx. 3.5 mm (holotype dissected prior to measurement), wing length 3.7 mm (colouration bleached by prolonged storage in alcohol). Head in lateral view higher than long; gena narrow, nearly one-third height of eye. Frons short, broader than face. Face wide, with distinct carina on lower margin, bare, lacking setae. One pair of ocellar and one pair of vertical setae; about 5 distinct upper postoculars, subequal in size; lower postocular setae finer and merging...
Table 2. List of Greek aquatic dance flies and summary of their distribution. European Ecoregions are taken from Illies (1978): Hellenic Western Balkan (6) and Eastern Balkan (7).

| Species | Distribution | Ecoregion |
|---------|--------------|-----------|
| **Hemerodromiinae** | | |
| Chelifera angusta Collin, 1927 | Europe, Asia | 6 |
| Chelifera barbarica Vaillant, 1982 | Southern Europe, North Africa | 6 |
| Chelifera horvati sp. n. | Greece | 6 |
| Chelifera precabunda Collin, 1961 | Widespread in Europe | 6, 7 |
| Chelifera precatoria (Fallén, 1816) | Widespread in Europe | 6 |
| Chelifera stigmatica (Schiner, 1862) | Widespread in Europe | 6, 7 |
| Hemerodromia melangyna Collin, 1927 | Europe | 6 |
| Hemerodromia oratoria (Fallén, 1816) | Widespread in Europe, Asia | 6, 7 |
| Hemerodromia unilineata Zetterstedt, 1842 | Europe | 6, 7 |
| **Clinocerinae** | | |
| Clinocera megalatlantica (Vaillant, 1957) | Greece, Morocco | 7 |
| Clinocera nigra Meigen, 1804 | Europe, North Africa, Asia | 6 |
| Clinocera stagnalis (Haliday, 1833) | Europe, North Africa, Asia, and northern North America | 6, 7 |
| Clinocerella siveci (Wagner & Horvat, 1993) | Greece | 6 |
| Dolichocephala cretica Wagner, 1995 | Greece (Crete) | 6 |
| Dolichocephala guttata (Haliday, 1833) | Widespread in Europe | 6, 7 |
| Dolichocephala ocellata (Costa, 1854) | Europe, North Africa | 6 |
| Dolichocephala vaillanti Wagner, 1995 | Greece (Crete) | 6 |
| Dolichocephala zwicki Wagner, 1995 | Balkan region, Greece Islands | 6 |
| Kowarzia barbatula (Mik, 1880) | Europe, Asia Minor | 6, 7 |
| Kowarzia bipunctata (Haliday, 1833) | Widespread in Europe, North Africa | 6, 7 |
| Kowarzia madicola (Vaillant, 1965) | Central and southern Europe | 6 |
| Kowarzia plectrum (Mik, 1880) | Europe, Asia Minor | 6 |
| Phaeohalia dimidiata (Loew, 1869) | Europe | 6, 7 |
| Roederiodes malickyi Wagner, 1981 | Greece (Crete) | 6 |
| Wiedemannia (Chamaedipsia) aequilobata Mandaron, 1964 | Southern Europe | 6 |
| Wiedemannia (Chamaedipsia) ariadne Wagner, 1981 | Balkan region, Greece Islands | 6 |
| Wiedemannia (Chamaedipsia) beckeri (Mik, 1889) | Europe | 7 |
| Wiedemannia (Chamaedipsia) lota Walker, 1851 | Europe, Asia | 6, 7 |
| Wiedemannia (Eucelidia) zetterstedti (Fallén, 1826) | Europe, Asia Minor | 6, 7 |
| Wiedemannia (Philolutra) angeli Wagner, 1981 | Southern Europe | 6 |
| Wiedemannia (Philolutra) chival Joost, 1981 | Russia (Kabardino-Balkaria), Greece | 7 |
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)

| Species                                      | Distribution                              | Ecoregion |
|----------------------------------------------|-------------------------------------------|-----------|
| *Wiedemannia (Philolutra*) fallaciosa (Loew, 1873) | Europe, Asia Minor, Middle East, North Africa | 6, 7      |
| *Wiedemannia (Pseudowiedemannia)* lamellata (Loew, 1869) | Europe | 6, 7 |
| *Wiedemannia (Pseudowiedemannia)* microstigma (Bezzi, 1902) | Balkan region | 6 |
| *Wiedemannia (Roederella)* czernyi (Bezzi, 1905) | Southern Europe | 7 |
| *Wiedemannia (Wiedemannia)* andreevi Joost, 1982 | Balkan region, Poland | 6 |
| *Wiedemannia (Wiedemannia)* bilobata Oldenberg, 1910 | Central and southern Europe | 6 |
| *Wiedemannia (Wiedemannia)* dinarica Engel, 1940 | Balkan region | 6 |
| *Wiedemannia (Wiedemannia)* dyonysica Wagner, 1990 | FyR Macedonia, Greece | 6 |
| *Wiedemannia (Wiedemannia)* gnaecVaillant & Wagner, 1990 | Greece | 6, 7 |
| *Wiedemannia (Wiedemannia)* tricuspidata (Bezzi, 1905) | Central and southern Europe | 6, 7 |

Table 3. Sørensen Index of Similarity between aquatic dance fly assemblages of studied Balkan countries in relation to Greece. Abbreviations: SLO = Slovenia, HR = Croatia, B&H = Bosnia & Herzegovina, MN = Montenegro, FYRM = FyR Macedonia, GR = Greece.

|    | SLO | HR | B&H | MN | FYRM | GR |
|----|-----|----|-----|----|------|----|
| SLO| 0   |    |     |    |      |    |
| HR | 71.56 | 0  |     |    |      |    |
| B&H| 54.16 | 62.92 | 0  |    |      |    |
| MN | 41.3 | 61.17 | 61.11 | 0  |      |    |
| FYRM| 47.83 | 56.47 | 61.11 | 52.94 | 0   |    |
| GR | 45.71 | 48.97 | 51.76 | 34.56 | 51.85 | 0  |

with longer setae on middle and lower occiput; many setulae present on vertex and between ocellar area. Antenna brownish; postpedicel and stylus minutely pubescent; pedicel slightly longer than scape; scape with complete circlet of subapical setae; postpedicel apically pointed; stylus nearly twice length of postpedicel; scape with setulae dorsally.
Scutum with pale central vitta between dorsocentral rows. Mesonotum with 5 dorsocentral setae, with short setulae intermixed. Acrostichal setae small and fine, biserial, extending to 2nd dorsocentral seta; 1 strong postpronotal seta and 1–4 short setulae; 2 notopleural setae and several setulae; 1 presutural supra-alar seta and many small anterior setulae; 1 postalar seta. Antepronotum with 1 pair of strong setae and 1 pair of smaller setae. Proepisternum with some fine setulae. Laterotergite with several fine, pale setulae. One pair of strong marginal scutellar setae; disc without setae.

Wing membrane clear, veins darker; 1 long basal costal seta, extending almost to humeral crossvein. Cell dm produced anteroapically. M1 and M2 with long stem vein proximal to M1+2 fork. CuA+CuP not visible. Pterostigma elongate, faint. Squama with setulae. Halter pale.

Legs brownish; fore femur with two stronger anterior setae on apical fourth; uniformly covered with rows of small dark setulae. All coxae with longer setae anteriorly; fore coxae with several erect setae. Fore and mid femora ventrally with some longer setulae on proximal half, some longer than width of segment.

Abdomen covered in small setae. Terminalia (Figs 6, 7): hypandrium subequal in length with epandrium; narrow, with 8 pairs of short setae. Epandrium subrectangular, covered with long setae especially ventrally and laterally; surstylus thumb-like on inner face apically. Clasping cercus unilobed, pointed apically; finger-like, with small basal projection on inner face with setae; fine on outer face near anterior margin and apex; inner face with stouter setae, especially near posterior margin. Phallus more or less linear, slender; distiphallus similar to phallus shaft, narrow, without swellings.

Female. Unknown.

Etymology. The species is named after the Greek mythology character Iphigenia, the priestess of the Greek Goddess Artemis.

Remarks. Wiedemannia iphigeniae sp. n. is known only from the type locality in Greece. The shape of the clasping cercus is similar to that of W. aerea Vaillant, 1967 (Pyrenees), but a distinct basal projection is lacking in the latter species.

Wiedemannia ljerkae Ivković & Sinclair, sp. n.
http://zoobank.org/F9A07ACC-BB76-4D11-8736-FDD2414413B7
Figs 1, 2, 4, 5, 8

Type locality. Greece: Epirus, Igoumenitsa, River Thiamis, Soulopoulo, 39°32'00"N, 20°12'00"E.

Type material. Holotype ♂ (in 80% ethanol), labelled: “HOLOTYPE/ Wiedemannia/ljerkae IVKOVIC et SINCLAIR// GREECE, Epirus, Igoumenitsa, R. Thiamis./ Soulopoulo// 39°32'00"N, 20°12'00"E, 30.iv.1989,/ leg. B. Horvat, I. Sivec” (UZC). Paratypes: same data as holotype (2 ♂, 6 ♀, UZC; 3 ♂, 9 ♀, CNC (dried from alcohol); 2 ♂, 16 ♀, SMNH).

Additional material. GREECE: Central Greece, Etoia, Peristera, Agrinio, 1 km S of Perkos, 300 m, 38°38'00"N, 21°45'00"E, 24.iv.1990 (SMNH); Peloponnese, Kato
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

Figures 2–5. Heads, male terminalia and wing of Wiedemannia spp. 2 W. ljerkae Ivković & Sinclair, sp. n., male paratype, head, lateral view. 3 W. pseudobertheleymi Ivković & Sinclair, sp. n., male paratype, head, lateral view. 4 W. ljerkae Ivković & Sinclair, sp. n., paratype, male terminalia, lateral view. 5 W. ljerkae Ivković & Sinclair, sp. n., male paratype, wing. Scale bar: 0.5 mm (2, 3, 4); 1.0 mm (5).

Klitoria, 450 m, 37°50'00"N, 22°10'00"E, 20.iv.1990 (SMNH); Peloponnisos, R. Kratis, 7 km N of Peristera, 600 m, 38°05'00"N, 22°14'00"E, 22.iv.1990 (SMNH); Peloponnese, Aroania Mts., Kastria, 21.iv.1990 (UZC).

Diagnosis. This species of Wiedemannia is distinguished by the cercus with two long finger-like processes and a rounded pterostigma on the wings.

Description. Male. Body length 3.5–4.5 mm, wing length 4.0–4.3 mm (colouration bleached by prolonged storage in alcohol). Head (Fig. 2) in lateral view higher than long; gena broad, more than half height of eye. Frons short, broader than face. Face wide, with distinct carina on lower margin, bare, lacking setae. Ocellar setae short and fine; one pair of vertical setae; about 7–8 distinct upper postocular setae; lower postocular setae finer and merging with longer setae on middle and lower occiput;
Figures 6–8. Male terminalia of *Wiedemannia* spp., lateral view. 6 *W. iphigeniae* Ivković & Sinclair, sp. n., holotype 7 *W. iphigeniae* Ivković & Sinclair, sp. n., holotype, clasping cercus, inner view 8 *W. ljerkae* Ivković & Sinclair, sp. n., paratype.

numerous dark setulae on vertex and between ocellar area and eye margin. Antenna brown; postpedicel and stylus minutely pubescent; pedicel slightly shorter than half length of scape, with complete circlet of subapical setae; postpedicel apically pointed, stylus nearly twice length of postpedicel; scape with setulae dorsally.

Mesonotum with 5 pairs of dorsocentral setae with short setulae interspersed. Acrostichal setae small and fine, biserial, extended onto prescutellar depression; 1 strong postpronotal seta and 2–4 small setulae; 2 notopleural setae with several short setulae; 1 presutural supra-alar seta and many small anterior setulae; 1–2 postsutural supra-alar setulae; 1 postalar seta. Antepronotum with 3–4 pairs of dark, strong setae and some smaller setae. Proepisternum with some fine, long setae. Katepisternum with some short setulae on posterior margin. Laterotergite with fine, pale setae. One pair of strong marginal scutellar setae, with many scattered setulae on disc.

Wing (Fig. 5) membrane infuscate, veins darker; 1 long basal costal seta extending almost to humeral crossvein. R<sub>2+3</sub> dipped beneath pterostigma. Cell dm produced anteroapically. M<sub>1</sub> and M<sub>2</sub> originating separately, together or sometimes with a very short stem vein proximal to M<sub>1+2</sub> fork. CuA+CuP appearing as crease. Pterostigma broad, circular to squarish, dark brown, extending faintly beyond R<sub>2+3</sub>. Squama with setulae. Halter pale, yellowish.
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

Legs mostly brown; fore femur with one stronger preapical anterior seta; uniformly covered with rows of small dark setulae. All coxae with longer setae anteriorly. Fore and mid femora ventrally with some longer setulae on proximal half.

Abdomen concolourous with thorax, covered in short setae. Terminalia (Figs 4, 8): hypandrium shorter than epandrium, bearing 4 pairs of setae. Epandrium subquadrate, covered with long dark setae especially ventrally and laterally; surstylus slender, digitiform. Clasping cercus with two long, slender, finger-like processes and small basal lobe with crown of spine-like setae on inner face apically; finger-like lobes with long setae distally; posterior finger-like lobe with inner cluster of stout setae at mid-length. Phallosome more or less linear, very slender; distiphallus with distinct swelling at mid-length.

Female. Similar to male except pterostigma smaller, more elliptical, not extending beyond R₂₊₃; cercus short, ovate and minutely pilose.

Etymology. The species is named after the first author’s mother, Katica Ljerka Ivković, for all those things that mothers do for all of us.

Remarks. Wiedemannia ljerkae sp. n. is known only from several localities in Greece. On the basis of the multiple slender lobes of the clasping cercus and distinct pterostigma, W. ljerkae sp. n. appears closely related to W. brasieri (Mik, 1880) and W. tricuspidata (Bezzi, 1905) (see Engel 1918, 1940).

Wiedemannia nebulosa Ivković & Sinclair, sp. n.
http://zoobank.org/61BC89BA-016F-43BC-A59F-BA5B5259EAD9
Figs 1, 9

Type locality. Greece: Thrace, north of Dipotama, 41°24'24"N, 24°37'19"E, 1400 m.
Type material. Holotype ♂, labelled: “GREECE: Thrace/ N of Dipotama/ 41°24'24"N, 24°37'19"E/ 23.v.1994; 1400 m/ leg. B. Horvat, I. Sivec”; “HOLOTYPE/ Wiedemannia/ nebulosa/ Ivković & Sinclair” (CNC, dried from alcohol). Paratypes: same data as holotype (1 ♂, 1 ♀, CNC, dried from alcohol).

Diagnosis. This species of Wiedemannia is distinguished by the faint clouding about crossveins and base of radial fork, shape of the clasping cercus and position of distiphallus on the phallic shaft.

Description. Male. Body length 3.8–4.5 mm, wing length 5.2–5.3 mm (colouration slightly bleached by prolonged storage in alcohol). Head dark with brown frons and vertex, remainder of head with blue pruinescence; head higher than long; gena narrow, one-quarter height of eye. Frons short, broader than face. Face wide, with distinct carina on lower margin, bare, lacking setae. One pair of long ocellar setae and one pair of vertical setae; 6–7 distinct upper postoculars; lower postocular setae finer and merging with longer setae on middle and lower occiput; a few small setulae present on vertex and in ocellar area. Antenna brown; postpedicel and stylus minutely pubescent; scape longer than pedicel, with setulae dorsally; pedicel with complete cerclet of apical setae; postpedicel apically pointed; stylus twice length of postpedicel.

Scutum dark brown with pair of faint black vittae between dorsocentral row and acrostichals and bluish stripe medially; prescutellar depression with blue pruinescence.
Pleura clothed with blue pruinescence. Mesonotum with 5 pairs of dorsocentral setae without short setulae interspersed. Acrostichal setae short and fine, biserial, extending onto prescutellar depression; 1 strong postpronotal seta; 2 notopleural setae and several short setae; 1 presutural supra-alar seta and several small anterior setulae; 1 postalar
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

seta. Antepronotum with 1 pair of strong setae. Proepisternum with some fine setulae. Katepisternum without setulae. Laterotergite with fine, pale setae. One pair of strong marginal scutellar setae; disc bare.

Wing membrane infuscate with darkening at apex of cell dm, radial fork and r-m crossvein; veins darker; 1 short basal costal seta ending before humeral crossvein. Cell dm produced anteroapically. M₁ and M₂ originating separately from cell dm. CuA+CuP in form of short streak. Pterostigma broad and elongate, very distinct. Squama with setulae. Halter yellowish brown.

Legs mostly brown; fore femur with 2–3 strong anterior setae on apical quarter; uniformly covered with rows of small dark setulae. All coxae with longer setae anteriorly; fore coxa with 1–2 erect setae. Fore and mid femora ventrally with some longer setulae on proximal half.

Abdomen concolourous with thorax, covered in short setae. Pruinescence darker on tergites than sternites. Terminalia (Fig. 9): hypandrium subequal in length with epandrium, with 5 pairs of setae. Epandrium irregularly subquadrangular, with several stouter and longer setae (shown by enlarged sockets) in addition to normal setae ventrally and laterally; surstylus short, digitiform with rounded apex; subepandrial sclerite projecting slightly beyond epandrium near surstylus. Clasping cercus pale brown, broad, gradually tapered to rounded apex; inner posterior margin with long peg-like setae. Phallus more or less linear, slender; distiphallus without swelling at mid-length; distiphallus with serrate membranous margin, extending onto shaft.

**Female.** Similar to male. Terminalia: cercus short ovate and minutely pilose.

**Etymology.** The species name is derived from the Latin *nebulosus* (misty, cloudy, dark), in reference to the clouding about the crossveins.

**Remarks.** *Wiedemannia nebulosa* sp. n. is known only from the type locality in Greece. On the basis of the shape of the clasping cercus, this new species is similar to *W. carpathica* Vaillant, 1967 (eastern Carpathians), *W. pyrenaica* Vaillant, 1967 (Pyrenees) and perhaps *W. wachtli* (Mik, 1880).

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**Wiedemannia pseudoberthelemyi** Ivković & Sinclair, sp. n.
http://zoobank.org/BD1AFAB9-06BD-4BEC-A08F-F3D80E8FAFE0
Figs 1, 3, 10

**Type locality.** Greece: Etolia, River Mornos, Nafpaktos, 38°23’N, 21°51’E.

**Type material.** Holotype ♂ (in 80% ethanol), labelled: “HOLOTYPE/ Wiedemannia/ pseudoberthelemyi/ IVKOVIĆ/ et SINCLAIR/, GREECE, Etolia, River Mornos, Nafpaktos, 38°23’N, 21°51’E, 23.iv.1990, leg. B. Horvat, I. Sivec” (UZC). Paratypes: same data as holotype (1 ♂, 3 ♀, UZC; 3 ♂, 6 ♀, CNC, dried from alcohol).

**Additional material.** GREECE: Central Greece, Panaitoliko Mts., R. Tavropos, Kalesmeno, 300 m, 38°56’N, 21°40’E, 29.iv.1989 (SMNH); Central Greece, Etolia, Agrinio, Agia Soufia, 100 m, 38°36’N, 21°26’E, 24.iv.1990 (SMNH);
Diagnosis. This species of Wiedemannia is distinguished by the long gena and the mitten-shaped clasping cercus, which is extremely similar to that of Wiedemannia (Chamaedipsia) berthelemyi Vaillant & Vinçon, 1987.

Description. Male. Body length 3.5–4.1 mm, wing length 3.5–3.6 mm (colouration bleached by prolonged storage in alcohol). Head (Fig. 3) in lateral view higher than long; gena broad, three-quarters height of eye. Frons short, broader than face. Face wide, with distinct carina on lower margin, bare, lacking setae. One pair of short ocellar setae and one pair of vertical setae; about 6 distinct upper postocular setae; lower postocular setae finer and merging with longer setae on middle and lower occiput; few small setulae present on vertex and between ocellar area. Antenna brown; postpedicel and stylus minutely pubescent; scape longer than pedicel, with setulae dorsally; pedicel with complete circlet of apical setae; postpedicel apically pointed; stylus nearly twice length of postpedicel.

Mesonotum with 5 pairs of dorsocentral setae with short setulae interspersed. Acrostichal setae short and fine, biserial, extending to prescutellar depression; 1 strong postpronotal seta; 2–3 notopleural setae and several short setae of variable size; 1 presutural supra-alar seta and numerous small setulae; 1 postalar seta. Antepronotum with 1 pair of strong setae and a few shorter setae. Proepisternum with some fine setae. Katepisternum with a few (1–3) setulae. Laterotergite with fine, pale setae. One pair of strong marginal scutellar setae with many scattered setae on disc.

Wing membrane infuscate, veins darker; 1 short basal costal seta ending before humeral crossvein. Cell dm produced anteroapically. Veins M₁ and M₂ originating together with short stem vein proximal to M₁+₂ fork. Vein CuA+CuP extremely faint. Pterostigma elongate, indistinct. Squama with setulae. Halter yellowish.

Legs mostly brown; fore femur with 1 strong preapical anterior seta; uniformly covered with rows of small dark setulae. All coxae with longer setae anteriorly. Fore and mid femora ventrally with some longer setulae on proximal half.

Abdomen concolourous with thorax, covered in short setae. Pubescence darker on tergites than sternites. Terminalia (Fig. 10): hypandrium subequal in length with epandrium, with 6 pairs of setae. Epandrium irregularly subquadrate, with 2–3 stouter and longer setae (shown by enlarged sockets) in addition to regular setae ventrally and laterally; surstylus very slender, hook-shaped. Clasping cercus yellowish-brown, broad, mitten-shaped, with thumb-like anterior lobe; posterior lobe truncate apically; thumb-like lobe with long outer setae; stout setae with multi-branched apex covering most of inner face of cercus. Phallosome more or less linear, slender; distiphallus with swelling at mid-length.

Female. Similar to male. Terminalia: cercus short ovate and minutely pilose.

Etymology. The species name is derived from the name Wiedemannia (Chamaedipsia) berthelemyi because of the similarity of the clasping cercus with that of this species.

Remarks. Wiedemannia pseudoberthelemyi sp. n. is known only from parts of Greece. This new species differs from W. berthelemyi on the basis of the truncate pos-
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

terior lobe of the clasping cercus (pointed in _W. berthelemyi_) and in having only a single preapical seta on the fore femur (2 in _W. berthelemyi_). The odd stout setae with multi-branched tips on the inner face of the clasping cercus were not noted by Vaillant and Vinçon (1987) and the absence of the swelling on the distiphallus (Vaillant and Vinçon 1987, fig. 32) is likely an artefact caused by the acid clearing process. The holotype of _W. berthelemyi_ was not examined.

Additional similar species that could be included in this group based on the shape of the clasping cercus include: _W. angelieri_ Vaillant, 1967 (Pyrenees), _W. vedranae_ Ivković & Sinclair, 2014 (Sierra Nevada, Spain), and _W. queyrasiana_ Vaillant, 1956 (European Alps).

**Hemerodromiinae**

*Chelifera horvati* Ivković & Sinclair, sp. n.

http://zoobank.org/9DE403F2-5A28-4E6F-A485-A4D42308165D

Figs 1, 11

**Type locality.** Greece: Central Greece, Etilia, Arta, Loutraki.

**Type material.** HOLOTYPE ♂, labelled: “GREECE: Central Greece/ Etilia, Arta, Loutraki/ 16.iv.1990/ leg. B. Horvat, I. Sivec”; “HOLOTYPE/ Chelifera horvati/ Ivković & Sinclair” (CNC, dried from alcohol).

**Diagnosis.** A yellow-brown species with distinct, brown and rounded pterostigma, characterized in the male by dark brown cercus with elongate, slender forked process at mid-length, posteriorly tapered epandrium with stout inner setae and membranous distiphallus with two elongate lobes.

**Description. Male.** Body length 4 mm, wing length 3.6 mm. Head dorsoventrally flattened, dark brown; ocellar triangle dark brown; all setae whitish. Eyes iridescent black; narrowly separated on face. Face with thick, whitish pubescence. One pair of postocular setae and scattered fine setae on vertex. Occiput bearing scattered fine setulae; gena with rather dense short, downwardly directed whitish pile. Antenna whitish, with scape and pedicle bearing distinct short dorsal setulae; postpedicel about 1.5× as long as wide, stylus much shorter than postpedicel.

Thorax elongate; yellow, all setae yellowish. Mesonotum with pair of brown vittae, extending around prescutellar depression; small dark spot posterior to postpronotal lobe and larger dark spot near wing base. Holotype missing most thoracic setae.

Wing (slightly damaged) membrane transparent, veins yellow; pterostigma dark, rounded, with R<sub>2+3</sub> arched around it; fork of R<sub>4+5</sub> less than 90°; cell r<sub>4</sub> rather long, R<sub>5</sub> nearly 2× as long as R<sub>4</sub>; Halter pale.

Legs whitish yellow, apical two tarsal segments on all legs brown. Fore coxa about 8× longer than wide with several pale dorsoapical setae. Fore femur slightly longer than fore coxa, more than 4× longer than wide, evenly inflated, widest at middle.
Fore femur with two rows of black ventral denticles and two rows of strong outer brownish-yellow ventral setae, with following chaetotaxy: 20 anteroventral denticles, 6 anteroventral spine-like setae, 21 posteroventral denticles, 6 posteroventral spine-like setae; denticles closely spaced and rows converging distally; posteroventral spine-like setae shorter distally. Fore tibia 0.6× as long as fore femur, evenly curved with anteroventral row of short, spine-like setae; with apicoventral dark spur-like seta, longer than width of tibia. Mid and hind femora with anteroventral row of short, slender setae.

Abdomen yellow ventrally, brown dorsally, with pale setae most conspicuous on hind margin of posterior sternites. Terminalia (Fig. 11): cercus dark brown, thick, with narrow, elongate process at mid-length with forked apex (process folded horizontally in non-macerated condition); anterior end of cercus pointed and curved medially, with long setae, posterior end of cercus rounded; cercus wider then epandrium. Epan-
drium yellowish-brown, concave medially, posteriorly pointed with 5 stout setae on inner apical margin directed medially; entire epandrium covered in numerous setae. Hypandrium yellow, quadrate, with posteroapical lobe and concave posterior margin; pale setae on posteroventral face. Postgonite slender, sickle-shaped. Distiphallus mem-
branous, expanded into two elongate lobes; apex of posterior lobe with pigmented arch-shaped sclerotization.

**Female.** Unknown.

**Etymology.** The new species is named after the late Dr Bogdan Horvat, mentor of the first author, colleague and during his life a leading expert on the genus *Chelifera* Macquart.

**Remarks.** *Chelifera horvati* sp. n. is known only from one site in Greece. The nar-
row pigmented and sclerotized apex of the distiphallus of *C. horvati* sp. n. is similar in *C. concinnicauda* Collin, 1927, *C. diversicauda* Collin, 1927, *C. giraudae* Vaillant, 1982 and *C. subangusta* Collin, 1961 (see Collin 1961 and Vaillant 1982).

**Key to species of aquatic Empididae of Greece**

(written primarily for male specimens; some couplets modified from Collin (1961) and Vaillant (1982); *Wiedemannia (Philolutra) hygrobia* (Loew) is included in the key, although Greek records not confirmed)

1. Fore femur with one or two rows of black, peg-like setae ventrally; fore femur width 2–3 times that of fore tibia..........................**Hemerodromiinae**...2
   – Fore femur without black, peg-like setae ventrally; fore femur width less than 1.5 times that of fore tibia..................................................**Clinocerinae**...11
2. Cell cua (anal cell) and crossvein bm-cu absent (discal cell absent); R₁ meeting costa before middle of wing .........................**Hemerodromia Meigen**...3
   – Cells cua (anal cell) and dm present (crossvein bm-cu present); R₁ meeting costa beyond middle of wing ........................**Chelifera Macquart**...5
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

3 Scutum with dark spot posterior to postpronotal lobe; cercus inflated, kidney-shaped in dorsal view (Collin 1961, fig. 302)..........................**Hemerodromia melangyna** Collin
 – Scutum without dark spot posterior to postpronotal lobe; cercus not inflated... 4

4 Cercus with shallow, semi-circular apical excision (Collin 1961, fig. 299)....
 – Cercus without apical excision, apex rounded with short, stout inner setae (Collin 1961, fig. 300a)......................**Hemerodromia unilineata** Zetterstedt

5 Pterostigma very indistinct, long ovate and pale yellow (male terminalia: Collin 1961, fig. 295)..........................**Chelifera trapezina** (Zetterstedt)
 – Pterostigma distinct, circular and black or brownish.............6

6 Male cercus simple, without lobe in lateral view .......................7
 – Male cercus with lobe in lateral view...........................................9

7 Male cercus small and thin, narrower than epandrium (Collin 1961, fig. 292)...
 – Male cercus as broad as epandrium ...........................................8

8 Male cercus, viewed from above, with a distinct projection near middle of inner edge (Collin 1961, fig. 287)..................**Chelifera precabilia** Collin
 – Male cercus, viewed from above, without a distinct projection near middle of inner edge (Collin 1961, fig. 286)..................**Chelifera precatoria** (Fallén)

9 Male cercus with narrow, elongate dorsal process at mid-length, with forked apex (Fig. 11)..........................................................**Chelifera horvati** sp. n.
 – Male cercus without dorsal process at mid-length........................10

10 Posterior lobe of male cercus arched; hypandrium in lateral view tapered and narrowed posteriorly (Vaillant 1982, figs 5g, 7a)......**Chelifera stigmatica** (Schiner)
 – Posterior lobe of male cercus conical; hypandrium in lateral view rounded and broadly prolonged posteriorly (Vaillant 1982, figs 5i, 9a)..............................

11 Neck arising high on occiput, from near top of head ..................**Dolichocephala** Macquart...12
 – Neck arising near centre of occiput or level with centre of eye...........16

12 Wings without white rounded spots or irruptions, at most only faint white streaks in cells .........................**Dolichocephala guttata** (Haliday)
 – Wings with white rounded spots or irruptions .........................13

13 Wings with only white streak in cell r$_{2+3}$ (proximal section) (Wagner 1995, fig. 4); clasping cercus elongate and straight, narrow on apical half (Wagner 1995, fig. 10)..........................**Dolichocephala cretica** Wagner
 – Wings with pair of white spots in cell r$_{2+3}$ (proximal section) (Wagner 1995, figs 3, 6); clasping cercus arched .........................14

14 Surstylus unforked; clasping cercus strongly arched (Engel 1939, fig. 46)....
 – Surstylus forked (Wagner 1995, figs 8, 13); clasping cercus gradually arched .........................15
15 Clasping cercus L-shaped, with peg-like seta at inner apex (Wagner 1995, fig. 7)...........................................\textit{Dolichocephala vaillanti} Wagner
  – Clasping cercus arched medially, with peg-like seta subapically (Wagner 1995, fig. 12)...........................................\textit{Dolichocephala zwicki} Wagner
\vspace{0.5em}
16 Tarsomeres 2–4 of foreleg subequal in length...........................................17
  – Tarsomere 2 of foreleg much longer than tarsomeres 3 or 4, often twice length of tarsomere 4..................................................18
\vspace{0.5em}
17 Proboscis as long as head; labrum long and slender; labellum not sucker-like (Wagner 1981, fig. 8).................................\textit{Roederiodes malickyi} Wagner
  – Proboscis shorter than head; labrum subtriangular; labellum sucker-like (Engel 1939, text fig. 92)...............................\textit{Clinocerella siveci} (Wagner & Horvat)
\vspace{0.5em}
18 Lower margin of face lacking notch or deep cleft above mouthparts; apical phallic filament not articulated.........................\textit{Clinocera Meigen}...19
  – Lower margin of face with notch or deep cleft; apical phallic filament articulated..........................................................21
\vspace{0.5em}
19 Comb of preapical anterior setae on fore femur absent; postpronotal seta reduced, shorter and thinner than notopleural setae; postsutural supra-alar setae absent.........................................................\textit{Clinocera nigra} Meigen
  – Comb of preapical anterior setae on fore femur present; postpronotal seta well developed, similar to scutal setae; postsutural supra-alar setae present........20
\vspace{0.5em}
20 Wings with faint clouding about crossveins; apex of femora (“knees”) light brown, compared to bluish pruinescent femur; surstylus elongate, apex rounded (Collin 1961, fig. 311b)..................\textit{Clinocera stagnalis} (Haliday)
  – Wings without clouding; apex of femora not paler than remaining femur; surstylus subtriangular, with narrow anterior apex (Fig. 12).................................\textit{Clinocera megalatlantica} (Vaillant)
\vspace{0.5em}
21 Face with setulae along inner margin of eye .......................\textit{Kowarzia} Mik...22
  – Face bare, without setulae along inner margin of eye......................25
\vspace{0.5em}
22 Coxae and femora dark, brown (male terminalia: Vaillant 1965, figs 3e, f) ...
  ...................................................................................\textit{Kowarzia plectrum} (Mik)
  – Coxae and femora pale, yellowish ........................................23
\vspace{0.5em}
23 Surstylus deeply forked (Collin 1961, fig. 314c) .........................\textit{Kowarzia bipunctata} (Haliday)
  – Surstylus unforked ..................................................................24
\vspace{0.5em}
24 Surstylus as broad as clasping cercus; clasping cercus digitiform, strongly curved at middle, generally similar in width until apex (Vaillant 1965, figs 3b, d)...........................................\textit{Kowarzia madicola} (Vaillant)
  – Surstylus long and slender, much thinner than clasping cercus; clasping cercus broad, gently curved (Collin 1961, fig. 314a).......\textit{Kowarzia barbatula} Mik
\vspace{0.5em}
25 Wings with distinct spots; pterostigma clearly outlined, elliptical..........................\textit{Phaeobalia dimidiata} (Loew)
  – Wings lacking spots; pterostigma usually either both faint and elongate or dark and circular..........................\textit{Wiedemannia Zetterstedt}..26
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

26 Pterostigma rounded, usually very distinct and large (Fig. 5) ......................... 27
  – Pterostigma elongate and narrow, often indistinct ..................................... 35
27 Gena width more than half vertical diameter of eye (Fig. 2) ....................... 28
  – Gena width less than half vertical diameter of eye .................................. 34
28 Clasping cercus deeply divided into 2 or 3 elongate finger-like lobes (Fig. 4) ................................................................. 29
  – Clasping cercus not divided into elongate finger-like lobes .................... 30
29 Clasping cercus with 2 elongate lobes and shorter, broad anterior lobe bearing peg-like apical setae (Fig. 8) .................. Wiedemannia ljarkei sp. n.
  – Clasping cercus with 3 elongate lobes, anterior lobe narrower and slightly shorter than posterior lobes, without peg-like setae (Engel 1940, fig. 95)...... Wiedemannia (Wiedemannia) tricuspidata (Bezzi) 30
  Base of clasping cercus prolonged anteriorly, arched around epandrium .... 31
  – Base of clasping cercus not prolonged anteriorly around epandrium ...... 33
31 Apex of clasping cercus tapered and narrow (Engel 1940, fig. 88) ............ Wiedemannia (Wiedemannia) bilobata Oldenberg
  Apex of clasping cercus bluntly rounded and broad ................................ 32
32 Apex of clasping cercus prolonged; base of clasping cercus with stout setae confined to upper inner edge (Vaillant and Wagner 1990, figs 1, 2) ........... Wiedemannia (Wiedemannia) graeca Vaillant & Wagner
  – Apex of clasping cercus slightly expanded, not prolonged anteriorly; base of clasping cercus with stout setae covering most of inner face (Wagner 1990, figs 3, 4) ............. Wiedemannia (Wiedemannia) dyonysica Wagner
33 Clasping cercus with posterior margin deeply invaginated, forming pair of narrow basal lobes (Joost 1982, figs 1, 2) .............................................................. Wiedemannia (Wiedemannia) andreevi Joost
  – Clasping cercus L-shaped (Engel 1940, fig. 91) ........................................ Wiedemannia (Wiedemannia) dinarica Engel 34
  Clasping cercus broad in lateral view, expanded at mid-length (Engel 1940, fig. 97) .................. Wiedemannia (Pseudowiedemannia) lamellata (Loew)
  – Clasping cercus very narrow on basal half in lateral view, with short lobe at mid-length directed medially (Engel 1940, fig. 98) ...................... Wiedemannia (Pseudowiedemannia) microstigma (Bezzi) 35
All femora with distinct anterior and posterior preapical setae (male terminalia: Engel 1940, fig. 78) .... Wiedemannia (Eucelidia) zetterstedti (Fallén)
  – Femora without distinct preapical setae, or at least only anterior seta present on fore femur ................................................................. 36
36 Acrostichals only present anterior to second dorsocentral seta (male terminalia: Engel 1940, fig. 79) ........ Wiedemannia (Roederella) czernyi (Bezzi)
  – Acrostichals extending to at least prescutellar depression .................. 37
37 Gena width more than half vertical diameter of eye (Fig. 3) .................. Wiedemannia pseudobertheleyi sp. n.
  – Gena width less than half vertical diameter of eye ................................ 38
Clasping cercus short and broad, height and width of lobe subequal........39
– Clasping cercus prolonged dorsally, distinctly higher than wide ..............39
Clasping cercus circular, without lobes (Mandaron 1964, figs B, E) ..............
..................................................................................................................... Wiedemannia (Chamaedipsia) aequilobata Mandaron

39 Clasping cercus bilobed, mitten-shaped ......................................................40
– Anterior lobe of clasping cercus narrow, thumb-like (Vaillant 1967, figs 2.3, 2.4)........... Wiedemannia (Philolutra) angelieri Vaillant

40 Anterior lobe of clasping cercus broad, subequal in width to posterior lobe or small, not longer than wide.................................................................41
– Anterior lobe of clasping cercus broad, subequal in width to posterior lobe (Joost 1981, figs 7, 8) .................... Wiedemannia (Philolutra) chvali Joost

41 Anterior lobe of clasping cercus small, not longer than wide .......................42
– Anterior lobe of clasping cercus small, not longer than wide .......................41

42 Clasping cercus without long setae anteriorly at base (Wagner 1981, figs 5, 6) .................... Wiedemannia (Chamaedipsia) ariadne Wagner
– Clasping cercus with long setae anteriorly at base (Engel 1940, fig. 102) ......
......................................................................................................................... Wiedemannia (Philolutra) bygrobia (Loew)

43 Clasping cercus mitten-shaped, with thumb-like anterior lobe (Engel 1940, fig. 101) ..................... Wiedemannia (Philolutra) fallacios (Loew)
– Clasping cercus not mitten-shaped ...................................................................44

44 Fore femur with a single distinct anterior seta at about one-sixth from apex ....45
– Fore femur without setae or with several distinct anterior setae at about one-sixth from apex .................................................................46

45 Clasping cercus long, slender and parallel-sided, yellow, nearly twice as long as width of epandrium (Collin 1961, fig. 313c; Engel 1940, fig. 86) ..........
........................................................................................................................ Wiedemannia (Chamaedipsia) lota Walker
– Clasping cercus slightly longer than width of epandrium and tapered apically with narrow basal lobe-like expansion (Fig. 6) ..........................................
........................................................................................................................ Wiedemannia iphigeniae sp. n.

46 Clasping cercus with broad base, bent at nearly right angles, L-shaped (Ivković et al. 2012, figs 2, 3) .................. Wiedemannia artemis Ivković & Plant
– Clasping cercus with broad base and gradually tapered apically.........................47

47 Phallus shaft extended well beyond base of distiphallus; clasping cercus with stout, blunt-tipped setae along inner posterior margin (Fig. 9); wing with faint clouding about crossveins .................. Wiedemannia nebulosa sp. n.
– Phallus shaft not extended beyond base of distiphallus; clasping cercus with long thick setae along inner margin (Vaillant 1967, fig. 2.9); wing without faint clouding about crossveins ....... Wiedemannia (Chamaedipsia) beckeri (Mik)

List of Empididae of Greece (Clinocerinae & Hemerodromiinae)

The following format is used for the distributional data: Literature references – name of the site and in brackets the reference citation and site ID; New records – name of the site and in brackets the site ID. All the sites and their numbers are listed in Table 1.
Subfamily Clinocerinae

*Clinocera megalatlantica* (Vaillant, 1957)

**New records.** Thrace, Samothrace, hygropetric zone of stream at the church of Kremi-notissa (15).

**Remarks.** This species is newly recorded from Greece. The male terminalia of this species are illustrated (Fig. 12) to highlight additional detail not shown in the original drawing of Vaillant (1957, fig. IIC).

*Clinocera nigra* Meigen, 1804

**New records.** Macedonia, Pieria Mts. 2 (52); Epirus, R. Aheron, N of Gliki (115); Central Greece, Eotia, Vardousia Mts., 13 km S of Gardiki (164); Central Greece, Eotia, Panaitoliko Mts., Klepa (170); Central Greece, Eotia, Nafpaktos, Anthofito (174); Central Greece, Eotia, Agrinio, R. Evinos, Kato Hrisovitsa, Diasellaki (183); Central Greece, Eotia, Agrinio, Agia Soufia (191); Central Greece, Eotia, Nafpaktos, Koutsopanneika (203); Peloponnese, tributary of R. Krathis, 7 km N of Peristera (215); Peloponnese, 2 km N of Peristera (216); Peloponnese, Ano Potames, Kalivitis (219).

*Clinocera stagnalis* (Haliday, 1833)

**Literature references.** Macedonia, Grevena, stream S of R. Aliakmon by Kamilas Pigi (Wagner 1995) (58); Macedonia, Vernon, influx of Aliakmon between Gavros and Aposkepos (Wagner 1995) (61); Macedonia, Chalkidiki, Chlomon Oros., valley on the southern slope (Wagner 1995) (68); Epirus, Pindus Mts., Metsovo, meadow source easthang (Wagner 1995) (94); Epirus, Xerovouni Mts., Plaka, R. Arachthos, u. Agnatha (Wagner 1995) (105).

**New records.** Thrace, N of Xanthi (18); Thrace, N of Dipotama, 1 (19); Thrace, N of Dipotama 3 (22); Thrace, Dit. Rodopi, Skaloti (29); Thrace, Dit. Rodopi 1 (30); Thrace, Dit. Rodopi, E of Mikromelia (35); Macedonia, Dit. Rodopi, Elata forest (37); Macedonia, E of Mikroklisoura (38); Macedonia, N of Stavros (39); Macedonia, N of Agios Dimitrios (43); Macedonia, Pieria Mts., S of Elatohori (44); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, Pieria Mts., Fteri (47); Macedonia, Pieria Mts., W of Fteri (48); Macedonia, Pieria Mts., E of Velventos (50); Macedonia, Pieria Mts., 1 (51); Macedonia, Pieria Mts. 2 (52); Macedonia, Pieria Mts., 3 (53); Macedonia, E of Velventos (54); Macedonia, Phalacro Mts., N of Livadero (55); Macedonia, Grevena, Milea (56); Macedonia, Grevena, 6 km S of Milea (57); Macedonia, Kastoria, Nestorio (62); Thessaly, Pieria Mts., S of Livadi (74); Thessaly, 5 km W of Palea Giannitsou (75); Thessaly, Deskati (76); Thessaly, S of Asprokklisia (78); Thessaly, Kalambaka, Agios Nikolaos (80); Thessaly, Trikala, Stournareika (81); Thessaly, Trikala, Kato Palagokaria (82); Thessaly, Trikala, 9 km
S of Chrisomilea (90); Epirus, Metsovo, Katara Pass (96); Epirus, Metsovo, R. Metsovitikos (99); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (100); Epirus, Metsovo, Lakmos Mts., Anilio (15 km S influx) (102); Epirus, Metsovo, 14 km W of Milea (103); Epirus, Ioannina, R. Zagoritikos, Karies (106); Epirus, 10 km N of Louros (110); Epirus, Ioannina, R. Voidomatis, Aristi (112); Central Greece, Eotia, Lamia, Ieraklia (145); Central Greece, Eotia, Vardousia Mts., between Kastanea and Katafygio (147); Central Greece, Eotia, Vardousia Mts., 5 km N of Grammeni Oxia (153); Central Greece, Eotia, Vardousia Mts., R. Evinos, Grammeni Oxia (154); Central Greece, Eotia, Vardousia Mts., 9 km N of Grammeni Oxia (155); Central Greece, Eotia, Vardousia Mts., 7 km N of Grammeni Oxia (156); Central Greece, Eotia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Tymfriostos Mts., R. Sperhios, Lamia (168); Central Greece, Eotia, Panaitoliko Mts., Klepa (170); Central Greece, Karpenisi, Agios Nikolaos (175); Central Greece, Eotia, Nafpaktos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Eotia, Lamia, Pavliani (192); Central Greece, Eotia, Agrinio, Panaitoliko Mts., Palagohori (199); Central Greece, Eotia, Nafpaktos, Koutsopanneika (203); Peloponnese, R. Krathis, 7 km N of Peristera (214); Peloponnese, tributary of R. Krathis, 7 km N of Peristera (215); Peloponnese, R. Krathis, Peristera (217); Peloponnese, Aroania Mts., Zarouhla (220); Peloponnese, Aroania Mts., Xelmos (bellow), Valtos, Zarelia (221); Peloponnese, Pagrati (225); Peloponnese, Aroania Mts., Kastria (226); Peloponnese, Kato Klitoria (227); Peloponnese, Labia Mts., Amigdalia (229); Peloponnese, R. Piro, Elliniko (230); Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio (231); Peloponnese, Erymanthos Mts., Lechouri (233); Peloponnese, Panachaiko Mts., Veteika (234); Peloponnese, Erymanthos Mts., Kato Vlasia (235); Peloponnese, Panachaiko Mts., Kounaveika (near village) (236); Peloponnese, Erymanthos Mts., Profitis Ilias (239); Peloponnese, Erymanthos Mts., Stavrohori, Eliniko (241); Peloponnese, Erymanthos Mts., S of Spartia (243); Peloponnese, Stavrodromi (245); Peloponnese, Abelokipi (246); Peloponnese, Panachaiko Mts., Kristalovrisi (stream) (248).

**Clinocerella siveci** (Wagner & Horvat, 1993)

**Literature references.** Central Greece, Eotia, Panaitoliko Mts., Klepa (Wagner and Horvat 1993) (170); Central Greece, Eotia, Agrinio, Agia Souria (Wagner and Horvat 1993) (191); Central Greece, Eotia, Agrinio, Panaitoliko Mts., 3 km N of Hanli Loliou (Wagner and Horvat 1993) (202); Central Greece, Eotia, Nafpakto, Koutsopanneika (Wagner and Horvat 1993) (203); Peloponnese, 2 km N of Peristera (Wagner and Horvat 1993) (216); Peloponnese, Aroania Mts., Kalivia (Wagner and Horvat 1993) (223); Peloponnese, Panachaiko Mts., Kounaveika (near village) (Wagner and Horvat 1993) (236); Peloponnese, Panachaiko Mts., Kristalovrisi (stream) (Wagner and Horvat 1993) (248); Peloponnese, Erymanthos Mts., Kalamata (Wagner and Horvat 1993) (249).
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)

Dolichocephala cretica Wagner, 1995

Literature references. Crete, stream near Kotsifiana (Wagner 1995) (257).

Dolichocephala guttata (Haliday, 1833)

Literature references. Crete, E of Ierepetra (Wagner 1981) (251).

New records. Thrace, Sapka Mts. 1 (6); Thrace, Dit. Rodopi, N of Dipotama 3 (26); Macedonia, Pieria Mts., 1 (51); Macedonia, Pieria Mts. 3 (53); Epirus, N of Katarapass, 1 km SW Milea (95); Epirus, Metsovo, Katara Pass (96); Cyclades islands, Andros (206); Peloponnese, 2 km N of Peristera (216); Peloponnese, Aroania Mts., 4 km S of Solos (218); Peloponnese, Ano Potames, Kalivitis (219).

Dolichocephala ocellata (Costa, 1854)

Literature references. North Aegean islands, Lesbos, 3 km NW of Agiasos (Wagner 1981) (130); North Aegean islands, Icaria (Wagner 1981) (140); Crete, E of Ierepetra (Wagner 1981) (251).

New records. Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115); Central Greece, Etoila, Agrinio, Agia Soufia (191).

Dolichocephala vaillanti Wagner, 1995

Literature references. Crete, stream near Sises (Wagner 1995) (252).

Dolichocephala zwicki Wagner, 1995

Literature references. North Aegean islands, Lesbos, 3 km NW of Agiasos (Wagner 1995) (130).

New records. Cyclades islands, Andros (206).

Kowarzia barbatula (Mik, 1880)

Literature references. Thrace (Wagner 1981) (36); Macedonia, Xanthi, NE Pass Str. Xanthi-Stavroupolis (Wagner 1995) (69); North Aegean islands, Lesbos, 7 km E of Plomari (Wagner 1981) (127); North Aegean islands, Lesbos, 4 km W of Agiasos (Wagner 1981) (131); North Aegean islands, Icaria, W of Chrisostomos (Wagner 1981) (136); North Aegean islands, Chios, 2 km N of Fita (Wagner 1981) (137);
North Aegean islands, Chios, N of Keramos (Wagner 1981) (138); North Aegean islands, Chios, 5 km N of Pirama (Wagner 1981) (139); North Aegean islands, Icaria (Wagner 1981) (140); Central Greece, Euboea, S of Komitou (Wagner 1995) (142).

**New records.** Thrace, W of Mega Derio (2); Thrace, Lesitse Mts. (3); Thrace, Sapka Mts., 1 (6); Thrace, 3 km N of Alexandroupoli (7); Thrace, Sapka Mts. 2 (8); Thrace, Sapka Mts., Nea Sanda 2 (10); Thrace, Anatoliki Rodopi, E od Drimi (11); Thrace, Dit. Rodopi, N of Dipotama 1 (21); Thrace, N of Dipotama 4 (23); Thrace, N of Dipotama 5 (24); Macedonia, Pieria Mts., 2 streams on Ritini (42); Macedonia, N of Agios Dimitrios (43); Macedonia, Pieria Mts., S of Elatochori (44); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, Pieria Mts., 1 (51); Macedonia, Pieria Mts., 2 (52); Macedonia, Phalacro Mts., N of Livadero (55); Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115); Central Greece, Etolia, Vardousia Mts., Ano Chora (169); Central Greece, Etolia, Panaitoliko Mts., Klepa (170); Central Greece, Etolia, Nafpaktos, Simos (180); Central Greece, Etolia, Panaitoliko Mts., Prousos (186); Central Greece, Etolia, Panaitoliko Mts., Chaliki, Nerosirtis (188); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Erymanthos Mts., S of Spartia (243).

**Kowarzia bipunctata** (Haliday, 1833)

**Literature references.** North Aegean islands, Lesbos, 2 km N of Akrassi (Wagner 1981) (132); North Aegean islands, Lesbos, Ambeliko (Wagner 1981) (134); North Aegean islands, Lesbos, E of Lepetimnos (Wagner 1981) (135); Crete, E of Agios Ioannis (Wagner 1995) (250); Crete, Passas valley near Pass (Wagner 1995) (253); Crete, S of Retimon (Wagner 1981) (254).

**New records.** Thrace, 3 km N of Alexandroupoli (7); Thrace, Sapka Mts., Nea Sanda, 2 (10); Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115); Central Greece, Etolia, Agrinio, Agia Soufia (191); Central Greece, Etolia, Arta, Loutraki (197); Peloponnese, village Akrata (210); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Erymanthos Mts., Stavrobori, Eliniko (241); Peloponnese, Abeliokipi (246).

**Kowarzia madicola** (Vaillant, 1965)

**New records.** Peloponnese, Erymanthos Mts., Stavrobori, Eliniko (241).

**Kowarzia plectrum** (Mik, 1880)

**New records.** Macedonia, Pieria Mts., E of Velventos (50); Macedonia, Pieria Mts., 1 (51); Macedonia, Pieria Mts., 2 (52); Epirus, 10 km N of Louros (110).

**Remarks.** This species is newly recorded from Greece.
**Phaeobalia dimidiata** (Loew, 1869)

**New records.** Thrace, N of Dipotama 3 (22); Thrace, N of Dipotama 4 (23); Thrace, Dit. Rodopi, N of Dipotama 2 (25); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, Pieria Mts., Fteri (47); Macedonia, Pieria Mts., W of Fteri (48); Macedonia, Pieria Mts., E of Velventos (50); Macedonia, Pieria Mts., 2 (52).

**Remarks.** This species is newly recorded from Greece.

**Roederiodes malickyi** Wagner, 1981

**Literature references.** Crete, Xyloskalon (Wagner 1981) (256).

**Wiedemannia** (*Chamaedipsia*) **aequilobata** Mandaron, 1964

**New records.** Epirus, Lakmos Mts., 10 km S of Anilio (101).

**Wiedemannia** (*Chamaedipsia*) **ariadne** Wagner, 1981

**Literature references.** Cyclades islands, Naxos, S of Koronis (Wagner 1981) (207); Cyclades islands, Andros, Apikia (Wagner 1981) (208).

**Wiedemannia** (*Chamaedipsia*) **beckeri** (Mik, 1889)

**New records.** Thrace, Rodopi, N of Dipotama 1 (21); Thrace, N of Dipotama 3 (22); Thrace, Rodopi, N of Dipotama 3 (26); Thrace, N of Sidironero 1 (31).

**Remarks.** This species is newly recorded from Greece.

**Wiedemannia** (*Chamaedipsia*) **lota** Walker, 1851

**Literature references.** Macedonia, Olympus Mts. above Agios Dyonysos, Prionia (Wagner 1981) (41); Dodecanese islands, Rhodes, 3 km E of Archipolis (Wagner 1981) (204).

**New records.** Thrace, Anatoliki Rodopi, Drimi (12); Thrace, Anatoliki Rodopi, E of Gratini 1 (13); Thrace, Anatoliki Rodopi, E of Gratini 2 (14); Thrace, 8 km N of Sminthi (17); Thrace, N of Xanthi (18); Thrace, N of Dipotama 1 (19); Thrace, N of Dipotama 3 (22); Macedonia, N of Stavros (39); Macedonia, R. Mavroneri, 10 km W of Katerini (40); Macedonia, S of Agios Dimitrios (45); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, Pieria Mts., 2 (52); Macedonia, E of Velventos (54); Macedonia, Kastoria, Nestorio (62); Macedonia, Kastoria, Grammos Mts., 7 km S Chrisi
(64); Thessaly, S of Kallithea (73); Thessaly, Pieria Mts., S of Livadi (74); Thessaly, Deskati (76); Thessaly, Trikala, Longiai (77); Thessaly, S of Asprokklisia (78); Epirus, Ioannina, R. Zagoritikos, Karies (106); Epirus, Konitsa, Asimohori (109); Epirus, 10 km N of Louros (110); Epirus, S of Seriziana (111); Epirus, W of Kriopigi (114); Epirus, R. Aheron, N of Gliki (115); Epirus, Mirsini (117); Epirus, R. Kokitos, W of Gardiki (119); Epirus, Igoumenitsa, R. Thiamis, Soulopolou (122); Epirus, Ioannina, Balndouma (124); Central Greece, Etoia, Lamia, Ieraklia (145); Central Greece, Etoia, Vardousia Mts., Paleovraha (151); Central Greece, Etoia, Nafpaktos, 9 km S of Krokiilio (152); Central Greece, Etoia, Vardousia Mts., 5 km N of Grammeni Oxia (153); Central Greece, Etoia, Vardousia Mts., R. Evinos, Grammeni Oxia (154); Central Greece, Etoia, Vardousia Mts., Terpsithea (158); Central Greece, Etoia, Nafpaktos, R. Mornos, Limnitsa (159); Central Greece, Etoia, Vardousia Mts., 6 km S of Lefkada (162); Central Greece, Etoia, Vardousia Mts., 13 km S of Gardiki (164); Central Greece, Etoia, Vardousia Mts., Pougkakia (165); Central Greece, Etoia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Etoia, Panaitoliko Mts., R. Evinos, Klepa (171); Central Greece, Etoia, R. Mornos, Nafpaktos (177); Central Greece, Etoia, Agrinio, Panaitoliko Mts., R. Evinos, Agios Dimitros (178); Central Greece, Etoia, Agrinio, Peristra, 1 km S of Perkos (182); Central Greece, Etoia, Agrinio, Panaitoliko Mts. R. Trikeriotis, Dermatio (185); Central Greece, Etoia, Agrinio, Panaitoliko Mts., Potamoula (190); Central Greece, Etoia, Arta, Loutraki (197); Central Greece, Etoia, Nafpaktos, Koutsopaniaka (203); Peloponnese, R. Krathis, Voutsimos (211); Peloponnese, 3 km N of Agia Varvara (213); Peloponnese, R. Krathis, 7 km N of Peristera (214); Peloponnese, tributary of R. Krathis, 7 km N of Peristera (215); Peloponnese, R. Krathis, Peristera (217); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Pagrati (225); Peloponnese, Aroania Mts., Kastria (226); Peloponnese, Kato Klioria (227); Peloponnese, Aroania Mts., Xelmos (above) (228); Peloponnese, R. Piro, Elliniko (230); Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio (231); Peloponnese, Panachaiko Mts., Leontio (232); Peloponnese, Erymanthos Mts., Lechouri (233); Peloponnese, Panachaiko Mts., Veteika (234); Peloponnese, Erymanthos Mts., Kato Vlasia (235); Peloponnese, Panachaiko Mts., Kounaveika (near village) (236); Peloponnese, Erymanthos Mts., Profitis Ilias (239); Peloponnese, Erymanthos Mts., Stavrohori, Eliniko (241); Peloponnese, Panachaiko Mts., Souli (242); Peloponnese, Erymanthos Mts., Manesi (244); Peloponnese, E of Olympia (247).

**Wiedemannia (Eucelidia) zetterstedti** (Fallén, 1826)

**Literature references.** Thrace (Wagner 1981) (36); Macedonia, Olympus Mts., above Agios Dyonomyos, Prionia (Wagner 1981) (41); Epirus, Preveza, Zalongu, stream 2 km E of Mirsini (Wagner 1995) (113); North Aegean islands, Samos, below Manolates (Wagner 1981) (125); North Aegean islands, Samos, E of Pirgos (Wagner 1981) (126);
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

North Aegean islands, Lesbos, 1 km SW of Megalochori (Wagner 1981) (129); North Aegean islands, Lesbos, S of Neochorion (Wagner 1981) (133); Central Greece, Euboea, S of Komiton (Wagner 1995) (142); Central Greece, Euboea, Steni Dirfyos (former Ano Steni) (Wagner 1995) (143); Central Greece, Parnassus Mts., above Polydrosos (Wagner 1981) (146); Central Greece, Central Euboea (Wagner 1981) (201); Cyclades islands, Andros, Apikia (Wagner 1981) (208); Peloponnese, Taygetos Mts. (below the summit) (Wagner 1981) (209); Laschtabend (Alpen) (Wagner 1981) (258).

**New records.** Thrace, E of Mega Derio (1); Thrace, N of Avas (5); Thrace, Sapka Mts. 1 (6); Thrace, Sapka Mts. 2 (8); Thrace, Sapka Mts., Nea Sanda 1 (9); Thrace, Sapka Mts., Nea Sanda 2 (10); Thrace, Anatoliki Rodopi, E od Drimi (11); Thrace, Anatoliki Rodopi, Drimi (12); Thrace, Anatoliki Rodopi, E of Gratini 1 (13); Thrace, Miki (16); Thrace, 8 km N of Sminthi (17); Thrace, N of Xanthi (18); Thrace, N of Dipotama 1 (19); Thrace, N of Dipotama 2 (20); Thrace, Dit. Rodopi, N of Dipotama 1 (21); Thrace, N of Dipotama 3 (22); Thrace, N of Dipotama 5 (24); Thrace, S of Dipotama (27); Thrace, S of Silli (28); Thrace, Dit. Rodopi, Skaloti (29); Thrace, W of Sidironero (34); Thrace, Rodopi, E of Mikromilia (35); Macedonia, E of Mikrodisoura (38); Macedonia, N of Stavros (39); Macedonia, R. Mavroneri, 10 km W of Katerini (40); Macedonia, Pieria Mts., 2 streams on Ritini (42); Macedonia, N of Agios Dimitrios (43); Macedonia, S of Agios Dimitrios (45); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, Pieria Mts., Fteri (47); Macedonia, Pieria Mts., W of Fteri (48); Macedonia, W of Daskio (49); Macedonia, Pieria Mts., 1 (51); Macedonia, Pieria Mts., 2 (52); Macedonia, Pieria Mts., 3 (53); Macedonia, Phalacro Mts., N of Livanero (55); Macedonia, Grevena, 6 km S of Milea (57); Macedonia, Kozani, Polilako (Paraveti), Neapolis (59); Macedonia, Smokilas Mts., main stream near the bridge, 2 km E of Agia Paraskevi (63); Thessaly, Ossa Mts., stream Apatanian (71); Thessaly, S of Kallitheia (73); Thessaly, Deskati (76); Thessaly, S of Asprokklisia (78); Thessaly, Kalambaka, Agios Nikolaos (80); Thessaly, Trikala, Kato Palagokaria (82); Thessaly, Kalambaka, 5 km E of Paleochori (83); Thessaly, Kalambaka, Trigona (85); Thessaly, Kalambaka, Koridallos (86); Thessaly, Trikala, Arta, Pahtouri (87); Thessaly, Kalambaka, 4 km S of Ambelia (91); Epirus, Metsovo, 14 km S of Milea (92); Epirus, Metsovo, R. Metsovitikos (99); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (100); Epirus, Ioannina, R. Zagoritikos, Karies (106); Epirus, 10 km N of Louros (110); Epirus, S of Seriziana (111); Epirus, Ioannina, R. Voidomatis, Aristi (112); Epirus, R. Aheron, N of Gliki (115); Epirus, Kanallaki, Skepaston (116); Epirus, Mirsini (117); Epirus, R. Aheron, Gliki (118); Epirus, R. Kokitou, W of Gardiki (119); Epirus, Igoumenitsa, R. Thiamis, Souloupolou (122); Central Greece, Eotia, Lamia, Iteraklia (145); Central Greece, Eotia, Vardousia Mts., Mousonitsa (149); Central Greece, Eotia, Vardousia Mts., Athanasios Diakos (150); Central Greece, Eotia, Vardousia Mts., Paleovraha (151); Central Greece, Eotia, Naafpaktos, 9 km S of Krokioli (152); Central Greece, Eotia, Vardousia Mts., 7 km N of Grammeni Oxia (156); Central Greece, Eotia, Naafpaktos, R. Mornos, Limnitsa (159); Central Greece, Eotia, Vardousia Mts., Elato (161); Central Greece, Eotia, Vardousia Mts., Pougkakia (165); Central Greece, Eotia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Eotia, Vardousia...
Mts., Grigorio (167); Central Greece, Etolia, Vardousia Mts., Ano Chora (169); Central Greece, Etolia, Panaitoliko Mts., Klepa (170); Central Greece, Etolia, Panaitoliko Mts., R. Evinos, Klepa (171); Central Greece, Etolia, Vardousia Mts., 3 km W of Kryoneri (172); Central Greece, Etolia, Vardousia Mts., Kato Chora (173); Central Greece, Etolia, Nafpaktos, Anthofito (174); Central Greece, Etolia, Nafpaktos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Etolia, R. Mornos, Nafpaktos (177); Central Greece, Etolia, Nafpaktos, Simos (180); Central Greece, Etolia, Nafpaktos, Pokista (181); Central Greece, Etolia, Agrinio, Peristra, 1 km S of Perkos (182); Central Greece, Etolia, Agrinio, R. Evinos, Kato Hrisovitsa, Diasellaki (183); Central Greece, Etolia, Panaitoliko Mts., Chaliki, Ladikon (187); Central Greece, Etolia, Agrinio, Agia Soufia (191); Central Greece, Etolia, Lamia, Pavliani (192); Central Greece, Etolia, Gionia Mts., Sikia (194); Central Greece, Oeta Mts., stream Valorema, Pavliani (195); Central Greece, Etolia, Agrinio, Ablavokastro (196); Central Greece, Etolia, Arta, Loutrakai (197); Central Greece, Etolia, Agrinio, Panaitoliko Mts., Palagohori (199); Central Greece, Etolia, Nafpaktos, Avrorema bridge (200); Central Greece, Etolia, Agrinio, Panaitoliko Mts., 3 km N of Hani Lioliou (202); Central Greece, Etolia, Nafpaktos, Koutsopaneika (203); Peloponnese, Aroania Mts., 2 km S of Zarouchla (212); Peloponnese, Aroania Mts., Zarouhla (220); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Aroania Mts., Kato Klitoria (227); Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio (231); Peloponnese, Erymanthos Mts., Lechouri (233); Peloponnese, Panachaiko Mts., Veteika (234); Peloponnese, Panachaiko Mts., Kounaveika (near village) (236); Peloponnese, E of Olympia (247).

**Wiedemannia (Philolutra) angelieri Vaillant, 1967**

**New records.** Central Greece, Etolia, Vardousia Mts., Athanasios Diakos (150).

**Remarks.** This species is newly recorded from Greece.

**Wiedemannia (Philolutra) chvali Joost, 1981**

**New records.** Thrace, N of Dipotama 3 (22); Thrace, N of Sidironero 1 (31).

**Remarks.** This species is newly recorded from Greece.

**Wiedemannia (Philolutra) fallaciosa (Loew, 1873)**

**Literature references.** Macedonia, Olympus Mts. above Agios Dyonysos, Prionia (Wagner 1981) (41); Epirus, Preveza, Zalongu, stream 2 km E of Mirsini (Wagner 1995) (113).

**New records.** Thrace, E of Mega Derio (1); Thrace, Miki (16); Thrace, N of Dipotama 1 (19); Thrace, Dit. Rodopi, Skaloti (29); Macedonia, R. Mavroneri, 10 km
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

W of Katerini (40); Macedonia, Pieria Mts., S of Elatochori (44); Macedonia, S of Agios Dimitrios (45); Macedonia, Pieria Mts., E of Fteri (46); Macedonia, W of Daskio (49); Macedonia, Pieria Mts., 2 (52); Macedonia, E of Velventos (54); Macedonia, Grevena, Milea (56); Macedonia, Grevena, 6 km S of Milea (57); Macedonia, Kozani, Polilako (Paraveti), Neapolis (59); Macedonia, Grevena, R. Venetikos, Kipourio (60); Macedonia, Kastoria, Nestorio (62); Macedonia, Kastoria, Grammos Mts., 7 km S Chrisi (64); Macedonia, Kastoria, Grammos Mts., 6 km N Pefkofito (65); Thessaly, Deskati (76); Thessaly, S of Asprokklisia (78); Thessaly, Trikala, Moshofto, Avra (79); Thessaly, Kalambaka, Agios Nikolaos (80); Thessaly, Trikala, Stournareika (81); Thessaly, Trikala, Kato Palagokaria (82); Thessaly, Kalambaka, 5 km E of Paleochori (83); Thessaly, Kalambaka, Paleochori (84); Thessaly, Kalambaka, Trigona (85); Thessaly, Trikala, Arta, Pahtouri (87); Thessaly, Trikala, Arta, R. Ahelos, Kapsala (88); Thessaly, Trikala, Arta, Korifi (89); Epirus, Metsovo, 14 km S of Milea (92); Epirus, Metsovo, Lakmos Mts., Anilio (5 km S bellow river) (93); Epirus, Metsovo, 12 km W Milea (98); Epirus, Metsovo, R. Metsovitikos (99); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (100); Epirus, Lakmos Mts., 10 km S of Anilio (101); Epirus, Ioannina, Megalo Peristeri (104); Epirus, Ioannina, R. Zagoritikos, Karies (106); Epirus, Konitsa, Asimohori (109); Epirus, 10 km N of Louros (110); Epirus, Ioannina, R. Voidomatis, Aristi (112); Epirus, W of Kriopigi (114); Epirus, R. Aheron, N of Gliki (115); Epirus, Kanallaki, Skepaston (116); Epirus, Mirsini (117); Epirus, R. Kokitos, W of Gardiki (119); Epirus, Ioannina, Balndouma (124); Central Greece, Etoia, Lamia, Ieraklia (145); Central Greece, Etoia, Vardousia Mts., Stromi (148); Central Greece, Etoia, Vardousia Mts., Mousonitsa (149); Central Greece, Etoia, Vardousia Mts., Athanasios Diakos (150); Central Greece, Etoia, Vardousia Mts., 9 km S of Kroki (152); Central Greece, Etoia, Vardousia Mts., 5 km N of Grammeni Oxia (153); Central Greece, Etoia, Vardousia Mts., R. Evinos, Grammeni Oxia (154); Central Greece, Etoia, Vardousia Mts., 9 km N of Grammeni Oxia (155); Central Greece, Etoia, Vardousia Mts., 7 km N of Grammeni Oxia (156); Central Greece, Etoia, Vardousia Mts., Terpsithea (158); Central Greece, Etoia, Naftakos, R. Morinos, Limnitsa (159); Central Greece, Etoia, Vardousia Mts., Elatovrisi (160); Central Greece, Etoia, Vardousia Mts., Elato (161); Central Greece, Etoia, Vardousia Mts., 6 km S of Lefkada (162); Central Greece, Etoia, Vardousia Mts., Gardiki (163); Central Greece, Etoia, Vardousia Mts., 13 km S of Gardiki (164); Central Greece, Etoia, Vardousia Mts., Pougkakia (165); Central Greece, Etoia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Etoia, Vardousia Mts., Grigorio (167); Central Greece, Etoia, Panaitoliko Mts., Klepa (170); Central Greece, Etoia, Panaitoliko Mts., R. Evinos, Klepa (171); Central Greece, Etoia, Vardousia Mts., 3 km W of Kryoneri (172); Central Greece, Etoia, Vardousia Mts., Kato Chora (173); Central Greece, Etoia, Naftakos, Anthofito (174); Central Greece, Etoia, Naftakos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Etoia, R. Morinos, Naftakos (177); Central Greece, Etoia, Agrinio, Panaitoliko Mts., R. Evinos, Agios Dimitrios (178); Central Greece, Etoia, Naftakos, 2 km N of Pokista (179); Central Greece, Etoia, Naftakos, Simos (180); Central Greece, Etoia, Naftakos, Pokista...
(181); Central Greece, Eolia, Agrinio, Peristra, 1 km S of Perkos (182); Central Greece, Eolia, Agrinio, R. Evinos, Kato Hrisovitsa, Diasellaki (183); Central Greece, Eolia, Agrinio, Panaitoliko Mts. R. Trikeriotis, Dermatio (185); Central Greece, Eolia, Lamia, Pavliani (192); Central Greece, Eolia, Giona Mts., Sikia (194); Central Greece, Eolia, Agrinio, Ahlavokastro (196); Central Greece, Eolia, Arta, Loutraki (197); Central Greece, Eolia, Agrinio, Panaitoliko Mts., Palagohori (199); Central Greece, Eolia, Nafpaktos, Avrorema bridge (200); Central Greece, Eolia, Agrinio, Panaitoliko Mts., 3 km N of Hani Lioliou (202); Central Greece, Eolia, Nafpaktos, Koutsopaneneika (203); Peloponnese, R. Krathis, Voutsimos (211); Peloponnese, 3 km N of Agia Varvata (213); Peloponnese, R. Krathis, 7 km N of Peristera (214); Peloponnese, tributary of R. Krathis, 7 km N of Peristera (215); Peloponnese, 2 km N of Peristera (216); Peloponnese, R. Krathis, Peristera (217); Peloponnese, Ano Potames, Kalivitis (219); Peloponnese, Aroania Mts., Zarouhla (220); Peloponnese, Likouria (under the village) (222); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Aroania Mts., Kastria (226); Peloponnese, Kato Klitoria (227); Peloponnese, Aroania Mts., Xelmos (above) (228); Peloponnese, R. Piro, Elliniko (230); Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio (231); Peloponnese, Panachaiko Mts., Leontio (232); Peloponnese, Erymanthos Mts., Lechouri (233); Peloponnese, Panachaiko Mts., Veteika (234); Peloponnese, Erymanthos Mts., Kato Vlasia (235); Peloponnese, Panachaiko Mts., Kounaveika (near village) (236); Peloponnese, Panachaiko Mts., Moira (237); Peloponnese, Panachaiko Mts., Moira (after village) (238); Peloponnese, Panachaiko Mts., Souli (242); Peloponnese, Abelokipi (246); Peloponnese, E of Olympia (247).

Wiedemannia (Pseudowiedemannia) lamellata (Loew, 1869)

Literature references. Thessaly, Karya (Wagner 1981) (72); North Aegean islands, Lesbos, 1 km W of Ippion (Wagner 1981) (128).

New records. Thrace, Sapka Mts., Nea Sanda 1 (9); Thrace, Anatoliki Rodopi, E od Drimi (11); Thrace, Anatoliki Rodopi, Drimi (12); Thrace, Anatoliki Rodopi, E of Gratin 1 (13); Thrace, 8 km N of Sminthi (17); Thrace, S of Silli (28); Thrace, Dit. Rodopi, Skaloti (29); Thrace, Dit. Rodopi 1 (30); Thrace, N of Sidironero 1 (31); Thrace, Dit. Rodopi 2 (32); Thrace, N of Sidironero 2 (33); Thrace, W of Sidironero (34); Macedonia, N of Stavros (39); Macedonia, R. Mavroneri, 10 km W of Katerini (40); Macedonia, Phalacro Mts., N of Livadero (55); Macedonia, Kozani, Polilako (Paraveti), Neapolis (59); Thessaly, Trikala, Kato Palagokaria (82); Thessaly, Kalambaka, 5 km E of Paleochori (83); Thessaly, Kalambaka, Paleochori (84); Thessaly, Kalambaka, Koridallos (86); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (100); Epirus, Ioannina, R. Vardas, Abelos (123); Central Greece, Eolia, Lamia, Ieraklia (145); Central Greece, Eolia, Vardousia Mts., 7 km N of Grammeni Oxia (156); Central Greece, Eolia, Vardousia Mts., 7 km S of Gardiki (157); Central Greece, Eolia, Vardousia Mts., Terpsithea (158); Central Greece, Eolia, Vardousia
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

Mts., 13 km S of Gardiki (164); Central Greece, Etolia, Vardousia Mts., Pougka-kia (165); Central Greece, Etolia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Etolia, Agrinio, Panaitoliko Mts., Megali Chora (193); Central Greece, Etolia, Nafpaktos, Avrorema bridge (200); Peloponnese, Aroania Mts., Kalivia (223); Peloponnese, Aroania Mts., Kas tria (226); Peloponnese, Panachaiko Mts., tributary of R. Selinous, Leontio (231); Peloponnese, Panachaiko Mts., Leontio (232); Peloponnese, Erymanthos Mts., Lechouri (233); Peloponnese, Panachaiko Mts., Veteika (234); Peloponnese, Erymanthos Mts., Kato Vlasia (235); Peloponnese, Panachaiko Mts., Kounaveika (near village) (236); Peloponnese, Erymanthos Mts., Manesi (244); Peloponnese, E of Olympia (247).

Wiedemannia (Pseudowiedemannia) microstigma (Bezzi, 1904)

New records. Thessaly, Trikala, Kato Palagokaria (82); Central Greece, Etolia, Vardousia Mts., Stromi (148).

Wiedemannia (Roederella) czernyi (Bezzi, 1905)

Literature references. Macedonia, Chalkidiki, Chlomon Oros., Paleokastron, Vatonia P. 1 (Wagner 1995) (66).

New records. Thrace, E of Sapka Mts., big stream in the valley (4); Macedonia, Chalkidiki, Chlomon Oros., Paleokastron, Vatonia P. 2 (67).

Wiedemannia (Wiedemannia) andreevi Joost, 1982

New records. Thrace, S of Silli (28).

Wiedemannia (Wiedemannia) bilobata Oldenberg, 1910

Literature references. Macedonia, Olympus Mts. above Agios Dyony sos, Pronia (Wagner 1981) (42); Central Greece, Parnassus Mts., above Polydrosos (Wagner 1981) (146).

Wiedemannia (Wiedemannia) dinarica Engel, 1940

New records. Epirus, Ioannina, R. Voidomatis, Aristi (112); Epirus, R. Aheron, N of Gliki (115); Epirus, R. Aheron, Gliki (118); Peloponnese, Likouria (under the village) (222); Peloponnese, Aroania Mts., Krinofita (224); Peloponnese, Aroania Mts., Kas tria (226); Peloponnese, Kato Klitoria (227).
**Wiedemannia (Wiedemannia) dyonysica** Wagner, 1990

**Literature references.** Macedonia, Olympus Mts. above Agios Dyonysos, Prionia (Wagner 1990) (41).

**Wiedemannia (Wiedemannia) graeca** Vaillant & Wagner, 1990

**Literature references.** Central Greece, Polydrosos (Vaillant and Wagner 1990) (144).

**New records.** Thrace, Rodopi, Skaloti (29); Thessaly, Trikala, Stournareika (81); Thessaly, Kalambaka, 5 km E of Paleochori (83); Thessaly, Kalambaka, Paleochori (84); Thessaly, Trikala, Arta, R. Ahelos, Kapsala (88); Epirus, Metsovo, Lakmos Mts., 2 km S of Anilio (bellow left tributary) (97); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (100); Central Greece, Eotia, Vardousia Mts., Stromi (148).

**Wiedemannia (Wiedemannia) tricuspidata** (Bezzi, 1905)

**New records.** Thrace, S of Silli (28); Macedonia, Grevena, R. Venetikos, Kipourio (60); Macedonia, Kastoria, Grammos Mts., 7 km S Chrisi (64); Thessaly, Trikala, Longiai (77); Thessaly, Trikala, Kato Palagokaria (82); Epirus, Konitsa, R. Saradaporos, Drosopigi (108); Central Greece, Eotia, Naftaktos, R. Mornos, Limnitsa (159); Central Greece, Eotia, Naftaktos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Eotia, R. Mornos, Naftaktos (177); Central Greece, Eotia, Agrinio, Panaitoliko Mts., R. Evinos, Klepa (171); Central Greece, Eotia, Naftaktos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Eotia, R. Mornos, Naftaktos (177); Central Greece, Eotia, Agrinio, Panaitoliko Mts., R. Evinos, Agios Dimitros (178); Central Greece, Eotia, Agrinio, Peristra, 1 km S of Perkos (182).

**Wiedemania artemisa** Ivković & Plant, 2012

**Literature references.** Thessaly, Trikala, Kato Palagokaria (Ivković et al. 2012) (82); Thessaly, Trikala, Arta, Pahtouri (Ivković et al. 2012) (87); Thessaly, Trikala, Arta, R. Aheleos, Kapsala (Ivković et al. 2012) (88); Thessaly, Trikala, Arta, Korifi (Ivković et al. 2012) (89); Epirus, Metsovo, Lakmos Mts., Anthohori, (bellow rapid river) (Ivković et al. 2012) (100); Epirus, Igoumenitsa, R. Thiamis, Souloupoulo (Ivković et al. 2012) (122); Central Greece, Eotia, Lamia, Ieraklia (Ivković et al. 2012) (145); Central Greece, Eotia, Vardousia Mts., 7 km S of Gardiki (Ivković et al. 2012) (157); Central Greece, Eotia, Vardousia Mts., Pougkakia (Ivković et al. 2012) (165); Peloponese, R. Krathis, Voutsimos (Ivković et al. 2012) (211); Peloponese, R. Krathis, Peristera (Ivković et al. 2012) (217); Peloponese, Likouria (under the village) (Ivković et al. 2012) (222); Peloponese, Aroania Mts., Kastria (Ivković et
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

New records. Thessaly, Kalambaka, 4 km S of Ambelia (91); Epirus, Metsovo, Lakmos Mts., 2 km S of Anilio (bellow left tributary) (97); Epirus, Konitsa, Smolikas Mts., Pournia (107); Epirus, Mirsini (117); Central Greece, Eotia, Vardousia Mts., Stromi (148); Central Greece, Eotia, Vardousia Mts., Athanasios Diakos (150); Central Greece, Eotia, Nafpaktos, 9 km S of Krokilio (152); Central Greece, Eotia, Vardousia Mts., R. Evinos, Grammeni Oxia (154); Central Greece, Eotia, Vardousia Mts., 7 km N of Grammeni Oxia (156); Central Greece, Eotia, Vardousia Mts., Terpsiheia (158); Central Greece, Eotia, Nafpaktos, R. Mornos, Limnitsa (159); Central Greece, Eotia, Vardousia Mts., 13 km S of Gardiki (164); Central Greece, Eotia, Vardousia Mts., 2 km W of Gardiki (166); Central Greece, Eotia, Vardousia Mts., Grigorio (167); Central Greece, Eotia, Vardousia Mts., Kato Chora (173); Central Greece, Karpenisi, Agios Nikolaos (175); Central Greece, Eotia, Nafpaktos, tributary of R. Evinos, 6 km N of Pokista (176); Central Greece, Eotia, Nafpaktos, Pokista (181); Central Greece, Eotia, Agrinio, Peristra, 1 km S of Perkos (182); Central Greece, Eotia, Panaitoliko Mts., Prousos (186); Central Greece, Eotia, Panaitoliko Mts., Chaliki, Ladikon (187); Central Greece, Eotia, Agrinio, Panaitoliko Mts., Anatoliki Frangista (189); Central Greece, Eotia, Lamia, Pavliani (192); Central Greece, Eotia, Agrinio, Panaitoliko Mts., Megali Chora (193); Central Greece, Eotia, Agrinio, Panaitoliko Mts., Houni (198); Central Greece, Eotia, Nafpaktos, Koutsopanneika (203); Peloponnese, 3 km N of Agia Varvara (213); Peloponnese, R. Krathis, 7 km N of Peristera (214).

Wiedemannia iphigeniae Ivković & Sinclair, sp. n.

Records. Peloponnese, Aroania Mts., Krinofita (224).

Wiedemannia ljerkae Ivković & Sinclair, sp. n.

Records. Epirus, Igoumenitsa, R. Thiamis, Soulopoulo (122); Central Greece, Eotia, Agrinio, Peristra, 1 km S of Perkos (182); Peloponnese, Aroania Mts., Kastria (226); Peloponnese, Kato Klitoria (227).

Wiedemannia nebulosa Ivković & Sinclair, sp. n.

Records. Thrace, N of Dipotama 5 (24).
**Wiedemannia pseudobertheleyi** Ivković & Sinclair, sp. n.

**Records.** Central Greece, Etolia, Vardousia Mts., R. Evinos, Grammeni Oxia (154); Central Greece, Etolia, R. Mornos, Nafpaktos (177); Central Greece, Panaitoliko Mts., R. Tavropos, Kalesmeno (184); Central Greece, Etolia, Agrinio, Agia Soufia (191).

Subfamily Hemerodromiinae

**Chelifera angusta** Collin, 1927

**New records.** North Aegean islands, Lesbos (141).

**Remarks.** This species is newly recorded from Greece.

**Chelifera barbarica** Vaillant, 1982

**Literature references.** Dodecanese islands, Rhodes, near Archipolis (Wagner 1995) (205).

**Chelifera horvati** Ivković & Sinclair, sp. n.

**Records.** Central Greece, Etolia, Arta, Loutraki (197).

**Chelifera precabunda** Collin, 1961

**New records.** Thrace, Sapka Mts., 1 (6); Thrace, Dir. Rodopi, Skaloti (29); Thrace, Rodopi, E of Mikromilia (35); Macedonia, Pieria Mts., E of Velventos (50); Peloponnese, R. Krathis, 7 km N of Peristera (214).

**Chelifera precatoria** (Fallén, 1816)

**Literature references.** Crete, Georgioupolis (Wagner 1981) (255).

**Chelifera stigmatica** (Schiner, 1862)

**Literature references.** North Aegean islands, Samos, E of Pithos (Wagner 1981) (126).

**New records.** Thrace, N of Sidironero 2 (33); Thessaly, Trikala, Kato Palagokaria (82); Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115); Central Greece, Etolia, Vardousia Mts., Stromi (148); Central Greece, Etolia, Panaitoliko Mts.,
Aquatic dance flies (Diptera, Empididae, Clinocerinae and Hemerodromiinae)...

R. Evinos, Klepa (171); Central Greece, Eotia, Agrinio, Peristra, 1 km S of Perkos (182); Central Greece, Eotia, Nafpaktos, Koutsopanopelaika (203); Peloponnese, Erymanthos Mts., Stavrophori, Eliniko (241); Peloponnese, E of Olympia (247).

Chelifera trapezina (Zetterstedt, 1838)

Literature references. North Aegean islands, Samos, E of Pirgos (Wagner 1981) (126).

Hemerodromia melangyna Collin, 1927

New records. Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115).

Remarks. This species is newly recorded from Greece.

Hemerodromia oratoria (Fallén, 1816)

Literature references. Peloponnese, Ano Kastritsi, stream (Wagner 1995) (240).

New records. Thrace, Lesitse Mts. (3); Thrace, Anatoliki Rodopi, E od Drimi (11); Thrace, Anatoliki Rodopi, Drimi (12); Thrace, Miki (16); Thrace, 8 km N of Sminthi (17); Epirus, 10 km N of Louros (110); Epirus, W of Kriopigi (114); Epirus, Mirsini (117); Central Greece, Eotia, Lamia, Ieraklia (145).

Hemerodromia unilineata Zetterstedt, 1842

Literature references. Thessaly, Portaria (Wagner 1995) (70).

New records. Thrace, Anatoliki Rodopi, E od Drimi (11); Thrace, Anatoliki Rodopi, Drimi (12); Thrace, Anatoliki Rodopi, E of Gratini, 1 (13); Thrace, 8 km N of Sminthi (17); Thrace, S of Silli (28); Thrace, W of Sidironero (34); Macedonia, E of Mikroklioua (38); Macedonia, W of Daskio (49); Epirus, 10 km N of Louros (110); Epirus, R. Aheron, N of Gliki (115); Epirus, Mirsini (117); Epirus, R. Kokitos, Themelo (120); Epirus, Igoumenitsa, Thesprotia, R. Thiamis, Neohori (121).

Results and discussion

Species richness and assemblage composition. A total of 47 species of aquatic empidids are recorded from Greece (Table 2), collected from 258 sites (Fig. 1, Table 1). The subfamily Clinocerinae is represented by 37 species, in seven genera: Clinocera Meigen (3 species), Clinocerella Engel (1 species), Dolichocephala Macquart (5 species), Kowarzia Mik (4 species), Phaeobalia (1 species), Roederiodes Coquillett (1 species) and
Wiedemannia Zetterstedt (22 species). The subfamily Hemerodromiinae is represented by 10 species, in two genera: Chelifera (7 species) and Hemerodromia Meigen (3 species) (Table 2). The Clinocerinae genus Wiedemannia is most species rich (46.8%), followed by the Hemerodromiinae genus Chelifera (14.9%) (Fig. 13). The Hellenic Western Balkan (Ecoregion 6) is the richest European Ecoregion with 42 species, while 20 species are recorded from the Eastern Balkan (Ecoregion 7), and 15 species occur in both ecoregions (Table 2). Most aquatic Empididae inhabiting Greece are widely distributed in Europe or more broadly, but 10 species are only known from mainland Greece or its islands (Table 2).

Greece supports at least 47 species, but this is unlikely to be the final number. Slovenia, situated in the northwest part of the Balkans, supports 58 species, Croatia 51 species, while Bosnia & Herzegovina, Montenegro and FYR Macedonia have 38, 34 and 34, respectively (Fig. 14). The Sørensen Index of Similarity showed that the Empididae fauna of Greece is most similar to that of FYR Macedonia followed by Bosnia & Herzegovina, whereas it is the least similar to that of Montenegro (Table 3).

We compared our list of Greek species with existing checklists in “Fauna Europaea” (Chvála 2012) and the World Catalogue of Empididae (Yang et al. 2007). The following species were not recorded from Greece in both these works: Chelifera angusta and Hemerodromia melangyna from the subfamily Hemerodromiinae, and Clinocera megalatlantica, Kowarzia plectrum, Phaeobalia dimidiata, W. (Chamaedipsia) beckeri, W. (Philolutra) angelieri and W. (P) chvali from the subfamily Clinocerinae. They represent new country records. On the other hand, some species that are listed in Chvála (2012) and Yang et al. (2007) are not included in the present checklist. We omitted Wiedemannia (Philolutra) hygrobia (Loew) because its presence has not been confirmed in Greece. However, it is possible that it does occur in Greece as it is present in surrounding countries (Chvála 2012, Horvat 1995b, 1997) and consequently it was included in the above key to species. Altogether, 13 species (including the new species) are recorded for the first time from Greece. The species richness of both subfamilies varies between European Ecoregions.

Clinocerinae show greater species richness in mountainous areas of Europe (Vaillant 1982, Wagner and Gathmann 1996), and they are also more species rich in streams and rivers in the Balkans (Horvat 1993, 1995b, 1997, Ivković et al. 2007, 2010, 2012, 2013a, 2013b, 2014).

**Comparison with neighbouring faunas.** Greece has been divided into two ecoregions: Hellenic Western Balkan (Ecoregion 6) and Eastern Balkan (Ecoregion 7). The higher species richness is in the Hellenic Western Balkan Ecoregion, but the Eastern Balkan Ecoregion in Greece is much smaller, so this was an expected result. Greece supports at least 47 species, of which 10 are currently endemic to the country (Dolichocephala cretica, D. vaillanti, Clinocerella siveci, Roederiodes malickyi, Wiedemannia (W) graeca, W. iphigeniae, W. ljerkae, W. nebulosa, W. pseudoberthelemyi, Chelifera horvati). The higher number of species recorded for Slovenia and the far fewer species recorded, for instance, in Montenegro, FYR Macedonia and Bosnia & Herzegovina should be viewed with caution. Slovenia was well studied (Horvat 1995a) in comparison to other
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Figure 13. Species richness of aquatic Empididae genera from Greece.

Figure 14. Comparison of the Greek aquatic Empididae assemblage with those of other Balkan countries.

Balkan countries, which were only studied sporadically (Horvat 1993, 1995b, 1997, Ivković et al. 2012, 2013b, 2014).

Our comparison of Sørensen Similarity indices shows that the FYR Macedonia assemblage has the greatest similarity with the Greek assemblage. This was expected since FYR Macedonia borders with Greece, so they have many species in common. The lowest similarity is with Montenegro, which was not expected as it is geographically much closer to Greece, but this could be due to undersampling of that country (Ivković et al. 2014).
Concluding remarks

The Greek aquatic Empididae fauna is composed of exclusively Palearctic taxa with the exception of *C. stagnalis*, which is the most widespread clinocerine (known from North America, Asia, and North Africa) (Sinclair 2008). Most of the species are restricted to Europe or South Europe and some of them are only found in the Balkans and Greek islands (e.g., *Dolichocephala zwicki*, *Wiedemannia (Chamaedipsia) ariadne*, *W. (Pseudowiedemannia) microstigma*, *W. (Wiedemannia) dinarica* and *W. artemisa*). Some species have a small area of distribution, occurring in just one or a few sites (e.g., *Chelifera horvati*, *Clinocerella siveci*, *Dolichocephala cretica*, *D. vaillanti*, *Roederio-des malickyi*, *Wiedemannia (W.) graeca*, *W. iphigeniae*, *W. ljerkae*, *W. nebulous* and *W. pseudobertheleyi*), and can be considered as Greek endemics.

There are still some genera of Clinocerinae and Hemerodromiinae that have not been recorded in Greece and that might be present, as they occur in surrounding countries (e.g., *Bergenstammia* Mik, *Chelipoda* Macquart and *Phyllodromia* Zetterstedt). Within Greece, most species were reported from the Hellenic Western Balkan Ecoregion; this was expected as this European Ecoregion covers most of the surface area of the country (Illies 1978) and it is considered a biodiversity hotspot (Kryštufek and Reed 2004). The checklist presented here only includes species for which good evidence exists of their presence in Greece. As explained previously, we have omitted any ambiguous or doubtful data and references. This paper may serve as a baseline for planning future work in Greece, but also in surrounding countries for which knowledge of the aquatic dance fly fauna is poor, such as Albania, Bulgaria and Turkey.

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