Faunistic and zoogeographic analysis of sac and ground spiders (Cheiracanthiidae, Clubionidae and Gnaphosidae) in mainland Greece

Authors: Pitta, Eva, and Chatzaki, Maria

Source: Arachnologische Mitteilungen: Arachnology Letters, 64(1) : 34-50

Published By: Arachnologische Gesellschaft e.V.

URL: https://doi.org/10.30963/aramit6405

Arachnologische Mitteilungen / Arachnology Letters 64: 34-45 Karlsruhe, Dezember 2022

Faunistic and zoogeographic analysis of sac and ground spiders (Cheiracanthiidae, Clubionidae and Gnaphosidae) in mainland Greece

Eva Pitta & Maria Chatzaki

doi: 10.30963/aramit6405

Abstract. The spider families Cheiracanthiidae, Clubionidae and Gnaphosidae from areas of mainland Greece are examined. In total 72 species were recorded, belonging to Cheiracanthiidae (1 species), Clubionidae (1 species) and Gnaphosidae (70 species). *Marinarozelotes cumensis* (Ponomarev, 1979) is recorded from Greece for the first time. Habitat preferences of the dominant species are discussed. A zoogeographic analysis focusing on those areas where sampling was more complete, reveals conspicuous similarities to both the European and the eastern spider fauna.

Keywords: Araneae, biogeography, habitats, Mediterranean, species list

Zusammenfassung. Faunistische and zoogeografische Analyse von Spinnen der Familien Cheiracanthiidae, Clubionidae und Gnaphosidae auf dem griechischen Festland. In diesem Artikel werden die Spinnenfamilien Cheiracanthiidae, Clubionidae und Gnaphosidae von Flächen auf dem griechischen Festlandes untersucht. Es wurden insgesamt 72 Arten gefunden, die zu den Cheiracanthiidae (1 Art), Clubionidae (1 Art) und Gnaphosidae (70 Arten) gehören. *Marinarozelotes cumensis* (Ponomarev, 1979) wird erstmals für Griechenland nachgewiesen. Die Habitatpräferenzen der dominanten Arten werden erfasst. Eine zoogeografische Analyse, die für die Flächen mit relativ vollständiger Erfassung durchgeführt wurde, weist auffällige Ähnlichkeiten sowohl zur europäischen als auch zur östlichen Spinnenfauna auf.

Greece is a biodiversity hotspot for Europe (Cuttelod et al. 2008). Concerning, for example, spiders 1298 species have been recorded from the country with its total surface of 132000 km². This is a relatively high species number with respect to area when compared to other South European countries like, for example, Italy (301000 km², 1720 species), Spain (498000 km², 1441 species – without the Canary Is.), Portugal (88000 km², 860 species – without Madeira and Azores), and France (544000 km², 1702 species) (Nentwig et al. 2022). As part of the southern Balkan Peninsula, Greece also has a key biogeographical position, being located at the edge of two continents: Asia and Europe. The northern parts of the country in particular form a consequential zoogeographical connection between European and Eastern faunas, therefore the study of diversity in this area is essential for the understanding of dispersal paths and distributional limits of animals originating from either of the geographical parts. Because of its paleogeography, topography, climate and habitat heterogeneity, Greece is very diverse in terms of local biogeographical patterns (see Kougioumoutzis et al. 2021 and references therein). For instance, in northern areas, European and widespread spider species dominate (Schröder et al. 2011), as well as Eastern species (e.g., East Mediterranean and Ponto-East-Mediterranean) (Komnenov et al. 2016). In Thrace, the south-eastern distribution limit of many north or central European species is found (e.g. *Arctosa stigmosa*, *Agroeca lusatica, Xysticus gallicus*). Similarly, the western distribution limit of species originating from eastern parts (Asian or Pontic) is found here (e.g. *Zelotes solstitialis, Xysticus xerodermus, Titanoeca turkmenia, Tegenaria angustipalpis* and others) (Nentwig et al. 2022). On the other hand, in southern areas and in insular parts of the country, Mediterranean species dominate, and higher rates of endemism are evident, with the most striking case met in the arachnofauna of Crete (Bosmans et al. 2013).

Eva PITTA, Maria CHATZAKI, Department of Molecular Biology and Genetics, Democritus University of Thrace, Dragana, 68100 Alexandroupolis, Greece;
E-mail: maria.chatzaki@gmail.com or mchatzak@mbg.duth.gr, evpitta@gmail.com

Academic Editor: Petr Dolejš

submitted 27.10.2021, accepted 22.11.2022, online 28.12.2022

However, there is still a lack of evidence in the spider catalogue and for distributions across Greece. A similar situation exists in neighboring countries with important biogeographic impact on Greece (e.g. Turkey), rendering distributional data incomplete and difficult to analyse. As a result, biogeographical studies based on spiders in this area may only be considered as preliminary estimates of biogeographic trends along the main axis of the country, i.e. north-south, east-west, or between mainland and insular parts.

Notwithstanding the extensive surveys on the arachnofauna of some of the insular parts of Greece, e.g., Crete (Chatzaki et al. 2002a, 2002b, 2003, Bosmans et al. 2013), Lesbos (Bosmans et al. 2009), Chios (Russell-Smith et al. 2011) and the Dodekanese (Chatzaki & Van Keer 2019)), the spiders of mainland Greece, and especially the northern parts of the country, have largely escaped the interest of arachnologists. To this end, an effort was made to focus on spiders of the least known areas of Greece and hence an extensive sampling survey was organized in previous years including pitfall trapping and hand collecting in many parts of the country's mainland. This paper represents part of a series of taxonomic and ecological studies (i.e., Komnenov et al. 2016, Chatzaki 2018, Zografou et al. 2017, Pitta et al. 2019) dealing with the large material collected in this framework. It focuses on the sac and ground spiders of the families Cheiracanthiidae, Clubionidae and Gnaphosidae and results in 72 species records, one of which is a new record for Greece. These species are further analyzed in order to draw some preliminary results about their ecological and biogeographical patterns.

Material and methods

Material examined here was obtained between 2014 and 2015 by pitfall trapping and hand collecting from 88 sampling sites, in the framework of a biodiversity project (SPIDOnetGR) centered in eastern Thrace (Greece) and extending to many other parts of mainland Greece (i.e. Makedonia, Ipeiros, Thessalia and Sterea Ellada). Coordinates, habitat details and dates of sampling at the 88 sites are given in Tab. 1 and are shown in Fig. 1, prepared with QGIS version 3.16. Site 88 refers to a different project that took place in 2011.

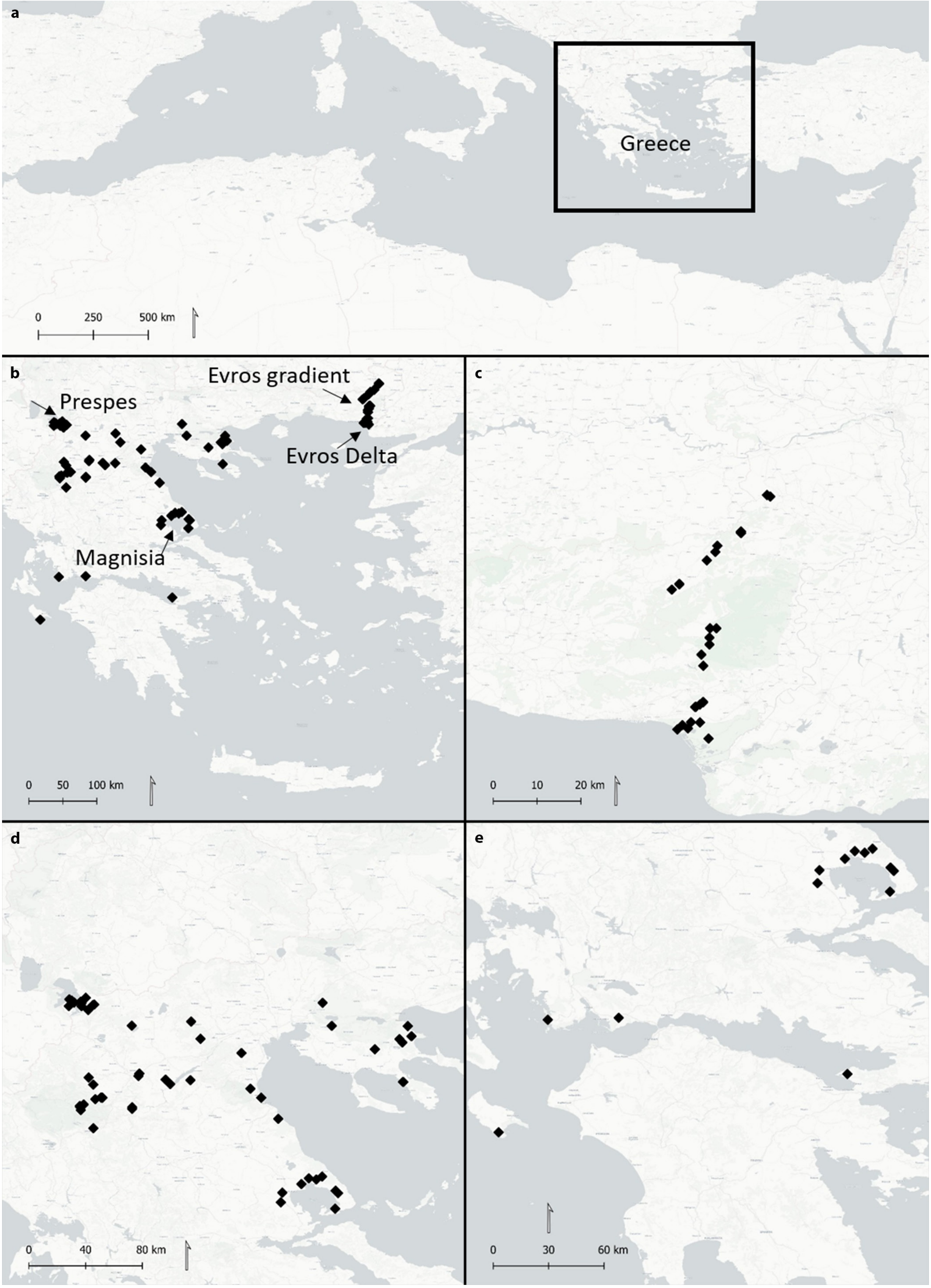

Fig. 1: Map of the sampling sites (black dots). **a.** Reference map of the study area with respect to Europe; **b.** Overview of Greece and the total of 88 sampling sites emphasizing the four areas in which more intensive sampling took place; **c.** Sampling sites in Evros district; **d.** Sampling sites in Makedonia, Ipeiros and Thessalia districts; **e.** Sampling sites in Magnisia, Attiki and Aitoloakarnania districts

The choice of sampling plots depended on habitat dominance in the area. More specifically, in the Evros district pitfall traps were set in grasslands (mostly natural, but also some abandoned old arable lands), maquis and mixed forests (*Quercus*, *Ostria*, *Juniperus* and *Pinus*) of variable openness. In the Evros Delta, pitfall traps were set in sand dunes, on riverbanks, in rushy marshes and meadows. At the Prespes lake, the traps were set in agricultural areas as well as in open oak, beech and juniper forests and dry grasslands, while litter sieving and hand collecting also took place at ruderal stripes of similar habitats. In Magnisia, pitfall traps were set in phrygana and maquis of variable density and in oak, pine and beech forests. In Tab.1 the time period during which pitfall traps were active is indicated, while all other collecting methods are indicated by a single date.

Species identification took place at the Natural History Museum of Basel, Switzerland and was finalized in the Department of Molecular Biology & Genetics of the Democritus University of Thrace. The nomenclature and distributional data used for the biogeographical analysis follows the WSC (2022). All material of species here presented, are deposited at the Natural History Museum of Crete (NHMC hereafter), curator Maria Chatzaki.

The analysis included number and dominance of spider species as well as comparison of patterns of different geographical ranges across the study area. Accumulative data from the whole inventory were initially used. Furthermore, data obtained from areas which were considered more thoroughly surveyed because of the higher number of sites sampled in them, were analysed separately. The latter case involves the Evros district (divided into the Delta of Evros river – Sites 23–28, six sites in total – and in the rest of the Evros district – Sites 1–22, twenty two sites in total – in Thrace), the Magnisia district (in Thessalia) – Sites 75–83, nine sites in total – and the area surrounding the Greek part of Prespes Lake (in Makedonia) – Sites 29–39, eleven sites in total. Because the area of the Evros Delta was extensively sampled and its habitats are distinct from the rest of sampling sites in the district of Evros (see habitat details in Tab. 1), it was considered as a different "area". To better illustrate zoogeographic trends, zoogeographic elements (as given by Komnenov (2014)) were attributed to five general categories as follows (see also Fig. 3a): **WIDE** (i.e. species with widespread distribution): EMA = Euro-Middle Asiatic, EMMA = Euro-Mediterranean-Middle Asiatic, EUA = Eurasian, HOL = Holarctic, PAL = Palearctic, SEM = South-European-Middle Asiatic; **EU** (i.e. species with mainly European distribution): EUR = European, EUS = Euro-Siberian, EUC = Euro-Caucasian, ECA = Euro-Carpathian, SEU = South-European; **MED** (i.e. species with mainly Mediterranean distribution): MED = Mediterranean, MMA = Mediterranean-Middle Asiatic; **EAST** (i.e. species with mainly Anatolian distribution or limited to the eastern parts of Europe): EME = East-Mediterranean, EMI = East-Mediterranean-Iranian; **STENO** (i.e. species with limited distribution within the national borders or in the nearby areas): GRE = Greek, AEG = Aegean, BALK = Balkanic, CBAL = Carpatho-Balkanic, PON = Pontic, PEM = Ponto-East-Mediterranean. Furthermore, recent faunistic data from Komnenov et al. (2016) and Chatzaki (2021) were added in the original data provided here, as they both originate from the same sampling areas and inventories. This resulted in an overall dataset of 83 species used in the analysis.

Results

Taxonomic list

Cheiracanthiidae Wagner, 1887

Cheiracanthium mildei L. Koch, 1864

Material. Site 8 (a: 1 ♀), Site 11 (a: 1 ♀), Site 66 (1 ♂).

Clubionidae Wagner, 1887

Clubiona juvenis Simon, 1878

Material. Site 26 (a: 1 ♀).

Gnaphosidae Pocock, 1898

Anagraphis ochracea (L. Koch, 1867)

Material. Site 63 (1 ♂), Site 69 (1 ♂), Site 75 (1 ♂), Site 79 (1 ♂), Site 81 (2 ♂♂, 1 ♀), Site 82 (1 ♀).

Aphantaulax cincta (L. Koch, 1866)

Material. Site 26 (a: 1 ♂), Site 33 (1 ♀), Site 39 (1 ♀).

Aphantaulax trifasciata (O. Pickard-Cambridge, 1872)

Material. Site 49 (1 ♂).

Berinda infumata (O. Pickard- Cambridge, 1872)

Material. Site 75 (4 ♂♂, 2 ♀♀).

Berlandina plumalis (O. Pickard-Cambridge, 1872)

Material. Site 24 (a: 1 ♀).

Callilepis cretica (Roewer, 1928)

Material. Site 1 (b: 3 ♀♀), Site 2 (b: 1 ♂), Site 6 (b: 1 ♂, 2 ♀♀; c: 2 ♀♀), Site 8 (b: 1 ♂; c: 1 ♂), Site 10 (b: 3 ♂♂, 2 ♀♀; c: 1 ♀), Site 11 (c: 1 ♂, 2 ♀♀), Site 12 (b: 1 ♀), Site 16 (a: 2 ♂♂, 1 ♀; b: 3 ♂♂, 11 ♀♀; c: 2 ♀♀), Site 19 (b: 1 ♂), Site 20 (b: 2 ♂♂), Site 22 (b: 2 ♂♂ 1 ♀), Site 30 (2 ♀♀), Site 40 (2 ♂♂), Site 47 (10 ♂♂), Site 48 (7 ♂♂, 1 ♀), Site 54 (1 ♀), Site 62 (1 ♂), Site 63 (2 ♂♂).

Callilepis schuszteri (Herman, 1879)

Material. Site 10 (b: 1 ♀; c: 1 ♀), Site 17 (b: 1 ♀), Site 21 (b: 1 ♀), Site 31 (a: 1 ♂; b: 5 ♂♂; c: 1 ♂), Site 33 (1 ♂, 2 ♀♀), Site 42 (1 ♀), Site 68 (1 ♂), Site 69 (1 ♀).

Civizelotes caucasius (L. Koch, 1866)

Material. Site 2 (b: 1 ♂, 1 ♀; c: 1 ♀), Site 5 (b: 9 ♂♂ 19 ♀♀; c: 1 ♂ 16 ♀♀), Site 7 (b: 4 ♂♂ 11 ♀♀; c: 2 ♀♀), Site 8 (a: 1 ♂; b: 9 ♂♂, 8 ♀♀; c: 1 ♂ 11 ♀♀), Site 10 (b: 3 ♂♂, 6 ♀♀; c: 3 ♀♀), Site 11 (b: 1 ♂; c: 1 ♀), Site 12 (a: 1 ♂; b: 4 ♂♂, 2 ♀♀; c: 1 ♀), Site 13 (a: 2 ♂♂; b: 3 ♂♂, 9 ♀♀; c: 2 ♀♀), Site 14 (a: 1 ♀), Site 15 (a: 4 ♂♂; b: 2 ♂♂, 1 ♀; c: 12 ♀♀), Site 16 (a: 2 ♂♂, 2 ♀♀; b: 4 ♀♀), Site 19 (b: 2 ♂♂; c: 2 ♀♀), Site 20 (b: 1 ♀), Site 24 (b: 2 ♀♀), Site 30 (3 ♂♂), Site 31 (c: 1 ♀), Site 32 (4 ♂♂, 2 ♀♀), Site 35 (1 ♂), Site 43 (1 ♂, 1 ♀), Site 45 (1 ♂), Site 51 (1 ♂), Site 54 (1 ♀), Site 55 (1 ♀), Site 73 (5 ♂♂, 3 ♀♀), Site 74 (6 ♀♀), Site 76 (1 ♂), Site 78 (1 ♀), Site 81 (17 ♂♂, 8 ♀♀), Site 83 (9 ♂♂, 4 ♀♀).

Civizelotes solstitialis (Levy, 1998)

Material. Site 1 (c: 1 ♀), Site 2 (c: 1 ♀), Site 10 (c: 1 ♀), Site 13 (c: 3 ♂♂, 15 ♀♀), Site 15 (c: 1 ♂, 3 ♀♀), Site 16 (c: 1 ♂), Site 19 (c: 10 ♂♂, 15 ♀♀), Site 22 (c: 3 ♂♂, 1 ♀).

Cryptodrassus creticus Chatzaki, 2002
Material. Site 2 (a: 2 ♂♂, 2 ♀♀; b: 1 ♂, 3 ♀♀; c: 1 ♀), Site 19 (a: 1 ♂; b: 3 ♂♂), Site 22 (a: 2 ♂♂; b: 1 ♂).

Cryptodrassus hungaricus (Balogh, 1935)
Material. Site 5 (c: 1 ♀), Site 7 (a: 2 ♂♂), Site 14 (a: 3 ♂♂), Site 16 (a: 3 ♂♂, 3 ♀♀; b: 1 ♀), Site 22 (b: 1 ♂), Site 40 (1 ♂).

Drassodes lapidosus (Walckenaer, 1802)
Material. Site 1 (a: 2 ♂♂), Site 2 (a: 1 ♂), Site 5 (a: 7 ♂♂), Site 7 (a: 3 ♂♂; b: 1 ♂, 1 ♀), Site 8 (a: 32 ♂♂, 4 ♀♀; b: 4 ♂♂, 5 ♀♀), Site 9 (a: 1 ♂), Site 10 (a: 1 ♂, 1 ♀), Site 12 (a: 21 ♂♂, 2 ♀♀; b: 9 ♂♂, 2 ♀♀), Site 15 (a: 2 ♂♂), Site 16 (a: 18 ♂♂, 2 ♀♀), Site 19 (a: 6 ♂♂, 1 ♀; c: 1 ♀), Site 22 (a: 2 ♂♂, 1 ♀), Site 23 (a: 3 ♂♂), Site 24 (a: 1 ♂), Site 27 (a: 32 ♂♂, 2 ♀♀; b: 1 ♀), Site 28 (a: 1 ♂, 1 ♀) Site 30 (2 ♂♂), Site 31 (a: 1 ♂), Site 31 (b: 1 ♂), Site 31 (d: 1 ♂, 1 ♀), Site 38 (1 ♂, 2 ♀♀), Site 45 (2 ♀♀), Site 47 (1 ♂), Site 69 (1 ♀), Site 73 (1 ♂), Site 79 (1 ♂, 1 ♀), Site 81 (1 ♀), Site 83 (3 ♂♂, 1 ♀).

Drassodes lutescens (C. L. Koch, 1839)
Material. Site 1 (a: 1 ♂), Site 2 (a: 2 ♂♂), Site 6 (c: 1 ♀), Site 7 (a: 1 ♂), Site 14 (a: 1 ♂), Site 54 (1 ♀), Site 61 (a: 1 ♂), Site 77 (1 ♀), Site 78 (2 ♀♀), Site 79 (8 ♂♂, 2 ♀♀), Site 81 (3 ♂♂, 1 ♀), Site 73 (1 ♂), Site 86 (4 ♂♂, 1 ♀).

Drassodes pubescens (Thorell, 1856)
Material. Site 15 (a: 1 ♂), Site 19 (a: 6 ♂♂), Site 23 (a: 7 ♂♂), Site 24 (a: 1 ♂, 1 ♀), Site 26 (b: 1 ♀), Site 27 (a: 3 ♂♂, 1 ♀), Site 28 (a: 23 ♂♂, 3 ♀♀; b: 1 ♀), Site 29 (b: 1 ♂).

Drassyllus crimeaensis Kovblyuk, 2003
Material. Site 1 (a: 1 ♂, 1 ♀), Site 2 (a: 2 ♀♀), Site 13 (a: 1 ♂, 4 ♀♀), Site 22 (a: 1 ♂, 4 ♀♀; b: 1 ♀), Site 26 (a: 4 ♂♂), Site 27 (a: 1 ♂).

Drassyllus lutetianus (L. Koch, 1866)
Material. Site 23 (a: 3 ♂♂), Site 26 (b: 1 ♀), Site 28 (a: 1 ♂).

Drassyllus praeficus (L. Koch, 1866)
Material. Site 8 (a: 2 ♂♂, 7 ♀♀; b: 4 ♀♀), Site 15 (a: 8 ♂♂, 10♀♀; b: 3 ♀♀; c: 1 ♀), Site 21 (a: 1 ♀), Site 22 (a: 6 ♂♂, 1 ♀), Site 23 (a: 16 ♂♂, 2 ♀♀; b: 2 ♂♂ 1 ♀), Site 25 (a: 2 ♀♀), Site 26 (a: 19 ♂♂, 2 ♀♀; b: 1 ♀), Site 27 (a: 1 ♂), Site 28 (a: 131 ♂♂, 11 ♀♀; b: 1 ♂, 5 ♀♀), Site 41 (c: 1 ♀).

Drassyllus villicoides (Giltay, 1932)
Material. Site 8 (a: 1 ♂, 7 ♀♀; b: 2 ♀♀), Site 12 (a: 1 ♂, 1 ♀; b: 2 ♀♀, c: 1 ♀), Site 15 (a: 8 ♀♀: b: 1 ♀), Site 16 (a: 1 ♂), Site 19 (b: 1 ♀), Site 73 (1 ♀), Site 76 (1 ♂), Site 81 (1 ♂, 2 ♀♀).

Drassyllus villicus (Thorell, 1875)
Material. Site 3 (b: 1 ♀), Site 8 (a: 1 ♀; b: 2 ♀♀), Site 9 (a: 10 ♂♂, 14 ♀♀; b: 11 ♀♀), Site 11 (a: 4 ♂♂, 2 ♀♀; b: 2 ♀♀), Site 17 (b: 1 ♀), Site 30 (1 ♀), Site 31 (a: 4 ♂♂, 10 ♀♀; c: 3 ♂♂, 2 ♀♀), Site 36 (2 ♀♀), Site 40 (2 ♀♀), Site 53 (4 ♂♂, 50 ♀♀), Site 58 (1 ♂ 2 ♀♀), Site 59 (1 ♂, 2 ♀♀), Site 61 (b: 3 ♂♂, 66 ♀♀), Site 64 (1 ♂), Site 65 (7 ♂♂, 102 ♀♀), Site 66 (3 ♀♀), Site 68 (3 ♀♀), Site 69 (1 ♂, 12 ♀♀), Site 70 (10 ♀♀), Site 72 (1 ♀).

Echemus angustifrons (Westring, 1861)
Material. Site 4 (b: 1 ♂, 1 ♀; c: 2 ♂♂, 1 ♀), Site 6 (b: 1 ♂), Site 17 (c: 1 ♂, 1 ♀), Site 21 (b: 1 ♂), Site 31 (a: 1 ♂), Site 70 (1 ♀), Site 72 (1 ♂).

Gnaphosa lucifuga (Walckenaer, 1802)
Material. Site 13 (a: 8 ♂♂, 3 ♀♀; b: 1 ♂, 1 ♀; c: 2 ♂♂), Site 22 (a: 1 ♂; b: 2 ♂♂, 2 ♀♀; c: 2 ♀♀), Site 27 (a: 12 ♂♂, 7 ♀♀), Site 28 (a: 28 ♂♂, 5 ♀♀; b: 1 ♂, 3 ♀♀), Site 41 (a: 1 ♂; b: 1 ♂), Site 43 (2 ♀♀).

Gnaphosa modestior Kulczyński, 1897
Material. Site 9 (a: 1 ♂), Site 27 (a: 1 ♂), Site 28 (a: 2 ♂♂).

Haplodrassus dalmatensis (L. Koch, 1866)
Material. Site 5 (a: 5 ♂♂, 1 ♀; b: 1 ♀; c: 1 ♀), Site 8 (a: 16 ♂♂, 2 ♀♀; b: 1 ♂, 2 ♀♀), Site 12 (a: 14 ♂♂, 6 ♀♀; b: 4 ♂♂, 2 ♀♀), Site 13 (a: 2 ♂♂), Site 16 (a: 1 ♂, 1 ♀), Site 19 (a: 2 ♂♂; c: 1 ♀), Site 23 (a: 5 ♂♂; b: 2 ♂♂ 1 ♀), Site 27 (a: 1 ♂) Site 29 (a: 2 ♂♂, 1 ♀), Site 30 (1 ♂, 6 ♀♀), Site 31 (c: 2 ♀♀; d: 2 ♀♀), Site 38 (1 ♀), Site 72 (1 ♀), Site 79 (1 ♂), Site 81 (1 ♀), Site 83 (1 ♂).

Haplodrassus invalidus (O. Pickard-Cambridge, 1872)
Material. Site 22 (b: 1 ♂).

Haplodrassus minor (O. Pickard-Cambridge, 1879)
Material. Site 23 (b: 2 ♂♂).

Haplodrassus pseudosignifer Marusik, Hippa & Koponen, 1996
Material. Site 67 (1 ♀).

Haplodrassus signifer (C. L. Koch, 1839)
Material. Site 5 (a: 5 ♂♂, 3 ♀♀), Site 8 (a: 1 ♂), Site 11 (a: 1 ♂), Site 12 (a: 1 ♀), Site 15 (a: 3 ♂♂, 1 ♀), Site 16 (a: 1 ♀), Site 22 (a: 1 ♂, 1 ♀), Site 26 (a: 3 ♂♂, 1 ♀), Site 27 (a: 2 ♂♂), Site 28 (a: 2 ♂♂) Site 57 (1 ♀), Site 79 (1 ♀).

Haplodrassus silvestris (Blackwall, 1833)
Material. Site 30 (1 ♂), Site 38 (3 ♀♀), Site 53 (1 ♂, 4 ♀♀), Site 59 (1 ♂, 1 ♀), Site 60 (1 ♂), Site 70 (1 ♂, 1 ♀).

Lasophorus zografae Chatzaki, 2018
Material. Site 1 (b: 1 ♀), Site 14 (a: 1 ♀; b: 2 ♀♀; c: 2 ♀♀), Site 16 (a: 1 ♀), Site 22 (a: 1 ♂).

Leptodrassus albidus Simon, 1914
Material. Site 12 (a: 1 ♂), Site 19 (a: 10 ♂♂; b: 2 ♀♀).

Marinarozelotes barbatus (L. Koch, 1866)
Material. Site 1 (a: 3 ♂♂, 1 ♀; b: 3 ♀♀), Site 2 (a: 10 ♂♂, 2 ♀♀; b: 2 ♂♂, 4 ♀♀; c: 1 ♀), Site 5 (c: 1 ♀), Site 19 (a: 1 ♀), Site 22 (a: 21 ♂♂, 7 ♀♀; b: 5 ♂♂, 8 ♀♀), Site 26 (b: 1 ♂), Site 27 (a: 1 ♂), Site 28 (a: 4 ♂♂), Site 62 (1 ♂), Site 87 (1 ♂), Site 82 (2 ♀♀).

Marinarozelotes cumensis (Ponomarev, 1979)
Material. Site 23 (a: 43 ♂♂, 2 ♀♀; b: 1 ♀).

Marinarozelotes fuscipes (L. Koch, 1866)
Material. Site 22 (b: 1 ♀; c: 1 ♂).

Marinarozelotes lyonneti (Audouin, 1826)
Material. Site 15 (a: 1 ♀; c: 1 ♂, 2 ♀♀), Site 19 (a: 4 ♂♂ 1 ♀; b: 5 ♂♂, 4 ♀♀; c: 3 ♂♂, 1 ♀), Site 22 (a: 2 ♂♂), Site 23 (a: 2 ♂♂; b: 31 ♂♂, 10 ♀♀), Site 24 (a: 1 ♂), Site 25 (a: 4 ♂♂), Site 26 (b: 1 ♂),

Site 27 (a: 61 ♂♂, 8 ♀♀; b: 2 ♂♂), Site 28 (a: 169 ♂♂, 15 ♀♀; b: 20 ♂♂, 11 ♀♀), Site 77 (1 ♂).

Marinarozelotes malkini (Platnick & Murphy, 1984)
Material. Site 1 (a: 15 ♂♂, 6 ♀♀; b: 2 ♀♀), Site 5 (a: 1 ♂), Site 7 (b: 1 ♀), Site 8 (a: 1 ♂), Site 13 (a: 3 ♂♂), Site 15 (a: 7 ♂♂; b: 1 ♂, 1 ♀; c: 2 ♀♀), Site 17 (a: 1 ♂), Site 19 (a: 27 ♂♂, 3 ♀♀; b: 7 ♂♂, 3 ♀♀; c: 1 ♂ 1 ♀), Site 22 (a: 4 ♂♂, 2 ♀♀), Site 23 (a: 1 ♂; b: 1 ♂, 3 ♀♀), Site 25 (a: 3 ♂♂), Site 26 (a: 21 ♂♂, 1 ♀; b: 3 ♂♂), Site 27 (a: 77 ♂♂, 14 ♀♀; b: 2 ♂♂, 2 ♀♀), Site 40 (1 ♂), Site 68 (1 ♂ 1 ♀).

Marjanus platnicki (Zhang, Song & Zhu, 2001)
Material. Site 10 (a: 1 ♂; b: 1 ♀; c: 2 ♀♀), Site 11 (a: 1 ♂).

Micaria albovittata (Lucas, 1846)
Material. Site 8 (a: 2 ♂♂), Site 12 (b: 1 ♀), Site 15 (a: 1 ♀), Site 23 (a: 18♂♂, 1 ♀; b: 3 ♀♀), Site 24 (a: 6 ♂♂, 6 ♀♀), Site 28 (a: 1 ♂), Site 41 (a: 1 ♀), Site 45 (1 ♀).

Micaria coarctata (Lucas, 1846)
Material. Site 5 (c: 1 ♀), Site 8 (b: 1 ♂), Site 10 (b: 1 ♀), Site 12 (b: 4 ♂♂; c: 4 ♂♂), Site 15 (b: 4 ♂♂).

Micaria dives (Lucas, 1846)
Material. Site 5 (a: 5 ♂♂; b: 1 ♀), Site 8 (a: 1 ♀), Site 10 (b: 2 ♀♀), Site 12 (a: 12 ♂♂, 3 ♀♀; b: 3 ♂♂, 1 ♀; c: 1 ♀), Site 13 (a: 3 ♂♂), Site 16 (a: 2 ♂♂, 1 ♀; b: 1 ♀), Site 19 (a: 30 ♂♂, 3 ♀♀; b: 1 ♂, 4 ♀♀), Site 20 (a: 1 ♂), Site 21 (a: 1 ♀), Site 22 (a: 7 ♂♂, 1 ♀), Site 26 (a: 14 ♂♂, 3 ♀♀).

Micaria guttulata (C. L. Koch, 1839)
Material. Site 22 (a: 1 ♀), Site 23 (a: 1 ♂), Site 29 (a: 1 ♂).

Micaria pallipes (Lucas, 1846)
Material. Site 23 (a: 5 ♂♂, 1 ♀), Site 28 (a: 3 ♂♂, 1 ♀).

Micaria pulicaria s. lat. (Sundevall, 1831)
Material. Site 37 (1 ♀).

Nomisia exornata (C. L. Koch, 1839)
Material. Site 1 (a: 2 ♀♀), Site 2 (a: 1 ♂, 3 ♀♀), Site 7 (a: 2 ♀♀), Site 8 (c: 1 ♀), Site 10 (a: 1 ♀; b: 1 ♀), Site 11 (a: 1 ♂), Site 12 (a: 1 ♀; b: 1 ♀), Site 13 (a: 1 ♂; b: 1 ♀), Site 14 (a: 1 ♀), Site 16 (a: 1 ♂; b: 1 ♀), Site 27 (a: 4 ♂♂), Site 28 (a: 1 ♂), Site 29 (c: 10 ♂♂, 1 ♀; d: 5 ♂♂, 1 ♀), Site 30 (8 ♂♂, 11 ♀♀), Site 31 (b: 2 ♂♂; c: 5 ♂♂, 1 ♀; d: 4 ♀♀), Site 34 (1 ♀), Site 43 (2 ♀♀), Site 51 (2 ♀♀), Site 55 (1 ♀), Site 74 (1 ♀), Site 79 (4 ♂♂, 5 ♀♀), Site 81 (1 ♀), Site 83 (1 ♂, 1 ♀), Site 85 (2 ♂♂).

Nomisia levyi Chatzaki, 2010
Material. Site 31 (c: 2 ♂♂), Site 44 (1 ♂, 6 ♀♀), Site 45 (4 ♀♀), Site 64 (1 ♀), Site 68 (1 ♀), Site 69 (1 ♂, 3 ♀♀), Site 76 (6 ♂♂, 1 ♀), Site 84 (2 ♀♀).

Nomisia ripariensis (O. Pickard-Cambridge, 1872)
Material. Site 2 (a: 2 ♂♂, 3 ♀♀; b: 2 ♂♂, 4 ♀♀; c: 1 ♀), Site 5 (b: 1 ♀), Site 8 (a: 1 ♂; b: 4 ♀♀; c: 1 ♀), Site 13 (a: 2 ♂♂, 1 ♀; b: 1 ♀), Site 16 (b: 1 ♀; c 1 ♀), Site 22 (a: 3 ♀♀; b: 1 ♀), Site 23 (b: 4 ♀♀), Site 27 (a: 1 ♂), Site 55 (1 ♀), Site 83 (3 ♀♀).

Phaeocedus braccatus (L. Koch, 1866)
Material. Site 13 (c: 1 ♀), Site 19 (c: 1 ♂, 5 ♀♀), Site 23 (a: 1 ♂), Site 49 (1 ♂).

Scotophaeus scutulatus (L. Koch, 1866)
Material. Site 3 (b: 1 ♀), Site 54 (1 ♂), Site 62 (1 ♂).

Setaphis carmeli (O. Pickard-Cambridge, 1872)
Material. Site 8 (a: 1 ♂), Site 19 (b: 1 ♀), Site 23 (a: 2 ♂♂), Site 28 (a: 2 ♂♂).

Setaphis parvula (Lucas, 1846)
Material. Site 13 (a: 1 ♂).

Talanites strandi Spassky, 1940
Material. Site 22 (b: 1 ♂), Site 69 (1 ♂).

Trachyzelotes pedestris (C. L. Koch, 1837)
Material. Site 1 (a: 20 ♂♂, 4 ♀♀), Site 3 (a: 16 ♂♂, 6 ♀♀; b: 1 ♂), Site 4 (a: 9 ♂♂, 2 ♀♀; b: 1 ♀), Site 5 (a: 1 ♀), Site 6 (a: 4 ♂♂, 1 ♀), Site 7 (a: 3 ♂♂, 1 ♀), Site 8 (a: 2 ♂♂, 1 ♀), Site 9 (a: 11 ♂♂ 1 ♀; b: 1 ♂, 4 ♀♀), Site 12 (a: 1 ♀), Site 17 (a: 2 ♂♂), Site 18 (a: 6 ♂♂, 7 ♀♀; b: 1 ♂ 1 ♀), Site 19 (a: 1 ♂ 1 ♀), Site 21 (a: 3 ♂♂ 1 ♀), Site 22 (a: 3 ♂♂), Site 23 (a: 56 ♂♂ 1 ♀), Site 25 (a: 7 ♂♂, 10 ♀♀), Site 26 (a: 1 ♂), Site 30 (1 ♂), Site 31 (a: 3 ♂♂; b: 1 ♂; c: 1 ♂ 1 ♀), Site 47 (1 ♀), Site 53 (1 ♀), Site 56 (1 ♀), Site 58 (2 ♂♂), Site 61 (b: 1 ♂ 4 ♀♀), Site 63 (5 ♀♀), Site 64 (2 ♀♀), Site 65 (2 ♀♀), Site 66 (1 ♂ 2 ♀♀), Site 68 (1 ♀), Site 69 (1 ♂ 10 ♀♀), Site 76 (9 ♂♂, 2 ♀♀), Site 77 (1 ♂), Site 81 (2 ♂♂, 3 ♀♀) Site 82 (2 ♀♀), Site 84 (2 ♂♂), Site 87 (5 ♂♂, 2 ♀♀).

Turkozelotes mccowani (Chatzaki & Russell-Smith, 2017)
Material. Site 15 (a: 7 ♂♂, 6 ♀♀; b: 1 ♀; c: 2 ♀♀), Site 19 (a: 10 ♂♂, 1 ♀), Site 22 (a: 1 ♂), Site 23 (a: 1 ♂), Site 25 (a: 1 ♂), Site 27 (a: 5 ♂♂ 1 ♀), Site 28 (a: 2 ♂♂).

Turkozelotes microb Kovblyuk & Seyyar, 2009
Material. Site 2 (b: 1 ♂), Site 13 (a: 4 ♂♂, 3 ♀♀), Site 22 (a: 2 ♂♂).

Zelotes acarnanicus Lissner & Chatzaki, 2018
Material. Site 87 (6 ♀♀).

Zelotes apricorum (L. Koch, 1876)
Material. Site 31 (a: 1 ♂; c: 1 ♂), Site 38 (1 ♀).

Zelotes atrocaeruleus (Simon, 1878)
Material. Site 29 (a: 1 ♂; c: 2 ♂♂; d: 3 ♂♂, 3 ♀♀), Site 40 (3 ♂♂, 3 ♀♀), Site 41 (b: 1 ♂ 4 ♀♀; c: 1 ♂ 2 ♀♀; f: 1 ♂, 2 ♀♀), Site 47 (1 ♂), Site 48 (1 ♂, 2 ♀♀), Site 54 (2 ♀♀), Site 65 (1 ♂, 1 ♀), Site 66 (1 ♀), Site 74 (1 ♀), Site 76 (3 ♂♂), Site 77 (4 ♂♂, 3 ♀♀), Site 79 (1 ♂), Site 81 (4 ♂♂, 1 ♀), Site 82 (1 ♂ 1 ♀), Site 86 (1 ♂ 1 ♀).

Zelotes babunaensis (Drensky, 1929)
Material. Site 6 (b: 3 ♂♂; c: 1 ♀), Site 9 (b: 1 ♂ 1 ♀), Site 29 (a: 1 ♂), Site 40 (1 ♂), Site 76 (2 ♂♂, 1 ♀), Site 77 (4 ♂♂, 1 ♀), Site 78 (27 ♂♂, 7 ♀♀), Site 81 (1 ♀), Site 82 (1 ♀).

Zelotes balcanicus Deltshev, 2006
Material. Site 3 (a: 10 ♂♂, 2 ♀♀; b: 1 ♂, 1 ♀; c: 3 ♀♀), Site 4 (a: 4 ♂♂; b: 1 ♂, 1 ♀; c: 5 ♀♀), Site 6 (a: 2 ♂♂; c: 1 ♀). Site 9 (a: 2 ♂♂, 2

♀♀; b: 2 ♀♀; c: 1 ♂), Site 11 (a: 2 ♂♂; c: 1 ♀), Site 17 (a: 1 ♂; b: 1 ♀), Site 18 (a: 1 ♂; b: 1 ♀), Site 21 (a: 3 ♂♂, 1 ♀; b: 1 ♂ 2 ♀♀; c: 1 ♀), Site 30 (1 ♂), Site 31 (a: 1 ♂; b: 1 ♂), Site 34 (1 ♂), Site 47 (2 ♀♀), Site 50 (1 ♀), Site 52 (4 ♀♀), Site 61 (b: 2 ♂♂, 2 ♀♀), Site 63 (1 ♀), Site 64 (3 ♀♀), Site 66 (1 ♀), Site 68 (2 ♀♀), Site 69 (8 ♂♂, 6 ♀♀), Site 76 (6 ♂♂, 4 ♀♀), Site 77 (1 ♂), Site 81 (1 ♂), Site 82 (1 ♂), Site 87 (6 ♂♂, 3 ♀♀).

Zelotes cingarus (O. Pickard-Cambridge, 1874)
Material. Site 1 (a: 6 ♀♀), Site 5 (a: 1 ♀), Site 6 (a: 1 ♀; b: 1 ♀; c: 6 ♀♀), Site 7 (b: 1 ♀), Site 8 (a: 3 ♀♀; b: 1 ♀; c: 1 ♀), Site 9 (c: 1 ♀), Site 10 (b: 1 ♀), Site 14 (a: 1 ♀; b: 1 ♀), Site 16 (a: 1 ♀), Site 20 (b: 2 ♀♀), Site 32 (1 ♀), Site 57 (1 ♀), Site 61 (a: 1 ♀), Site 76 (1 ♀), Site 77 (2 ♀♀), Site 78 (2 ♀♀), Site 79 (1 ♀), Site 81 (6 ♀♀).

Zelotes electus (C. L. Koch, 1839)
Material. Site 23 (a: 2 ♀♀), Site 24 (a: 3 ♂♂, 3 ♀♀).

Zelotes erebeus (Thorell, 1871)
Material. Site 4 (c: 1 ♂), Site 9 (c: 5 ♂♂, 2 ♀♀), Site 17 (b: 1 ♂; c: 14 ♂♂, 3 ♀♀), Site 18 (c: 6 ♂♂, 1 ♀), Site 69 (3 ♀♀).

Zelotes eugenei Kovblyuk, 2009
Material. Site 28 (a: 5 ♀♀; b: 2 ♂♂).

Zelotes fulvaster (Simon, 1878)
Material. Site 1 (c: 1 ♀), Site 13 (b: 2 ♂♂, 2 ♀♀; c: 1 ♀), Site 15 (b: 8 ♂♂, 2 ♀♀; c: 2 ♂♂, 4 ♀♀), Site 19 (b: 3 ♂♂, 2 ♀♀; c: 1 ♂ 1 ♀), Site 22 (b: 16 ♂♂, 4 ♀♀; c: 1 ♂, 6 ♀♀), Site 23 (b: 2 ♂♂), Site 26 (b: 12 ♂♂, 3 ♀♀), Site 28 (b: 4 ♂♂).

Zelotes harmeron Levy, 2009
Material. Site 1 (a: 4 ♂♂, 2 ♀♀; b: 2 ♀♀; c: 1 ♀), Site 2 (a: 3 ♂♂, 2 ♀♀; b: 2 ♀♀), Site 3 (a: 1 ♀), Site 13 (b: 1 ♀), Site 15 (a: 2 ♀♀; b: 2 ♂♂, 3 ♀♀), Site 19 (a: 2 ♂♂, 1 ♀; b: 2 ♂♂, 6 ♀♀; c: 2 ♀♀), Site 20 (a: 1 ♀; b: 1 ♂, 12 ♀♀; c: 1 ♀), Site 21 (a: 1 ♀; b: 1 ♀), Site 22 (a: 10 ♂♂, 15 ♀♀; b: 1 ♂, 5 ♀♀), Site 23 (b: 2 ♀♀).

Zelotes hermani (Chyzer, 1897)
Material. Site 23 (a: 1 ♀) Site 29 (c: 2 ♀♀ d: 1 ♀), Site 38 (1 ♀), Site 41 (d: 1 ♀).

Zelotes longipes (L. Koch, 1866)
Material. Site 8 (a: 2 ♀♀; b: 1 ♀), Site 12 (a: 1 ♀; c: 1 ♀), Site 19 (a: 1 ♀), Site 23 (a: 1 ♀), Site 24 (a: 3 ♀♀).

Zelotes oblongus (C. L. Koch, 1833)
Material. Site 4 (c: 1 ♀), Site 11 (a: 2 ♀♀; b: 2 ♀♀; c: 1 ♂ 5 ♀♀), Site 17 (a: 1 ♂, 1 ♀; b: 1 ♀; c: 1 ♀), Site 18 (b: 3 ♀♀; c: 1 ♀), Site 20 (b: 1 ♀; c: 2 ♀♀), Site 40 (1 ♀), Site 42 (1 ♀), Site 43 (1 ♀), Site 45 (1 ♀), Site 46 (1 ♀), Site 61 (b: 7 ♂♂, 2 ♀♀), Site 66 (1 ♂, 3 ♀♀), Site 69 (4 ♀♀), Site 71 (1 ♀).

Zelotes prishutovae Ponomarev & Tsvetkov, 2006
Material. Site 2 (c: 1 ♀), Site 13 (a: 7 ♂♂, 2 ♀♀), Site 22 (a: 7 ♂♂, 4 ♀♀; b: 3 ♂♂, 1 ♀; c: 1 ♀).

Zelotes segrex (Simon, 1878)
Material. Site 2 (a: 1 ♂), Site 5 (b: 6 ♂♂, 1 ♀; c: 1 ♂, 1 ♀), Site 7 (b: 5 ♂♂, 1 ♀; c: 1 ♀), Site 10 (c: 2 ♀♀), Site 11 (c: 1 ♀), Site 14 (c: 1 ♀), Site 16 (a: 1 ♂, 1 ♀; b: 1 ♂, 7 ♀♀; c: 4 ♀♀), Site 19 (c: 1 ♀), Site 20 (b: 1 ♂), Site 22 (a: 4 ♂♂; b: 1 ♂).

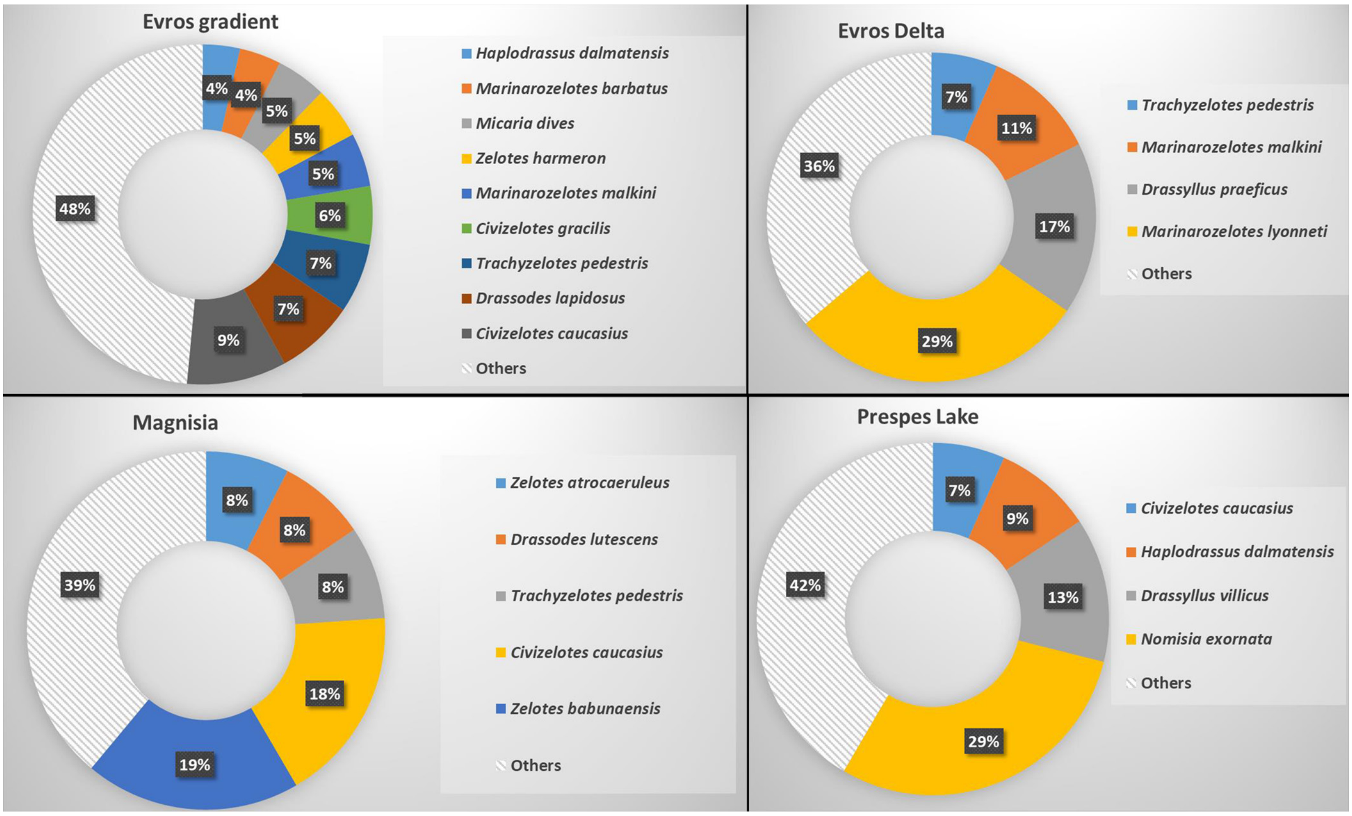

Fig. 2: Dominant Gnaphosidae species in the four analysed areas (see map of Fig. 1b). The percentage of each of the dominant species from the cumulative numbers of Gnaphosidae specimens in all sites of each area is shown

Zelotes tenuis (L. Koch, 1866)
Material. Site 7 (b: 1 ♂, 1 ♀), Site 8 (a: 1 ♂; b: 1 ♂, 2 ♀♀; c: 4 ♀♀), Site 15 (a: 3 ♂♂, 1 ♀; b: 3 ♂♂, 3 ♀♀; c: 3 ♀♀), Site 16 (c: 1 ♂), Site 19 (b: 2 ♂♂), Site 23 (a: 1 ♂; b: 4 ♂♂, 4 ♀♀), Site 24 (a: 1 ♂), Site 25 (b: 1 ♀), Site 26 (a: 1 ♂; b: 3 ♂♂, 5 ♀♀), Site 27 (a: 2 ♂♂, 1 ♀), Site 28 (a: 5 ♂♂; b: 10 ♂♂, 4 ♀♀), Site 38 (1 ♂, 1 ♀).

Ecology and zoogeography

Gnaphosidae represent ca. half of the total spider samples collected in this inventory, resulting in 3795 adult individuals (of which, 1748 were in the Evros gradient, 1147 in the Evros Delta, 226 in Magnisia and 166 in Prespes, and the rest at all other sites). The genera and species recorded in each area, as well as the total number of corresponding specimens caught are shown in Tab. 2. In Fig. 2 the dominant Gnaphosidae species in terms of numbers of specimens (four to five and up to nine species in the Evros district), each covering 4–29% of the local Gnaphosidae fauna, are shown. Additionally, *Drassyllus villicus* is present in very high numbers (340 individuals, 9% of the total number of specimens collected), mainly at the sites where oak or mixed deciduous forests prevail (e.g. sites 53, 61, 65 and others). *Trachyzelotes pedestris* is a dominant species at three of the four mentioned areas and *Civizelotes caucasius* is dominant in all of them (except for the area of the Evros Delta where very specific habitats are found – see Materials and methods). *Anagraphis ochracea*, *Berinda infumata* and *Drassyllus centrohellenicus* were exclusively recorded from Magnisia. *Zelotes olympi*, *Z. apricorum*, *Micaria pulicaria* and *Haplodrassus sylvestris* were sampled only in Prespes. Forty-five species were found only in Evros, of which nine are exclusively recorded from the Evros Delta.

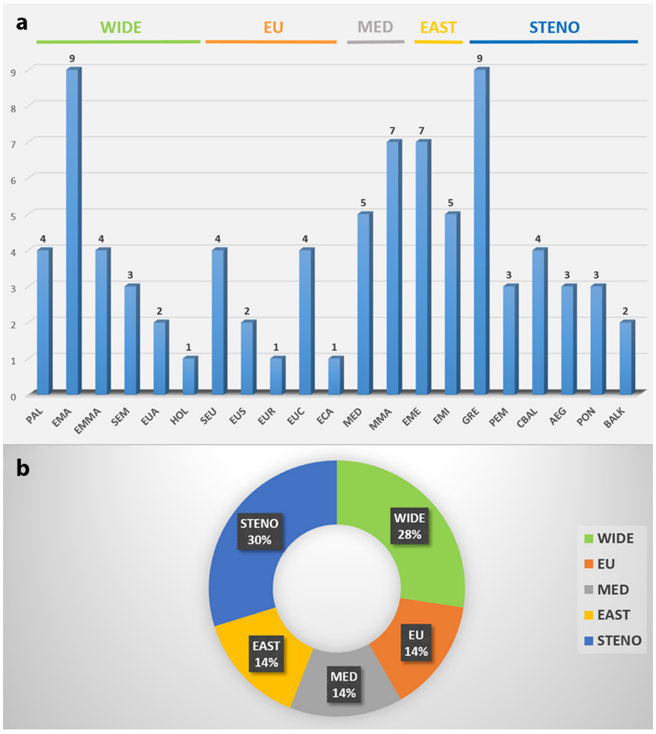

Fig. 3: Overall analysis of species representation according to zoogeographic categories on the Greek mainland (based on 83 species). **a.** Subdivided to particular chorotype categories; **b.** Subdivided to cumulative categories. Coloured bars in (a) show the cumulative category to which each chorotype has been attributed. Abbreviations of chorotypes: AEG = Aegean, BALK = Balkanic, CBAL = Carpatho-Balkanic, ECA = Euro-Carpathian, EMA = Euro-Middle Asiatic, EME = East-Mediterranean, EMI = East-Mediterranean-Iranian, EMMA = Euro-Mediterranean-Middle Asiatic, EUA = Eurasian, EUC = Euro-Caucasian, EUR = European, EUS = Euro-Siberian, GRE = Greek, HOL = Holarctic, MED = Mediterranean, MMA = Mediterranean-Middle Asiatic, PAL = Palearctic, PEM = Ponto-East-Mediterranean, PON = Pontic, SEM = South-European-Middle Asiatic, SEU = South-European

The zoogeographic characterization attributed to the species recorded is shown in Tab. 2 and their representation is illustrated in Figs 3 (cumulative data), and 4-5 (patterns and percentages presented per focal region).

In the category STENO (30% of the total inventory), nine species are Greek endemics and three are endemics of the specific Aegean region, while the rest of the species in this category (twelve) are endemics of the wider Balkan Peninsula and Pontic area (Fig. 3). In the category WIDE (28% of the total inventory), nine species present a Euro-Middle Asiatic distribution, four species present a Euro-Mediterranean-Middle Asiatic distribution, and another ten species are of wider distribution. The EU category (14% of the total inventory) is dominated by South-European (four) and Euro-Caucasian (four) species. The EAST category (14% of the total inventory) is composed of seven East-Mediterranean and five East-Mediterranean-Iranian species. Finally, the MED category (14% of the total inventory) is dominated by Mediterranean-Middle Asiatic (seven) and Mediterranean (five) species.

Widespread elements are the dominant category in all four regions examined separately, while Eastern elements are equally dominant in Evros (24%) and Magnisia (27%) (Fig. 5). Although dominant in the overall inventory, stenoendemics present a high percentage only in the two areas of the Evros district (19% and 20%), but they are the least represented category in the other two regions (9% and 14%). European elements range between 13% (in the Magnisia district) and 26% (in Prespes) and Mediterranean elements range between 9% (in Prespes) and 17% (in the Evros Delta).

Discussion

This paper presents the results of a taxonomic and faunistic work focusing on ground spiders of the least studied areas in mainland Greece, e.g., Thrace, Makedonia, Ipeiros, Thessalia and others. In total, 72 species were recorded. Since the publication of earlier papers dealing with the spiders of Thrace (Komnenov et al. 2016, Chatzaki 2018) and other areas of northern Greece (Chatzaki 2021), 21 Gnaphosidae species have been newly reported for the region (see Tab. 2), revealing that knowledge on spider faunas of these areas is still incomplete.

Marinarozelotes cumensis is the single new record for Greece. This species was known to occur in Ukraine, Russia (European part), Azerbaijan and Kazakhstan (Nentwig et al. 2022), and hence its presence in Greece also represents the first record from southern Europe. Further evidence from possible new recordings in the other Balkan countries could confirm its distributional expansion to SE Europe and would render its chorological characterization from Pontic to Ponto-East Mediterranean. A full revision of the species is required (particularly due to the current geographical gap in the range of occurrence), including comparative taxonomic notes, and will represent part of another paper (Chatzaki in prep.).

The number of species recorded exclusively from each of the studied areas demonstrates the diversity of the arachnofauna of the area, mainly correlated with the habitat hetero-

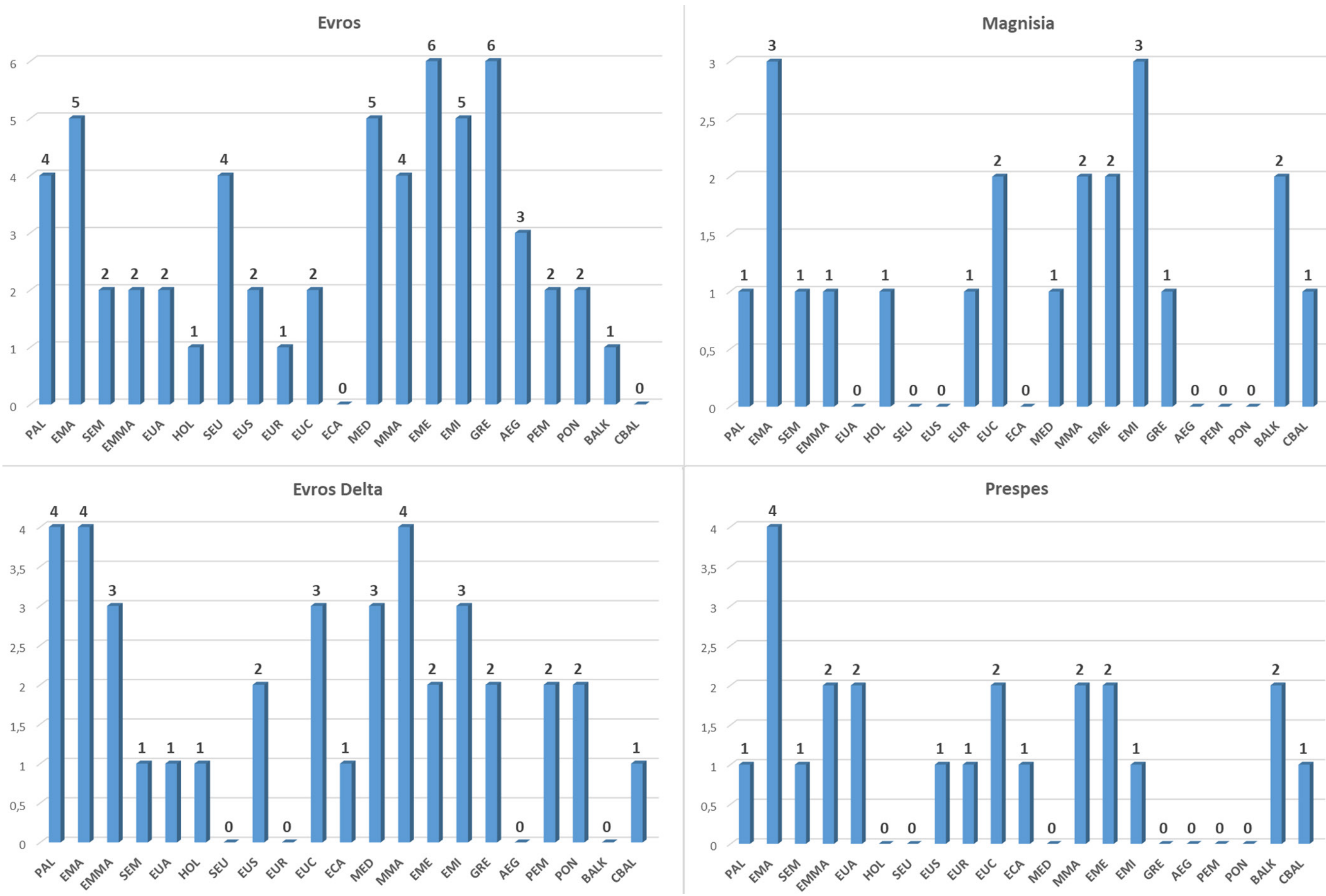

Fig. 4: Number of species from different zoogeographic categories in the four studied areas (see map of Fig. 1b) (for abbreviated categories, see Fig. 3b)

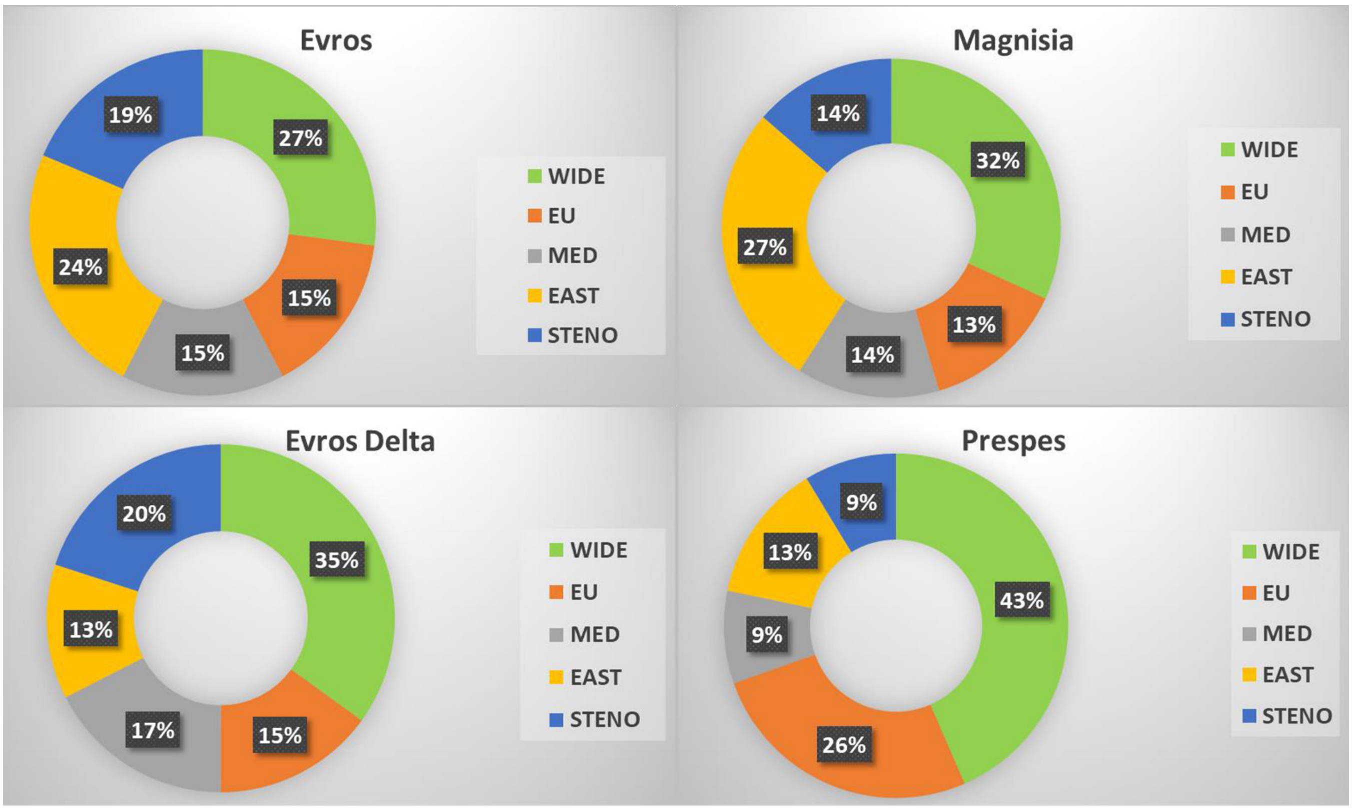

Fig. 5: Percentile of the five general zoogeographic categories in the four focal areas of study based on ground spiders (for abbreviated categories, see Fig. 3)

geneity as well as the biogeographic affinities of those areas, which are distinct to a certain point (see also below). On the other hand, 43.4% of the number of specimens collected in the whole inventory belong to six species, namely: *Drassyllus praeficus*, *D. villicus*, *Trachyzelotes pedestris*, *Civizelotes caucasius*, *Marinarozelotes malkini* and *M. lyonneti*. Apart from *D. villicus*, which occurs only on the mainland of N. Greece (and is also recorded from Lesvos island), the other species are common throughout the country, both insular and mainland. All have wide distributions, either ranging from Europe to Central Asia (i.e. *D. praeficus*, *D. villicus*, *T. pedestris*) or presenting a more Mediterranean distribution (i.e. *C. caucasius*, *M. malkini* and *M. lyonneti*, see Tab. 2). Usually they occur in large numbers when present.

Civizelotes caucasius is a dominant species in grasslands, shrublands and generally open areas (Chatzaki et al. 2003, Zografou et al. 2017, Pitta et al. 2019), presenting a peak of activity in mid-summer (Chatzaki et al. 2005, Zografou et al. 2017). The combination of this activity pattern and preference to open habitats clearly demonstrates the xerophilic character of this species. For this reason Zografou et al. (2017) concluded that changes in agricultural land use, such as afforestation of abandoned fields, might limit its suitable habitats, therefore leading to a plausible threat for its regional populations.

Trachyzelotes pedestris dominated sites in oak and mixed forests (see also Pitta et al. 2019) in the whole range of this study, but it was also found in high numbers in the marshes of the Evros Delta as well as in grasslands of the Evros district. It was recorded from about half of the sampling sites of this study. This species was found to be negatively associated with forested areas in other parts of mainland Greece (Zakkak et al. 2014) or Europe (Bell et al. 2001, Piterkina & Ovtcharenko 2008), which contradicts our results. This might be a result of different definition of sites' characteristics or a sampling artefact, i.e. the degree of open space between the trees in a forest and the exact position of the traps in the forested sites. In this study, most of investigated forests had openings and bushy understory (see Table 1). Since in the analysis of Zakkak et al. (2014) the cover of woody plants was calculated with higher accuracy, the negative association of *T. pedestris* with closed forests might be true and does not necessarily contradict our results.

Drassyllus villicus was another species found almost exclusively in oak and mixed forests of the study area and in relatively very high numbers. This species is thought to occur in warm steppic areas of central Europe (e.g. Grimm 1985, Roberts 1995) and in forests as well as orb-bunchgrass steppes of Ukraine (Polchaninova & Prokopenko 2019). Our results corroborate Komnenov (2014) who found *D. villicus* in forested areas of North Macedonia. Similarly, Pitta et al. (2019) found that this is a dominant species in the forests of the Evros district where lower temperatures prevail when compared to open sites in the same area, while Zakkak et al. (2014) found that, together with *Marinarozelotes cumensis* and *Civizelotes gracilis*, they are mainly responsible for differences in community structure among sites of variable forest encroachment, with 48% of the abundance of *D. villicus* being recorded in areas of 75-100% woody vegetation cover. The differences in habitat preferences of this species along its range of occurrence probably reflect its adaptation to various climatic zones and/or different competitive interactions in the corresponding communities.

Drassyllus praeficus was found in high numbers at the sites of the Evros Delta, in open grasslands and in grazed areas. This species was recorded frequently on Crete from sea level to 1650 m a.s.l., but it preferred maquis of middle altitude mainly in central Crete (Chatzaki et al. 2005). Kaltsas et al. (2019) found that *D. praeficus* is an indicator of intensive grazing in Crete, corroborating its preference for open habitats and its tolerance to disturbance. As a common species in Europe (Batáry et al. 2008, Grimm 1985), it is considered typical of sites near woods (Isaia et al. 2007), but it is also positively associated with agricultural landscapes (Samu & Szinetar 2002).

Both *Marinozelotes lyonneti* and *M. malkini* are mainly found in grassy openings and marshes. *Marinozelotes lyonneti* was also found to be a significant indicator of overgrazing in Crete (Kaltsas et al. 2019) where it is very common.

Overall, the present study is in line with previous data showing that increasing habitat heterogeneity (Kati et al. 2010), and – especially for generalist ground spider species – increasing distance from forests (Stenchly et al. 2012) favour species richness and diversity, presumably related to the corresponding high diversity of herbivorous insects, which constitute the main food resources for predatory arachnids (Zografou et al. 2009).

Greece has the most diversified habitats on the Balkan Peninsula, thus constituting a major biodiversity hotspot for the Mediterranean and Europe as a whole (Cuttelod et al. 2008, Kougioumoutzis et al. 2021). Particularly its northern area, forms the merging point of Caucasian and Irano-Anatolian elements originating from the NE side, and the European fauna from the NW side. This is mirrored in our zoogeographical analysis. The Evros district and the area of Prespes Lake represent the easternmost and westernmost areas of northern Greece respectively, and the Magnisia district represents an area in central Greece.

Apart from the highest number of the Greek endemics (9 species, or 10.8% of the total number of species included in the analysis) due to the six recently described species by the first author (i.e. *Civizelotes akmon*, *Drassyllus centrohellenicus*, *Drassyllus covid*, *Drassyllus dadianus*, *Phaeocedus similaris* and *Zelotes histius*, see Chatzaki 2021), Euro-Middle Asiatic (EMA, 9 species or 10.8%), Mediterranean-Middle Asiatic (MMA, 7 species or 8.4%) and East-Mediterranean (EME, 7 species or 8.4%) elements form the largest part of the total species inventory. In the general zoogeographical categories analysis species with very narrow distribution (i.e. Steno) or very wide distribution (i.e. Wide and Med) – reaching from the Middle Asia to either Europe (e.g. *Drassyllus praeficus*, *D. lutetianus*, *D. villicus*, *Gnaphosa lucifuga*, *Zelotes apricorum*, *Z. atrocaeruleus*, *Z. babunaensis*, *Z. electus*) or only the Mediterranean zone (*Berlandina plumalis*, *Drassodes lutescens*, *Marinarozelotes barbatus*, *Micaria coarctata*, *M. pallipes*, *M. pulicaria* and *Zelotes tenuis*) respectively – dominate, mostly highlighting the aforementioned intermixing between European and Eastern elements. This overall pattern deviates regionally, where different elements seem to outnumber the others. The most striking example is between the areas of Prespes (the westernmost area) and the Evros Delta (the easternmost), where not only the percentages of the four biogeographic categories form a different pattern, but also, the species composition is distinct from 43% (the EU elements) to 100% (the STENO elements).

In the Evros district, except for the endemic and East-Mediterranean elements (represented by six species each), there are also many East-Mediterranean-Iranian (*Drassyllus villicoides*, *Haplodrassus invalidus*, *Marinarozelotes malkini*, *Nomisia exornata*, *N. ripariensis*), Mediterranean (*Marinarozelotes fuscipes*, *M. lyonneti*, *Setaphis carmeli*, *S. parvula*, *Zelotes fulvaster*) and Euro-Middle Asiatic (*Drassyllus praeficus*, *D. villicus*, *Gnaphosa lucifuga*, *Scotophaeus scutulatus*, *Zelotes babunaensis*) species, as well as Mediterranean-Middle Asiatic species (*Drassodes lutescens*, *Marinarozelotes barbatus*, *Micaria coarctata*, *Zelotes tenuis*) leading to a large percentage of eastern elements (24%) in the general zoogeographic analysis, similar to that of widespread species (27%). In the small area of the Evros Delta, there are less stenoendemics, making the more widespread species (but not the European ones) the dominant element (for example, the Palearctic *D. lapidosus*, *Micaria albovittata*, *M. dives* and *Phaeocedus braccatus*, the Euro-Middle Asiatic *D. praeficus*, *D. lutetianus*, *G. lucifuga* and *Z. electus* and the Mediterranean-Middle Asiatic *B. plumalis*, *M. barbatus*, *M. pallipes* and *Z. tenuis*), thus only partially following the overall pattern. When compared with previous zoogeographic analyses in the Evros area where all ground spiders were analysed (i.e. Komnenov et al. 2016), similar results are obtained, with the only difference being that when all spider species are analysed, the European elements (e.g. European, Eurasian, Euro-Siberian etc.) are more numerous and the Eastern elements are less evident. This is related to the fact that the spider family Gnaphosidae is mostly composed by xerophilic species that prefer (or withstand?) warmer dry habitats (Cloudsley-Thompson 1975). As a result, they are more diverse in the southern parts of Europe and in the Eastern areas of the Mediterranean and the Middle East, where they also present higher rates of endemism.

In the Prespes area, the European and Widespread elements dominate, clearly showing the effect of its geographic affinity to the west. In this area, common species from Europe prevail (such as *Aphantaulax cincta*, *Callilepis schuszteri*, *Drassodes pubescens*, *Haplodrassus dalmatensis*, *Echemus angustifrons*, *Micaria guttulata*, *Trachyzelotes pedestris*, *Civizelotes gracilis*, *Drassyllus villicus*, *Zelotes apricorum*, *Z. atrocaeruleus*, *Z. hermani*), but no Greek endemic has been recorded here so far.

Finally, in the area of Magnisia the general zoogeographic picture is composed equally by Widespread (such as *Z. atrocaeruleus* and *Z. babunaensis*) and Eastern elements (such as the East Mediterranean-Iranian *D. villicoides*, *N. exornata* and *N. ripariensis*), while fewer steno-endemics occur here, as is the case for Prespes. The general pattern in Magnisia resembles that of the Evros district and, accordingly, the composition of species in all categories does not present significant deviations, with the exception of the STENO category where the only common endemic species the two areas share is *Zelotes cingarus*; all others being distinct. Two more species (the East Mediterranean *Berinda infumata* and the Euro-Middle Asiatic *Zelotes atrocaeruleus*) are distinct in the Gnaphosidae fauna of Magnisia (the latter being present in Prespes too). Overall, the pattern of Magnisia probably represents a more realistic zoogeographic distribution of chorological elements for the central parts of mainland Greece, since the high percentages of STENO elements in Evros reflect an artefact due to the newly described species from that area, the distribution of which will possibly change in the near future.

This study demonstrates the value of taxonomic works in the less surveyed areas of Greece, still revealing new taxa, and certainly adding ecological information on a species (autecology) and at a community level. Biogeographical studies based on spiders are still preliminary, but still they are valuable in denoting evidence of species occurrence and routes by which they expand their distributions.

Acknowledgments
The authors would like to thank O. Mettouris, M. Komnenov, K. Zografou and D. Kaltsas for setting and collecting pitfall traps in the sampling sites. Furthermore, D. Poursanidis prepared the map of Fig. 1. Maria Chatzaki is grateful to Dr. A. Hänggi for hosting her at the Natural History Museum of Basel during part of the time this work was conducted.

References
Batáry P, Báldi A, Samu F, Szűts T & Erdős S 2008 Are spiders reacting to local or landscape scale effects in Hungarian pastures? – Biological Conservation 141: 2062-2070 – doi: 10.1016/j.biocon.2008.06.002
Bell JR, Wheater CP & Cullen WR 2001 The implications of grassland and heathland management for the conservation of spider communities: a review. – Journal of Zoology 255: 377-387– doi: 10.1017/S0952836901001479
Bosmans R, Baert L, Bosselaers J, De Koninck H, Maelfait J-P & Van Keer J 2009 Spiders of Lesbos (Greece). – Niewsbrief van de Belgische arachnologische Vereniging 24 (supplement): 1-70
Bosmans R, Van Keer J, Russell-Smith A, Kronestedt T, Alderweireldt M, Bosselaers J & De Koninck H 2013 Spiders of Crete (Araneae). A catalogue of all currently known species from the Greek island of Crete. – Niewsbrief van de Belgische arachnologische Vereniging 28 (supplement 1): 1-147
Chatzaki M 2018 On the ground spider genera *Marjanus* gen. n., *Lasophorus* gen. n. and *Turkozelotes* Kovblyuk & Seyyar, 2009 (Araneae: Gnaphosidae) from Greece. – Zootaxa 4392: 521-545 – doi: 10.11646/zootaxa.4392.3.5
Chatzaki M 2021 Description of new Gnaphosidae (Araneae) species from mainland Greece. – Taxonomy 1: 374-394 – doi: 10.3390/taxonomy1040028
Chatzaki M & Van Keer J 2019 Ground spiders (Araneae: Gnaphosidae, Liocranidae, Prodidomidae) from the Greek islands Rodos, Symi and Karpathos, with the description of new species. – Zootaxa 4646: 434-460 – doi: 10.11646/zootaxa.4646.3.2
Chatzaki M, Thaler K & Mylonas M 2002a Ground spiders (Gnaphosidae; Araneae) of Crete (Greece). Taxonomy and distribution. I. – Revue Suisse de Zoologie 109: 559-601 – doi: 10.5962/bhl.part.79611
Chatzaki M, Thaler K & Mylonas M. 2002b Ground spiders (Gnaphosidae, Araneae) of Crete and adjacent areas of Greece. Taxonomy and distribution. II. – Revue Suisse de Zoologie 109: 603-633 – doi: 10.5962/bhl.part.79612
Chatzaki M, Thaler K & Mylonas M 2003 Ground spiders (Gnaphosidae; Araneae) from Crete and adjacent areas of Greece. Taxonomy and distribution. III. *Zelotes* and allied genera. – Revue Suisse de Zoologie 110: 45-89 – doi: 10.5962/bhl.part.80176
Cloudsley-Thompson JL 1975 Adaptations of Arthropoda to arid environments. – Annual Review of Entomology 20: 261-283 – doi: 10.1146/annurev.en.20.010175.001401
Cuttelod A, García N, Abdul Malak D, Temple H & Katariya V 2008 The Mediterranean: a biodiversity hotspot under threat. In: Vi´e J-C, Hilton-Taylor C & Stuart SN (eds) The 2008 review of the IUCN Red List of Threatened Species. IUCN Gland, Switzerland, pp. 16
Grimm U 1985 Die Gnaphosidae Mitteleuropas (Arachnida, Araneae). – Abhandlungen des Naturwissenschaftlichen Vereins Hamburg (NF) 26: 1-317
Isaia M, Bona F & Badino G 2007 Spiders in the landscape of Italian vineyards: Langa Astigiana. In: Roca Z, Spek T, Terkenli T, Plieninger T & Hochtl F (eds.) European landscapes and lifestyles: the Mediterrannean and beyond. Ediçóes Universitárias Lusofonas, pp. 1-11
Kaltsas D, Panayiotou E, Kougioumoutzis K & Chatzaki M 2019 Overgrazed shrublands support high taxonomic, functional and temporal diversity of ground spider assemblages. – Ecological Indicators 103: 599-609 – doi: 10.1016/j.ecolind.2019.04.024
Kati V, Poirazidis K, Dufrêne M, Halley JM, Korakis G, Schindler S & Dimopoulos P 2010 Towards the use of ecological heterogene-

ity to design reserve networks: a case study from Dadia National Park, Greece. – Biodiversity Conservation 19: 1585-1597 – doi: 10.1007/s10531-010-9788-y
Komnenov M 2014 Spider fauna of the Osogovo Mt. Range, North-eastern Macedonia. – Fauna Balkana 2: 1-267
Komnenov M, Pitta E, Zografou K & Chatzaki M 2016 Discovering the still unexplored arachnofauna of the National Park of Dadia-Lefkimi-Soufli, NE Greece: a taxonomic review with description of new species. – Zootaxa 4096: 1-66 – doi: 10.11646/zootaxa.4096.1.1
Kougioumoutzis K, Kokkoris IP, Panitsa M, Kallimanis A, Strid A, Dimopoulos P. 2021 Plant endemism centres and biodiversity hotspots in Greece. – Biology 10 (2, 72): 1-27 – doi: 10.3390/biology10020072
Nentwig W, Blick T, Bosmans R, Gloor D, Hänggi A & Kropf C 2022 araneae – Spiders of Europe. Version 5.2022. – Internet: https://araneae.nmbe.ch (14. May 2022) – doi: 10.24436/1
Piterkina TV & Ovtcharenko VI 2008 Fauna and ecology of gnaphosid spiders (Aranei: Gnaphosidae) in clay semidesert of Western Kazakhstan. – Arthropoda Selecta 17: 175-184
Pitta E, Zografou K, Poursanidis D & Chatzaki M 2019 Effects of climate on spider beta diversity across different Mediterranean habitat types. – Biodiversity and Conservation 28: 3971-3988 – doi: 10.1007/s10531-019-01860-2
Polchaninova N & Prokopenko E 2019 An updated checklist of spiders (Arachnida: Araneae) of Left-Bank Ukraine. – Arachnologische Mitteilungen 57: 60-64 – doi: 10.30963/aramit5711
Russell-Smith A, Allison R, Askins M, Blumsom M, Snazell WR & Spilling C 2011 A provisional checklist and gazetteer of the spiders of Chios, Greece (Arachnida: Araneae). – Bulletin of the British arachnological Society 15: 133-167 – doi: 10.13156/arac.2010.15.5.133
Samu F & Szinetár C 2002 On the nature of agrobiont spiders. – Journal of Arachnology 30: 389-402 – doi: 10.1636/0161-8202(2002)030[0389:OTNOAS]2.0.CO;2
Schröder M, Chatzaki M & Buchholz S 2011 The spider fauna of the Aladjagiola wetland complex (Nestos Delta, north-east Greece): a reflection of a unique zoogeographical transition zone in Europe. – Biological Journal of the Linnean Society 102: 217–233 – doi: 10.1111/j.1095-8312.2010.01572.x
Stenchly K, Clough Y & Tscharntke T 2012 Spider species richness in cocoa agroforestry systems, comparing vertical strata, local management and distance to forest. – Agriculture, Ecosystems & Environment 149: 189-194 – doi: 10.1016/j.agee.2011.03.021
WSC 2022 World spider catalog. Version 23.0. Natural History Museum, Bern. – Internet: https://wsc.nmbe.ch (14. May 2022) – doi: 10.24436/2
Zakkak S, Chatzaki M, Karamalis N & Kati V 2014 Spiders in the context of agricultural land abandonment in Greek Mountains: species responses, community structure and the need to preserve traditional agricultural landscapes. – Journal of Insect Conservation 18: 599-611 – doi: 10.1007/s10841-014-9663-3
Zografou K, Adamidis GC, Komnenov M, Kati V, Sotirakopoulos P, Pitta E & Chatzaki M 2017 Diversity of spiders and orthopterans respond to intra-seasonal and spatial environmental changes. – Journal of Insect Conservation 21: 531-543 – doi: 10.1007/s10841-017-9993-z
Zografou K, Sfenthourakis S, Pullin A & Kati V 2009 On the surrogate value of red-listed butterflies for butterflies and grasshoppers: a case study in Grammos site of Natura 2000, Greece. – Journal of Insect Conservation 13: 505-514 – doi: 10.1007/s10841-008-9198-6

Electronic supplement: Tab. 1. Details of the sampling sites

Tab. 2: Zoogeographic characterization of the Gnaphosidae species of the whole inventory. For category descriptions see Komnenov (2014) and for abbreviations see Fig. 3 or the main text. Asterisks in the right of recorded species indicate the new regional records as revealed in the present study

Species	Evros	Evros Delta	Magnisia	Prespes	Chorotype	General category
Cheiracanthiidae						
Cheiracanthium mildei L. Koch, 1864	2	.	.	.	EMMA	WIDE
Clubionidae						
Clubiona juvenis Simon, 1878	.	1	.	.	EMMA	WIDE
Gnaphosidae						
Anagraphis ochracea(L. Koch, 1867)	.	.	6	.	CBAL	STENO
Aphantaulax cincta(L. Koch, 1866)*	.	1	.	2	EMMA	WIDE
Aphantaulax trifasciata(O. Pickard-Cambridge, 1872)	.		.	.	SEM	WIDE
Berinda infumata (O.P. Cambridge, 1872)	.	.	6	.	EME	EAST
Berlandina plumalis(O. Pickard-Cambridge, 1872)*	.	1	.	.	MMA	MED
Callilepis cretica(Roewer, 1928)	46	.	.	2	EME	EAST
Callilepis schuszteri(Herman, 1879)	4	.	.	10	EUA	WIDE
*Civizelotes akmon*Chatzaki, 2021	1	.	.	.	GRE	STENO
Civizelotes caucasius (L. Koch, 1866)	166	2	40	11	SEM	WIDE
Civizelotes gracilis (Canestrini, 1868)	97	7	1	4	EUC	EU
Civizelotes solstitialis (Levy, 1998)*	55	.	.	.	EME	EAST
*Cryptodrassus creticus*Chatzaki, 2002*	16	.	.	.	EME	EAST
Cryptodrassus hungaricus(Balogh, 1935)	14	.	.	.	SEU	EU
Drassodes lapidosus(Walckenaer, 1802)	131	41	7	9	PAL	WIDE
Drassodes lutescens(C. L. Koch, 1839)	6	.	18	.	MMA	MED
Drassodes omalosis Roewer, 1928	.	.	.	.	GRE	STENO
Drassodes pubescens (Thorell, 1856)	7	41	.	1	EUA	WIDE
Drassyllus centrohellenicus Chatzaki, 2021	.	.	7	.	GRE	STENO
Drassyllus covidi Chatzaki, 2021	1	.	.	.	GRE	STENO
Drassyllus crimeaensis Kovblyuk, 2003	15	5	.	.	PEM	STENO
Drassyllus dadia Komnenov & Chatzaki, 2016	14	.	.	.	GRE	STENO
Drassyllus dadianus Chatzaki, 2021	23	2	.	.	GRE	STENO
Drassyllus lutetianus (L. Koch, 1866)*	.	5	.	.	EMA	WIDE

Species	Evros	Evros Delta	Magnisia	Prespes	Chorotype	General category
Drassyllus praeficus (L. Koch, 1866)	43	194	.	.	EMA	WIDE
Drassyllus villicoides (Giltay, 1932)*	26	.	4	.	EMI	EAST
Drassyllus villicus (Thorell, 1875)	48	.	1	22	SEU	EU
Echemus angustifrons (Westring, 1861)	9	.	1	1	EUR	EU
Gnaphosa lucifuga (Walckenaer, 1802)	22	56	.	.	EMA	WIDE
Gnaphosa modestior Kulczyński, 1897	1	3	.	.	PON	STENO
Haplodrassus caspius Ponomarev & Belosludtsev, 2008*	.	5	.	.	PEM	STENO
Haplodrassus dalmatensis (L. Koch, 1866)	62	9	4	15	EMMA	WIDE
Haplodrassus invalidus (O. Pickard-Cambridge, 1872)*	1	.	.	.	EMI	EAST
Haplodrassus minor (O. Pickard-Cambridge, 1879)*	.	2	.	.	EUC	WIDE
Haplodrassus pseudosignifer Marusik, Hippa & Koponen, 1996	.	.	.	.	CBAL	STENO
Haplodrassus signifer (C. L. Koch, 1839)	18	8	1	.	HOL	WIDE
Haplodrassus silvestris (Blackwall, 1833)	.	.	.	3	EUC	WIDE
Lasophorus zografae Chatzaki, 2018	8	.	.	.	AEG	STENO
Leptodrassus albidus Simon, 1914*	13	.	.	.	SEU	EU
Marinarozelotes barbatus (L. Koch, 1866)*	69	6	2	.	MMA	MED
Marinarozelotes cumensis (Ponomarev, 1979)*	.	46	.	.	PON	STENO
Marinarozelotes fuscipes (L. Koch, 1866)*	2	.	.	.	MED	MED
Marinarozelotes lyonneti (Audouin, 1826)	24	335	1	.	MED	MED
Marinarozelotes malkini (Platnick & Murphy, 1984)*	89	128	.	.	EMI	EAST
Marjanus platnicki (Zhang, Song & Zhu, 2001)	5	.	.	.	AEG	STENO
Micaria albovittata (Lucas, 1846)*	4	35	.	.	PAL	WIDE
Micaria coarctata (Lucas, 1846)	15	.	.	.	MMA	MED
Micaria dives (Lucas, 1846)	84	17	.	.	PAL	WIDE
Micaria guttulata (C. L. Koch, 1839)	1	1	.	1	EUS	EU
Micaria pallipes (Lucas, 1846)*	.	10	.	.	MMA	MED
Micaria pulicaria s. lat. (Sundevall, 1831)	.	.	.	1	MMA	MED
Nomisia exornata (C. L. Koch, 1839)	19	5	12	49	EMI	EAST
Nomisia levyi Chatzaki, 2010	.	.	7	2	BALK	STENO
Nomisia ripariensis (O. Pickard-Cambridge, 1872)	29	5	3	.	EMI	EAST
Phaeocedus braccatus (L. Koch, 1866)*	7	1	.	.	PAL	WIDE
Phaeocedus similaris Chatzaki, 2021	1	.	.	.	GRE	STENO
Scotophaeus scutulatus (L. Koch, 1866)*	1	.	.	.	EMA	WIDE
Setaphis carmeli (O. Pickard-Cambridge, 1872)*	2	4	.	.	MED	MED
Setaphis parvula (Lucas, 1846)*	1	.	.	.	MED	MED
Talanites strandi Spassky, 1940*	1	.	.	.	PON	STENO
Trachyzelotes pedestris (C. L. Koch, 1837)	116	75	19	7	EUC	EU
Turkozelotes mccowani (Chatzaki & Russell-Smith, 2017)	28	10	.	.	EME	EAST
Turkozelotes microb Kovblyuk & Seyyar, 2009	10	.	.	.	AEG	STENO
Zelotes acarnanicus Lissner & Chatzaki, 2018	.	.	.	.	GRE	STENO
Zelotes apricorum (L. Koch, 1876)	.	.	.	3	EMA	WIDE
Zelotes atrocaeruleus (Simon, 1878)	.	.	17	9	EMA	WIDE
Zelotes babunaensis (Drensky, 1929)	6	.	44	1	EMA	WIDE
Zelotes balcanicus Deltshev, 2006	53	.	13	4	EME	EAST
Zelotes cingarus (O. Pickard-Cambridge, 1874)	28	.	12	1	BALK	STENO
Zelotes electus (C. L. Koch, 1839)	.	8	.	.	EMA	WIDE
Zelotes erebeus (Thorell, 1871)	33	.	.	.	SEU	EU
Zelotes eugenei Kovblyuk, 2009	.	7	.	.	CBAL	STENO
Zelotes fulvaster (Simon, 1878)	56	21	.	.	MED	MED
Zelotes harmeron Levy, 2009	86	2	.	.	EME	EAST
Zelotes hermani (Chyzer, 1897)	.	1	.	4	ECA	EU
Zelotes histius Chatzaki, 2021	7	1	.	.	GRE	STENO
Zelotes longipes (L. Koch, 1866)	6	4	.	.	EUS	EU
Zelotes oblongus (C. L. Koch, 1833)	22	.	.	.	SEU	EU
Zelotes olympi (Kulczyński, 1903)	.	.	.	1	CBAL	STENO
Zelotes prishutovae Ponomarev & Tsvetkov, 2006	26	.	.	.	PEM	STENO
Zelotes segrex (Simon, 1878)	42	.	.	.	SEM	WIDE
Zelotes tenuis (L. Koch, 1866)	26	42	.	2	MMA	MED
Total number of adult specimens	**1748**	**1147**	**226**	**166**		
Total number of genera/species	**20/60**	**15/39**				

Supplement Tab. 1: Details of the sampling sites (FC stands for the Field Code and represents the access code to the sample in the Natural History Museum of Crete

Site	FC	Coordinates	District	Locality	Habitat	Sampling Period	Sampling Dates	Leg.
1	17136	40.8969N 26.0575E	Evros	1.5 km N from Loutros to Dadia, 65 m a.s.l.	maquis with sparce openings	a	14. May – 22. Jun. 2015	M. Komnenov & K. Zografou
	17186					b	22. Jun. – 21. Jul. 2015	
	17258					c	21. Jul. – 24. Aug. 2015	
2	17137	40.8959N 26.0574E	Evros	1.5 km N from Loutros to Dadia, 65 m a.s.l.	opening with some grassland shrubs	a	14. May –22. Jun. 2015	
	17187					b	22. Jun. – 21. Jul. 2015	
	17259					c	21. Jul. – 24. Aug. 2015	
3	17138	40.8899N 26.0487E	Evros	1km N from Loutros towards Profitis Ilias, 53 m a.s.l.	mixed forest with *Quercus, Ostria, Juniperus* and goat paths with visible grazing	a	14. May – 22. Jun. 2015	
	17188					b	22. Jun. – 21. Jul. 2015	
	17260					c	21. Jul. – 24. Aug. 2015	
4	17139	40.9939N 26.0576E	Evros	17 km N from Loutros to Dadia, 350 m a.s.l.	*Quercus* forest with undergrowth shrubs and grass	a	14. May – 22. Jun. 2015	
	17189					b	22. Jun. – 21. Jul. 2015	
	17261					c	21. Jul. – 24. Aug. 2015	
5	17141	41.0513N 26.0743E	Evros	25 km N from Loutros to Dadia, 140 m a.s.l.	grassland near the river with *Paliurus spina-christi*	a	14. May – 22. Jun. 2015	
	17190					b	22. Jun. – 21. Jul. 2015	
	17262					c	21. Jul. – 24. Aug. 2015	
6	17142	41.0238N 26.0526E	Evros	20 km N from Loutros to Dadia, 376 m a.s.l.	high and dense maquis	a	14. May – 22. Jun. 2015	
	17191					b	22. Jun. – 21. Jul. 2015	
	17263					c	21. Jul. – 24. Aug. 2015	
7	17143	41.0699N 26.0743E	Evros	27 km N from Loutros to Dadia, 296 m a.s.l.	maquis with openings	a	15. May – 22. Jun. 2015	
	17192					b	22. Jun. – 21. Jul. 2015	
	17264					c	21. Jul. – 24. Aug. 2015	
8	17144	41.0949N 26.0930E	Evros	32 km N from Loutros to Dadia, 360 m a.s.l.	grazed grassland pasture	a	15. May – 22. Jun. 2015	
	17193					b	22. Jun. – 21. Jul. 2015	
	17265					c	21. Jul. – 24. Aug. 2015	
9	17145	41.0950N 26.0759E	Evros	7.5 km after Treis Vryses towards Dadia, 500 m a.s.l.	broad-leaved forest with dense litter and high canopy cover	a	15. May – 22. Jun. 2015	
	17194					b	22. Jun. – 21. Jul. 2015	
	17266					c	21. Jul. – 24. Aug. 2015	
10	17146	41.2132N 25.9933E	Evros	5 km before Mega Dereio (from Aisymi), 580 m a.s.l.	*Juniperus* shrubs and a few *Quercus* tree individuals, rocky substrate	a	15. May – 23. Jun. 2015	
	17195					b	23. Jun. – 22. Jul. 2015	
	17267					c	22. Jul. – 26. Aug. 2015	
11	17147	41.2143N 25.9930E	Evros	5 km before Mega Dereio (from Aisymi), 580 m a.s.l.	broad-leaved *Quercus* forest with some *Juniperus* at the substrate	a	15. May – 23. Jun. 2015	
	17196					b	23. Jun. – 22. Jul. 2015	
	17268					c	22. Jul. – 26. Aug. 2015	
12	17148	41.1988N 25.9728E	Evros	7 km before Mega Dereio (from Aisymi), 666 m a.s.l.	open dry grassland, probably old pasture	a	15. May – 23. Jun. 2015	
	17197					b	23. Jun. – 22. Jul. 2015	
	17269					c	22. Jul. – 26. Aug. 2015	

Site	FC	Coordinates	District	Locality	Habitat	Sampling Period	Sampling Dates	Leg.
13	17150	40.8832N 26.0357E	Evros	2 km after Loutros towards, 52 m a.s.l.	opening in a mixed forest, old agriculture land, at 20m distance from a small rivulet	a	16. May – 22. Jun. 2015	M. Komnenov & K. Zografou
	17198					b	22. Jun. – 21. Jul. 2015	
	17270					c	21. Jul. – 24. Aug. 2015	
14	17152	40.8835N 26.0379E	Evros	2 km after Loutros towards, 52 m a.s.l.	maquis with thorny substrate and some *Pinus, Juniperus, Ostria* and *Quercus* individuals	a	16. May – 22. Jun. 2015	
	17199					b	22. Jun. – 21. Jul. 2015	
	17271					c	21. Jul. – 24. Aug. 2015	
15	17153	41.2776N 26.0671E	Evros	9 km after Mega Dereio towards Mikro Dereio, 166 m a.s.l.	grassland within *Quercus* / *Pinus* mixed forest and riverine vegetation, water at 50 m distance	a	16. May – 23. Jun. 2015	
	17200					b	23. Jun. – 22. Jul. 2015	
	17272					c	22. Jul. – 26. Aug. 2015	
16	17154	41.3169N 26.0955E	Evros	Mikro Dereio, 500 m W to Roussa, 154 m a.s.l.	high slope with high maquis vegetation (*Juniperus-Ostria*) on a stony substrate, stream at 20 m distance	a	16. May – 23. Jun. 2015	
	17251					b	23. Jun. – 22. Jul. 2015	
	17273					c	22. Jul. – 26. Aug. 2015	
17	17155	41.3002N 26.0903E	Evros	500 m before Mikro Dereio (from Mega Dereio), 144 m a.s.l.	*Quercus* forest with bushes and grass on the floor	a	16. May – 23. Jun. 2015	
	17252					b	23. Jun. – 22. Jul. 2015	
	17274					c	22. Jul. – 26. Aug. 2015	
18	17156	41.3550 N 26.1594E	Evros	11.5 km after Mikro Dereio towards Metaxades, 305 m a.s.l.	*Quercus* mixed forest with some *Platanus* and high canopy cover	a	17. May – 23. Jun. 2015	
	17253					b	23. Jun. – 22. Jul. 2015	
	17275					c	22. Jul. – 26. Aug. 2015	
19	17157	41.3509N 26.1595E	Evros	11.5 km after Mikro Dereio towards Metaxades, 320 m a.s.l.	open area not cultivated, within agricultural lands and in close vicinity to a *Quercus* forest	a	17. May – 23. Jun. 2015	
	17254					b	23. Jun. – 22. Jul. 2015	
	17276					c	22. Jul. – 26. Aug. 2015	
20	17158	41.3533N 26.1582E	Evros	11.5 km after Mikro Dereio towards Metaxades, 300 m a.s.l.	sparse maquis (*Juniperus*, *Quercus*, *Ostria*) with many openings and within a *Quercus* forest	a	17. May – 23. Jun. 2015	
	17255					b	23. Jun. – 22. Jul. 2015	
	17277					c	22. Jul. – 26. Aug. 2015	
21	17159	41.4532N 26.2291E	Evros	1 km N of Polia, 126 m a.s.l.	young *Quercus* forest with high canopy cover and no signs of grazing	a	17. May – 23. Jun. 2015	
	17256					b	23. Jun. – 22. Jul. 2015	
	17278					c	22. Jul. – 26. Aug. 2015	
22	17161	41.4491N 26.2382E	Evros	1.5 km after Polia towards Ladi, 53 m a.s.l.	dry grassland in an open area, near a *Quercus* forest	a	17. May – 23. Jun. 2015	
	17257					b	23. Jun. – 22. Jul. 2015	
	17279					c	22. Jul. – 26. Aug. 2015	
23	12197	40.8343N 26.0017E	Evros	Evros Delta, marsh meadows in Anthia beach		a	13. May – 17. Jun. 2015	M. Komnenov
	17185					b	17. Jun. – 17. Jul. 2015	
24	12198	40.8227N 25.9877E	Evros	Evros Delta, sand dunes in Anthia beach		a	13. May – 17. Jun. 2015	
	17184					b	17. Jun. – 17. Jul. 2015	
25	12199	40.8422N 26.0247E	Evros	Evros Delta, Loutros spring, riverbank		a	13. May – 17. Jun. 2015	
	17183					b	17. Jun. – 17. Jul. 2015	
26	12200	40.8416 N 26.0487E	Evros	Evros Delta, before Drana, rushy marsh field		a	13. May – 17. Jun. 2015	
	17182					b	17. Jun. – 17. Jul. 2015	

Site	FC	Coordinates	District	Locality	Habitat	Sampling Period	Sampling Dates	Leg.
27	17084	40.8255N 26.0163E	Evros	Evros Delta, Drana, marsh meadow		a	13. May – 17. Jun. 2015	M. Komnenov
	17181					b	17. Jun. – 17. Jul. 2015	
28	17086	40.7982N 26.0718E	Evros	Evros Delta, water reserve between E and W part		a	13. May – 17. Jun. 2015	
	17180					b	17. Jun. – 17. Jul. 2015	
29	17002	40.81439N 21.12520E	Florina	Prespes, 4.5 km SW of Ag. Germanos, 877 m a.s.l.	a: agricultural area, dry board by alfalfa field		24. Jun. – 29. Jun. 2014	C. Kropf et al.
		40.81439N 21.12520E	Florina	Prespes, 4.5 km SW of Ag. Germanos, 877 m a.s.l.	b: agricultural area, water trench			
		40.81439N 21.12520E	Florina	Prespes, 4.5 km SW of Ag. Germanos, 877 m a.s.l.	c: agricultural area, tall grass			
		40.81439N 21.12520E	Florina	Prespes, 4.5 km SW of Ag. Germanos, 877 m a.s.l.	d: agricultural area, dam, ruderal vegetation			
		40.81439N 21.12520E	Florina	Prespes, 4.5 km SW of Ag. Germanos, 877 m a.s.l.	d: agricultural area, dam, ruderal vegetation			
30	17005	40.77757N 21.13120E	Florina	Prespes, 9 km SW of Ag. Germanos, 948 m a.s.l.	open oak forest, herbaceous understory		24. Jun. – 29. Jun. 2014	
31	17014 [all four samples grouped together and hence given the same FC]	40.74757N 21.18502E	Florina	Prespes, 4.5 km S of Karyes, 1078 m a.s.l.	a: open oak forest, herbaceous understory		24. Jun. – 29. Jun. 2014	
		40.74757N 21.18502E	Florina	Prespes, 4.5 km S of Karyes, 1078 m a.s.l.	b: oak forest, dry grassland, *Juniperus*		24. Jun. – 29. Jun. 2014	
		40.74757N 21.18502E	Florina	Prespes, 4.5 km S of Karyes, 1078 m a.s.l.	c: oak forest, dry slope		24. Jun. – 29. Jun. 2014	
		40.74757N 21.18502E	Florina	Prespes, 4.5 km S of Karyes, 1078 m a.s.l.	d: ruderal grassy hill, scattered oaks		24. Jun. – 29. Jun. 2014	
32	17041	40.83256N 21.03151E	Florina	Prespes, 200 m N of Psarades	dry rocky slope with *Juniperus*		27. Jun. 2014	
33	17042	40.77859N 21.02786E	Florina	Prespes, 1.1 km NW of Pyli	oak forest, litter sieving sample by the roadside		27. Jun. 2014	
34	17043	40.80770N 21.07028E	Florina	Prespes, 5.5 km NE of Psarades	rocky slope with *Juniperus,* roadside vegetation		25. Jun. 2014	
35	17046	40.80220N 21.13076E	Florina	Prespes, 6 km SW of Ag. Germanos	old field at the roadside with scattered shrubs		25. Jun. 2014	
36	17044	40.78717N 21.22350E	Florina	Prespes, 3.2 km W of Pisoderi	beech forest edges, ruderal strip, leaf litter sieving		25. Jun. 2014	
37	17048	40.79085N 21.23345E	Florina	Prespes, 1.9 km NW of Pisoderi	beech forest edges, ruderal strip, dry and wet meadows		25. Jun. 2014	
38	17050	40.84568N 21.16485E	Florina	Prespes, 850 m NE of Ag. Germanos	valley in dry slopes with tall meadow and bushes		26. Jun. 2014	
39	17089	40.82185N 21.05258E	Florina	Prespes, 2.9 km SE of Psarades	open *Juniperus* forest in a rocky substrate		28. Jun. 2014	
40	17029	40.03813N 21.29929E	Grevena	4.2 km NE of Zakas, 738 m a.s.l.	grassy slope, sparse oaks		29. Jun. – 4. Jul. 2014	

Site	FC	Coordinates	District	Locality	Habitat	Sampling Period	Sampling Dates	Leg.
41	17033	40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	a: rocky river bank, sandy soil and gravel		29. Jun. – 4. Jul. 2014	C. Kropf et al.
		40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	b: oak forest patch		29. Jun. – 4. Jul. 2014	
		40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	c: cereal field edge, tall grass		29. Jun. – 4. Jul. 2014	
		40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	d: river bank, tall vegetation, grass		29. Jun. – 4. Jul. 2014	
		40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	e: river bank, alluvial forest, *Alnus,* tall grass		29. Jun. – 4. Jul. 2014	
		40.03878N 21.28875E	Grevena	3.2 km NE of Zakas, 693 m a.s.l.	f: river bank, sparse vegetation, sandy soil, muddy soil		29. Jun. – 4. Jul. 2014	
42	17085	39.97082N 21.11715E	Grevena	800 m S of Perivoli, 1350 m a.s.l.	beech forest		3. Jul. 2014	
43	17088	39.96530N 21.11720E	Grevena	1.6 km S of Perivoli, 1400 m a.s.l.	rocky slope with *Juniperus* and open coniferous shrubland at the roadside		1. Jul. 2014	
44	17095	39.93842N 21.12452E	Grevena	4.3 km S of Perivoli (Zakas area), 1350 m a.s.l.	*Pinus nigra* forest on a rocky slope		3. Jul. 2014	
45	17132	39.98220N 21.14819E	Grevena	4.6 km E of Perivoli, 1050 m a.s.l.	river banks and black pine forest on a rocky slope		1. Jul. 2014	
46	17169	40.02557N 21.24189E	Grevena	3.3 km W of Zakas, 1165 m a.s.l.	roadside with thistles and dwarf *Sambucus*		3. Jul. 2014	
47	17021	40.23106N 21.59614E	Kozani	7 km SE of Siatista, 764 m a.s.l.	grassy slope, oak forest edge, open vegetation		29. Jun. – 4. Jul. 2014	
48	17025	40.21269N 21.59056E	Kozani	Vourinos mt., 1.8 km NW of Palaiokastro, 915 m a.s.l.	grassy slope, oak forest edge		29. Jun. – 4. Jul. 2015	
49	17149	40.23255N 21.59842E	Kozani	6.5 km SE of Siatista, 760 m a.s.l.	small drainage line pipe and roadside vegetation		2. Jul. 2014	
50	17160	40.18439N 21.81001E	Kozani	2.5 km NW of Aiani, 450 m a.s.l.	river bed and slopes with *Platanus* and *Acer*		2. Jul. 2014	
51	17173	40.14809N 21.84807E	Kozani	2.7 km SE of Aiani, 330 m a.s.l.	dry sandy slopes with *Juniperus* and shrubs		2. Jul. 2014	
52	8800	40.62015N 21.5370E	Florina	Lake Zazari, 604 m a.s.l.	mixed forest with oaks and hornbeam, near cultivations		25. Jun. – 7. Aug. 2014	D. Kaltsas, O. Mettouris
53	8788	40.4291N 23.5038E	Chalkidiki	Cholomontas Mt., Taxiarchis, 868 m a.s.l.	mixed forest with oaks (*Quercus frainetto*), beech (*Fagus sylvatica*) and sparse Castanea (*C. sativa*) trees		11. Jun. – 6. Aug. 2014	
54	8789	40.1653N 23.7316E	Chalkidiki	Sithonia, Elia Nikitis, 94 m a.s.l.	maquis (*Quercus coccifera*) with sparse pine trees		12. Jun. – 6. Aug. 2014	
55	17026	40.1649N 23.7340E	Chalkidiki	Elia Nikitis, on the way to Agios Pavlos chapel, 105 m a.s.l.	maquis		12. Jun. 2014	
56	9272	40.6163N 23.7699E	Chalkidiki	Olympiada, 129 m a.s.l.	dense maquis dominated by *Quercus coccifera*		1. May – 9. Jun. 2014	
57	9288	40.6163N 23.7699E	Chalkidiki	Olympiada, 132 m a.s.l.	dense maquis		29. Apr. 2014	
58	9273	40.4848N 23.7266E	Chalkidiki	Skouries -Asprolakas, 262 m a.s.l.	open *Castanea* forest		2. May – 10. Jun. 2014	
59	9274	40.5118N 23.7031E	Chalkidiki	Skouries -Kerasia, 640 m a.s.l.	beech forest (*Fagus* sp.)		2. May – 11. Jun. 2014	
60	9286	40.4847N 23.7266E	Chalkidiki	Skouries, Asprolakas-Kerasia, 263 m a.s.l.	mixed forest (*Fagus* sp. with sparse *Castanea* trees)		3.May. 2014	
61	9287	40.5344 N 23.7999E	Chalkidiki	Stratoni, 673 m a.s.l.	mixed deciduous forest (*Fagus* sp., *Quercus* sp.) with no understory	a	28. Apr. – 9. Jun. 2014	
	8787/ 9275					b	9. Jun. – 2. Aug. 2014	
62	8797	40.0377N 22.5848E	Pieria	Leptokarya, 2 m a.s.l.	slopes with *Platanus* and walnut (*Juglas vegia*) trees		19. Jun. – 9. Aug. 2014	

Site	FC	Coordinates	District	Locality	Habitat	Sampling Period	Sampling Dates	Leg.
63	8798	40.1106N 22.4969E	Pieria	Litochoro, 311 m a.s.l.	maquis (*Quercus coccifera*)		19. Jun. – 9. Aug. 2014	
64	8790	40.3990N 22.4250E	Pieria	Ryakia, 388 m a.s.l.	oak forest		14. Jun. – 10. Aug. 2014	
65	8791	40.2010N 21.1889E	Kozani	Pentalofos, 838 m a.s.l.	oak forest (*Quercus* sp.)		15. Jun. – 8. Aug. 2014	
66	8795	40.1792N 22.0112E	Kozani	Kastania, 680 m a.s.l.	open meadow with *Castanea sativa* and sparse maquis vegetation		17. Jun. – 9. Aug. 2014	
67	8792	39.7911N 21.2263E	Ioannina	Katara, 1700 m a.s.l.	beech forest (*Fagus* sp.)		16. Jun. – 8. Aug. 2014	D. Kaltsas, O. Mettouris
68	8793	39.9481N 21.5400E	Grevena	Anthrakia, 909 m a.s.l.	mixed oak forest (*Quercus* sp., *Juniperus* sp.)		16. Jun. – 8. Aug. 2014	
69	8794	39.9613N 21.5404E	Grevena	Anoixi, 853 m a.s.l.	oak forest		17. Jun. – 8. Aug. 2014	
70	8799	40.5138N 22.0927E	Imathia	Vermio Mt., Koumaria, 728 m a.s.l.	mixed oak forest (*Quercus* sp., *Castanea* sp.)		24. Jun. – 7. Aug. 2014	
71	17068	40.6535N 22.0172E	Imathia	6.5 km NW from Naousa, 850 m a.s.l.	deciduous forest with hornbeam, beech and oaks *(Carpinus*, *Fagus*, *Quercus*)		23. Jun. 2014	
72	8796	39.8667N 22.7222E	Larissa	Pineios Delta, Stomio, 21 m a.s.l.	slopes with *Platanus* trees		18. Jun. – 9. Aug. 2014	
73	12188	40.8044N 23.0813E	Makedonia	Koroneia lake, 2.5 km SW from Polydendri, 216 m a.s.l.	edge of a pine forest, close to a cliff		28. Jun. – 23. Jul. 2014	M. Chatzaki
74	12189	40.6186N 23.1548E	Makedonia	3 km S of Koroneia lake, Chortiatis mt, 328 m a.s.l.	maquis close to cultivations		28. Jun. – 23. Jul. 2014	
75	9276	39.3396N 22.9101E	Magnisia	Alikes, 90 m a.s.l.	sparse phrygana (*Thymus capitatus, Phlomis fruticosa, Asparagus aphillus, Calicotome villosa*)		23. Apr. –27. Jun. 2014	
76	9277	39.1918N 22.7436E	Magnisia	Kouri, 73 m a.s.l.	lowlands oak forest (*Quercus pubescens, Q. ithaburensis, Q. pendunculiflora*)		23. Apr. – 27. Jun. 2014	
77	9278	39.2704N 22.7553E	Magnisia	Mikrothives, 136 m a.s.l.	pine forest (*Pinus halepensis*)		23. Apr. – 27. Jun. 2014	
78	9279	39.3862N 22.9698E	Magnisia	Ag. Onoufrios, N of Volos, 169 m a.s.l.	pine forest (*Pinus halepensis*)		23.Apr. – 28. Jun. 2014	
79	9281	39.3767N 23.0296E	Magnisia	1.5 km after Portaria to Chania, 966 m a.s.l.	maquis dominated by *Phlomis* sp.		24. Apr. – 28. Jun. 2014	D. Kaltsas
80	9282	39.40065N 23.007683E	Magnisia	Chania, 981 m a.s.l.	beech forest (*Fagus moesiaca*)		24. Apr. – 29. Jun. 2014	
81	9283	39.2865N 23.1865E	Magnisia	NE of Afetes village, 375 m a.s.l.	maquis/phrygana with *Cistus*		25. Apr. – 29. Jun. 2014	
82	9284	39.1401N 23.1831E	Magnisia	1.5 km after Koukoulaiika to Marathias, 61 m a.s.l.	maquis dominated by *Quercus coccifera* and phrygana dominated by *Cistus salvifolius*		25. Apr. – 30. Jun. 2014	
83	9285	39.2658N 23.20595E	Magnisia	N of Myriovryti village, 132 m a.s.l.	phrygana dominated by *Cistus salvifolius* and *Urginea maritima*		25. Apr. – 30. Jun. 2014	
84	9268	38.0335N 22.9248E	Korinthia	Geraneia Mt, 2 km after Perachora to Iraio (W), 159 m a.s.l.	maquis with *Olea europaea* trees and thorny bushes		4. Apr. – 9. Jun. 2014	P. Kornilios
85	9269	38.3625N 21.1082E	Aitoloakarnania	Acheloos estuaries	maquis dominated by *Nerium oleander*		9. Apr. – 5. Jun. 2014	
86	9270	38.3744N 21.5383E	Aitoloakarnania	W of Kokori village, 70 m a.s.l.	maquis/phrygana		10. Apr. – 5. Jun. 2014	P. Kornilios
87	9271	37.6796N 20.8104E	Zakynthos	5 km after Agalas to Apelati (SE), 142 m a.s.l.	pine forest (*Pinus halepensis*) with openings		15. Apr. – 7. Jun. 2014	
88	11573	40.1431N 21.2254E	Ipeiros	Voio Mt, Kyparissi, 950 m a.s.l.	mature oak trees and grassland by a rural street behind a football court		24. Jun. – 16. Jul. 2011	S. Zakkak