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The family Issidae (Homoptera, Auchenorrhyncha) in Greece: endemism and speciation

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ABSTRACT - The family Issidae so far comprises about 60 species in Greece, according to the literature and the material collected by the author during the last 10 years. Several of these species have not previously been recorded in Greece, while others are described as new species by Dr. J. Dlabola. Within this family are included certain genera with many closely related species, some of them endemic to Greece (e.g. genera *Bulbastia*, *Tchurtshurnella*). Undoubtedly this ignored group of organisms provides excellent material for biosystematic, phylogenetic and speciation studies.

IZVLEČEK - ŠKRŽATI DRUŽINE ISSIDAE (HOMOPTERA, AUCHENORRHYNCHA) V GRČIJI: ENDEMIZEM IN SPECIACIJA - Po podatkih iz literature in na osnovi gradiva, ki ga je zbral avtor v zadnjih desetih letih, so doslej ugotovili v Grčiji približno 60 vrst škržatov iz družine Issidae. Nekatere od teh vrst prej iz Grčije niso bile znane, nekatere nove vrste pa je opisal Dr. J. Dlabola. V to družino spada tudi nekaj rodov, ki so v Grčiji endemični in združujejo po nekaj ozko sorodnih vrst (npr. rodova *Bulbastia* in *Tchurtshurnella*). Nedvomno predstavlja ta dosedaj zapostavljena družina odlično gradivo za biosistematske in filogenetske študije ter raziskave speciacije.

Until 1972 the family *Issidae* comprised about 120 species distributed in the Mediterranean, northern Africa and from the middle East to the Himalaya mountain range (NAST, 1972). The absence of this group of insects from northern Europe is characteristic since only three species are reported from Fennoscandia and Denmark (OSSIANNILSSON, 1978) and one from England (LE QUESNE, 1960). Dr. J. DLABOLA has been involved in the study of this group of insects since the beginning of the 1970s, increasing the number of species to over 200 and splitting it into more than 30 genera. However, the phylogenetic relations within the taxa of this family needs careful and thorough analysis (REMANE, ASCHE and COBBEN, personal communications).

The biology of the species, on the other hand - as holds in general for almost all species of the mediterranean *Auchenorrhyncha* - is not known. We know that these species are not able to fly and usually live on dry habitats, shrubs and trees. Despite their inability to fly, some species have a

large area of distribution, but most of the species occur in very restricted areas (DLABOLA, 1985).

It is remarkable that, after accumulating all data available from the literature as well as the material collected by the author during the last 12 years, Greece provides an ideal area for studies on this group of insects. Thus, as is shown in Table 1, 60 species have been found in Greece so far. This number of species will certainly be increased when all the material collected by the author and Drs ASCHE and HOCH has been identified. Identification of the reported material has been made by Dr. J. DLABOLA who described from this material 7 new species (DLABOLA, 1982, 1984, 1987). Despite the extensive work of DLABOLA on the family *Issidae*, species identification is still complicated. In addition, the generic position given to some species obviously is not the appropriate one (*Mycterodus drosopouloسی* DLABOLA, 1982, for example, has no relation with this genus).

In this list, 8 species are reported for the first time from Greece, but the most important fact is that almost half of the species (27) are endemic. This number is very high in comparison to all other families of *Auchenorrhyncha* which are known in Greece (DROSOPOULOS, ASCHE and HOCH, 1983, 1986). Undoubtedly this is due to reduced flying activity and possibly to other unknown biological aspects of these species. Especially for the genus *Bubastia* and partly for *Tshurtshurnella* Greece is the centre of speciation. It is remarkable that out of 14 species of *Bubastia*, 11 are endemic. On mount Olympus and its slopes alone there are at least four species of *Bubastia*. Indeed this genus provides excellent material for biosystematic studies. Accordingly, it is very important to find out the isolating mechanisms between so many closely related species occurring in a relatively narrow area.

TABLE 1. List of species of the family *Issidae* occurring in Greece and their distribution. Asterisks indicate new records for the fauna of Greece, and diamonds endemic species.

| | |
|---|---|
| * <i>Caliscelis bonellii</i> (Latreille, 1807) | Fr., It., Spain, Yug., Nearct. region, Gr. |
| <i>C. wallengreni</i> (Stal, 1863) | Ch., S. Fr., Gr., Hung., It., Rom., USSR |
| * <i>Homocnemia albovittata</i> A. Costa, 1857 | It., Gr. |
| * <i>Aphelonema punctifrons</i> (Horvath, 1895) | USSR, Yug, Gr. |
| * <i>A. quadrivittata</i> (Fieber, 1876) | Alb., Aust., Hung., It., USSR, Yug, Gr. |
| ? <i>Ommatidiorus dissimilis</i> (Fallén, 1806) | Eurosiberian |
| <i>O. falleni</i> Stal, 1863 | Gr. Hung. It., Rom., Spain, USSR |
| * <i>O. longiceps</i> Puton, 1896 | Cyp., Iraq, Isr., It., Port., Spain, Gr. |
| ◆ <i>Pseudohemisphaerius piccus</i> (Puton, 1884) | Greece |
| <i>Mycterodus drosopouloسی</i> Dlabola, 1982 | Gr. (Vathi-Avlis Samos isl.), Turk. |
| ◆ <i>M. idomeneus</i> Dlabola, 1984 | Gr. (S. Kreta-Chora Sfakion) |
| <i>M. immaculatus</i> (Fabricus, 1794) | Aust., Bulg. Gzech., Fr., Gr., Hung., It., Rom., Switz., Turk., USSR, Yug. |

- ◆ *M. lapaceki* Dlabola, 1984
M. pallens Stal. 1861
- ◆ *M. wittmeri* Dlabola, 1974
Conosimus coelatus Mulsant et Rey, 1855
Falcidius apterus (Fabricius, 1974)
- ◆ *Hysteropterum fallaciosum* Matsumura, 1910
- ◆ *H. inconspicuum* Matsumura, 1910
- ◆ *H. lesbicum* Dlabola, 1984
H. montanum (Becker, 1865)
H. nervosum Fieber, 1877
Vertisicium pictifrons Melichar, 1906
- * *Bubastia corniculata* Puton, 1890
B. insulana Dlabola, 1982
- ◆ *B. jankovici* Dlabola, 1980
- ◆ *B. lindskogi* Dlabola, 1984
- ◆ *B. lukia* Dlabola, 1984
B. obsoleta Fieber, 1877
- ◆ *B. olympica* Dlabola, 1982
- ◆ *B. quadracuta* Dlabola, 1980
- ◆ *B. saktisi* Dlabola, 1984
- ◆ *B. saskia* Dlabola, 1984
- ◆ *B. spartica* Dlabola, 1982
B. suturale Fieber, 1877
- ◆ *B. thaidis* Dlabola, 1987
- ◆ *B. thessalica* Dlabola, 1980
Tshurtshurnella armatissima Linnavuori, 1962
- ◆ *T. moreana* Dlabola, 1979
- ◆ *T. peloponica* Dlabola, 1979
T. pseudoarmata Linnavuori, 1965
- ◆ *T. pythia* Dlabola, 1979
- Agalmatium bilobum* Fieber, 1877
- A. flavescens* (Oliver, 1791)
- ◆ *Latematium graccium* Dlabola, 1982
- * *L. latifrons* Fieber, 1877
- ◆ *Rhissolepus aspinosus* Dlabola, 1982
Dalmatium maculiceps Melichar, 1906
- ◆ *Quadrastylum scoleogramma* Fieber, 1877
- * *Q. basiniger* Dlabola, 1982
- ◆ *Issus analis* Brulle, 1832
I. coleopratus (Fabricius, 1781)
I. dilatatus (Fourcroy, 1785)
I. lauri Ahrens, 1814
I. muscaeformis (Schränk, 1781)
- ◆ *I. pallipes* Lucas, 1853
- ◆ *Latilica penelopae* Dlabola, 1974
- L. tendinosus* Spinola, 1839
- ◆ *Semirodus colossicus* Dlabola, 1987
- * *Libanissum talhouki* Dlabola, 1974
- Gr. (S. Kreta-Chora Sfakion)
Gr. (also Aeg. Is.), Yug.
Gr. (Ag. Nikolaos-Kreta)
Fr., Gr., It.
Alg., Canary Is., s. Fr., Gr. (Kreta)
It., Moroc., Pal., Spain, USSR
Greece
Greece
Gr. (Lesbos)
Gr., Rom., Turk., USSR
Alg., Gr. (Corfu), It., Pal., Spain, Yug.
Gr., n. e. Afr., Yug., Anat., USSR
Yug., Gr.
Gr. (Kyklades, Kreta), Anat.
Gr. (Platamon, Olympos)
Gr. (Peloponnesos)
Gr. (Panagia-Pindos, 1500m)
Alb., Gr., It., Yug.
Gr. (Olympos, 1050m)
Gr. (Peloponnesos, Lakonia, Messinia)
Gr. (Votonossi-Pindos, Poroi-Pieria)
Gr. (Halkidiki, Pefkochorion, Paliourion)
Gr. (Lakonia-Sparti, Messinia)
Cyp., Gr., Leb., Turk.
Gr. (Vevi-Florina)
Gr. (Thessalia, Elisson, Larissa, Aghia)
It., Gr. (Lechonia, Volos)
Gr. (Morea)
Gr. (Peloponnesos-Dimitsana)
It., Gr. (Peloponnesos, Karia, Argos)
Gr. (Sterea: Delfi, Amphissa,
Peloponnesos, Karia, Argos)
s. Fr., Gr., Isr., It., Spain,
Syr., Tun., Turk., USSR
European - Mediterranean
Gr. (Amaroussion, Vathi-Avlis,
Skaloula-Doris)
Bulg., Hung., Rom., Yug., Gr.
Gr. (Ag. Georgios-Hios, Neochorion- Hios)
Cyp., Gr., Isr., It., Turk., Yug.
Greece
Gr., Anat.
Greece
European
Alb., Fr., Gr., It., Spain, Turk., Yug.
Alb., Fr., Gr., It., Spain, Yug.
European
Gr. (Kreta)
Gr. (Peloponnesos, Nemea 300-800m,
Argos, Tripolis)
Alb., Gr. (Poros Is.), It., Rom., USSR, Yug.
Gr. (Rhodos)
Gr., Cyp., Leb., Syr., Isr.

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