

New Scale Insects (Homoptera: Coccoidea) in the Greek Entomofauna¹

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ABSTRACT

Collection of scale insects in Greece in 1990 - 1991 provided 71 species. Among them, 31 species were new for the Greek fauna. The total number of known species is 143 in Greece. Host plant's levels of infestation and phenological data are also presented. The results show that scale insect fauna of this country needs further intensive studies.

Introduction

The scale insect fauna of Greece is poorly known. According to Lindinger (1912), Koroneos (1934), Borchsenius (1966), Paloukis (1979), Argyriou (1983), Kozar (1985), Santas (1989) and Isaakidis (1936), 112 species have been identified. Certain species, cited in applied literature, however, require further study for confirmation.

The present study aimed at investigating further the scale insect fauna in Greece.

Material and Methods

Two collection surveys were made during 1990-1991 in the areas of Central Macedonia, Attica, Voiotia, Phokis and the islands of Crete, Rhodes, Hydra and Aegina. The dry material and the microscopic slides have been deposited in the Collection of the Plant Protection Institute in Budapest, Hungary. During collection, data such as stage of insect development, sex, plant host and incidence of infestation (F), rated in a scale ranging 1-5 (Kozar and Victorin, 1978), were recorded. Most of the species were collected by the senior author. S.S. Paloukis and N. Papadopoulos participated in

the collection of scale insects in the Macedonia region.

Results and Discussion

LIST OF SPECIES

ORTHEZIIDAE

Orthezia urticae (Linnaeus), Naoussa, 24.10.1990, *Mentha sp.*, and unidentified plant, female, larva, F = 4. It was reported earlier by Lindinger (1912).

MARGARODIDAE

Icerya purchasi Maskell, Athens 16.10.1990, *Parietaria sp.*, female, larva, F = 4. Knossos, 18.10.1990, *Parietaria sp.*, female, larva, F = 3. Rhodes, 20.10.1990, *Parietaria sp.*, female, F = 1. Naoussa, 24.10.1990, *Prunus laurocerasus var. atropurpurea*, dead female, F = 3. It was reported earlier by Argyriou (1983).

Marchalina hellenica (Gennadius), Hydra, 20.10.1990, *Pinus halepensis*, female, F = 4. Delfi, 21.10.1990, *Pinus halepensis*, female, F = 4. Naoussa, 24.10.1990, *Pinus halepensis*, female, F = 4. Thessaloniki, 9.3.1991, Gramineae sp., in the leaf sheath, dead female, F = 2. *Pinus sp.*, on the branch, female, F = 2. It was reported earlier by Argyriou (1983).

PSEUDOCOCCIDAE

Balanococcus mediterraneus Kozar, Athens Ly-

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cabetus, 17.10.1990, Gramineae sp., in the leaf sheath, female (pink color), male, larva, F = 3. It was reported earlier from Voula (Kozar, 1985).

* *Balanococcus orientalis* Danzig and Ivanova, Thessaloniki, 9.3.1991, Gramineae sp., *Alopecurus sp.* in the leaf sheath, female, F = 1. It is a new species to the European fauna.

Chaetococcus phragmitis (Marchal), Iraklio 19.10.1990, *Phragmites communis*, female, larva, F = 2. It was reported earlier from Karavomilos (Kozar, 1985).

Chorizococcus viktorina Kozar, Agios Prodromos (Galatista), 25.10.1992, *Chrysopogon gryllus*, female (pink colour), larva, eggs, F = 1. It was reported earlier from Karavomilos (Kozar 1985).

* *Mirococcopsis elongatus* Borchsenius, Athens (Lycabetsus), 17.10.1990, *Hyppotheria hirta*, in the leaf sheath, female, F = 1. It is a new species to the Greek fauna.

* *Peliococcus kimmericus* Kiritchenko, Heraklio (Ampelokipi), 18.10.1990, *Cynodon dactylon*, in the leaf sheath, female, F = 1, *Piptatherum miliaceum*, in the leaf sheath, female, F = 1. It is a new species to the Greek fauna.

* *Peliococcus sp.* Athens (Lycabetsus), 17.10.1990, *Piptatherum miliaceum*, on the leaves, female, larva, F = 1. Supposedly it is a new species to science.

* *Phenacoccus bicerarius* Borchsenius, Heraklio, 19.10.1990, *Elymus (Pycnanthus) furcatus*, in the leaf sheath, female (pink colour), F = 2. It is a new species to the Greek fauna.

Planococcus citri (Risso), Athens, 16.10.1990, *Conyza canadensis*, on the stem, female, larva, F = 4. Heraklio 18.10.1990, *Parietaria judaica*, on the stem, female, F = 4. *Oleander sp.*, on the leaves, female, F = 1. Hydra, 20.10.1990, *Parietaria sp.*, female, larva, F = 3. Naoussa, 24.10.1990, Cactaceae sp., female, F = 3. It was reported earlier by Argyriou (1983).

* *Pseudococcus calceolariae* (Maskell), Athens (Lycabetsus), 17.10.1990, *Morus sp.*, on the leaves, female, F = 1. It is a new species to the Greek fauna.

* *Pseudococcus obscurus* Essig, Naoussa, 24.10.1990, *Mahonia sp.*, female, second instar larvae, F = 1. *Robinia pseudoacacia*, female, F = 1. It is a new species to the Grecian fauna.

Puto superbus Leonardi, Thessaloniki, 9.3.1991, *Compositae sp.*, on the stem, second instar larvae, F = 1. Unidentified bush, female, F = 1. It was reported earlier by Argyriou (1983).

* *Trionymus aberrans* Goux, Athens 16.10.1990, *Oryzopsis sp.*, in the leaf sheath, female, F = 2. Athens (Lycabetsus), 17.10.1990, *Piptatherum miliaceum*, female (purple colour), F = 3. Heraklio (Ampelokipi), 18.10.1990, *Piptatherum miliaceum*, in the leaf sheath, female (pink and purple colour), F = 1. Aegina, 20.10.1990, *Oryzopsis sp.*, in the leaf sheath, female, F = 2. Rhodes, 20.10.1990, *Oryzopsis sp.*, in the leaf sheath, female, F = 1. Delphi, 21.10.1990, *Oryzopsis sp.*, in the leaf sheath, female, F = 1. Thessaloniki, 28.10.1990, Unidentified plant, female, F = 1. It is a new species to the Greek fauna.

ERIOCOCCIDAE

* *Acanthococcus greeni* (Newstead), Agios Prodromos (Galatista), 25.10.1990, *Chrysopogon gryllus*, dead female, F = 1. It is a new species to the Greek fauna.

* *Acanthococcus munroi* Boratynski, Knossos, 18.10.1990, *Sarcopoterium spinosa*, on the branch, female (red color), eggs, F = 2. Heraklio, 19.10.1990, *Sedum sp.*, female, F = 1. Levadia, 21.10.1990, *Conyza canadensis*, dead female eggs, F = 1. It is a new species to the Greek fauna.

* *Eriococcus buxi* (Fonscolombe), Naoussa, 24.10.1990, *Buxus sp.*, female, F = 2. It is a new species to the Greek fauna.

* *Gossyparia spuria* (Modeer), Naoussa, 24.10.1990, *Ulmus minor*, dead female, F = 1. It is a new species to the Greek fauna.

* *Rhizococcus agropyri* Borchsenius, Heraklio 19.10.1990, *Cynodon dactylon*, female, larva, F = 3. It is a new species to the Greek fauna.

Rhizococcus cynodontis (Kiritchenko), Knossos, 18.10.1990, *Cynodon dactylon*, female, larva, F = 4. *Hyppotheria hirta*, female, F = 1. *Elymus (Pynanthus) furcatus*, on the leaves, female, F = 1. *Sedum sp.*, female, F = 1. Delphi, 21.10.1990, *Cynodon dactylon*, female, F = 1. Levadia, 21.10.1990, *Cynodon dactylon*, female, larva, eggs, F = 3. Naoussa, 24.10.1990, *Cynodon dactylon*, female, eggs, F = 2. It was reported earlier in Meteora and Thermopiles by Kozar (1985).

Rhizococcus herbaceus Danzig, Athens (Lycabetsus), 17.10.1990, *Piptatherum miliaceum*, in

* Species marked with an asterisk denote new records in Greece.

the leaf sheath, female, F = 1. It was reported earlier in Voula (Kozar, 1985).

KERMESIDAE

Kermes ilicis (Linnaeus), Delphi, 21.10.1990, *Quercus ilex*, female, F = 1. It was reported earlier by Argyriou (1983).

* *Kermes quercus* (Linnaeus), Agios Prodromos (Galatista), 25.10.1990, *Quercus sp.*, dead female, F = 1. It is a new species to the Greek fauna. *Kermes vermilio* (Planchon), Agios Prodromos (Galatista), 25.10.1990, *Quercus coccifera*, dead female, F = 1. It was reported earlier by Argyriou (1983).

CEROCOCCIDAE

Pollinia pollini (Costa), Crete, 24.10.1990, *Olea sp.*, female, F = 1. It was reported earlier by Argyriou (1983).

COCCIDAE (LECANIIDAE)

Ceroplastes rusci (Linnaeus), Athens, 16.10.1990, *Albizzia sp.*, female, larva, F = 2. *Pittosporum sp.*, female larva, F = 1. Heraklio 18.10.1990, *Oleander sp.*, on the leaves, female, F = 1. Knossos, 18.10.1990, *Osiris alba*, on the branch, female, larva, F = 3. Hydra, 20.10.1990, *Ficus sp.*, female, larva, F = 3. It was reported earlier by Argyriou (1983).

Coccus hesperidum Linnaeus, Athens 16.10.1990, *Albizzia sp.*, female, F = 4. *Caragana sp.*, or *Cytisus sp.*, female, F = 1. *Citrus sp.*, female, larva, F = 3. *Hedera helix*, female, F = 1. *Ricinus sp.*, female, larva, F = 4. Knossos, 18.10.1990, *Iris craetensis*, female, larva, F = 1. Naoussa, 24.10.1990, *Mahonia sp.*, female, F = 1. It was reported earlier by Argyriou (1983). * *Eulecanium ciliatum* (Douglas), Agios Prodromos (Galatista), 25.10.1990, *Quercus sp.*, dead female, F = 1. It is a new species to the Greek fauna.

Lichtensia viburni Signoret, Knossos, 19.10.1990, *Osiris alba*, on the branch, dead female, larva, F = 3. Levadia, 21.10.1990, *Olea sp.*, female larva, F = 3. It was reported earlier by Argyriou (1983).

Parthenolecanium corni (Bouche), Athens (Lycabetus), 17.10.1990, *Morus sp.*, female, F = 1. Knossos, 18.10.1990, *Ulmus minor sp. canescens*, dead female, F = 3. Levadia, 21.10.1990, *Juglans sp.*, dead female, F = 1. Naoussa, 24.10.1990, *Robinia pseudoacacia*, female, F = 1. It was reported earlier by Argyriou (1983).

* *Parthenolecanium rufulum* (Cockerell), Agios Prodromos (Galatista), 25.10.1990, *Quercus sp.*, dead female, F = 1. It is a new species to the

Greek fauna.

Pulvinaria betulae Linnaeus, Naoussa, 24.10.1990, *Pyracantha coccinea*, dead female, F = 1. It was reported earlier by Argyriou (1983).

Pulvinariella mesembryanthemi (Vallot), Heraklio (Ampelokipi), 18.10.1990, *Mesembrianthemum sp.*, female, F = 1. It was reported earlier by Argyriou (1983).

Saissetia coffeae (Walker), Athens 16.1.1990, *Albizzia sp.*, dead female, F = 4. *Pittosporum sp.*, female, larva, F = 3. It was reported earlier by Argyriou (1983).

Saissetia oleae (Olivier), Knossos, 18.10.1990, *Crataegus monogyna*, dead female, F = 1. *Malva silvestris*, on the branch, female, F = 1. It was reported earlier by Argyriou (1983).

* *Scythia festuceti* (Sulc.), Athens (Lycabetus), 17.10.1990, *Hypporheria hirta*, on the leaves, female, F = 2, *Festuca sp.*, female, eggs, F = 2. It is a new species to the Greek fauna.

Sphaerolecanium prunastri (Fonscolombe), Knossos, 18.10.1990, *Amygdalus communis*, dead female, F = 3. It was reported earlier by Argyriou (1983).

DIASPIDIDAE

* *Abgrallaspis cyanophylli* (Signoret), Athens 16.10.1990, *Mesembrianthemum sp.*, female, male, F = 3. Heraklio (Ampelokipi), 18.10.1990, *Mesembrianthemum sp.*, on the leaves, female, male, F = 3. It is a new species to the Greek fauna.

* *Acanthomytilus jablonowskyi* Kozar and Matile - Ferrero, Agios Prodromos (Galatista), 25.10.1990, *Chrysopogon gryllus*, female (white color), F = 2. Thessaloniki (Rentziki), 5.3.1991, *Chrysopogon gryllus*, on the stem and in the leaf sheath, female, F = 1. Thessaloniki, 9.3.1991, *Chrysopogon gryllus*, female (white color), F = 2. It is a new species to the Greek fauna.

* *Acanthomytilus intermittens* (Hall), Heraklio (Ampelokipi), 18.10.1990, *Cynodon dactylon*, in the leaf sheath, female, F = 3. Knossos, 18.10.1990, *Cynodon dactylon* female, eggs, F = 3. *Oryzopsis sp.*, in the leaf sheath, female (white color), F = 2. Heraklio, 19.10.1990, *Cynodon dactylon*, female, larva, F = 2. It is a new species to the Greek fauna.

Aonidia lauri (Bouche), Athens 16.10.1990, *Albizzia sp.*, female, F = 1. *Citrus sp.*, female, F = 3. It was reported earlier by Argyriou (1983).

* *Aonidia maroccana* Balachowsky, - Thessalo-

niki, 9.3.1991, *Cyprus sp.*, on the branch, female, second instar larva, F = 3. It is a new species to the Greek fauna.

* *Aonidiella citrina* (Coquillett), - Rhodes, 20.10.1990, *Laurus sp.*, female, F = 1. It is a new species to the Greek fauna.

Aspidiotus nerii Bouche, Athens 16.10.1990, *Hedera helix*, female, male, F = 2. Athens (Lycabetus), 17.10.1990, *Capparis spinosa*, on the stem, female, male F = 2. Heraklio, 18.10.1990, *Capparis spinosa*, on the stem, female, F = 2. *Oleander sp.*, on the leaves, female, larva, eggs, F = 4. *Pittosporum sp.*, on the leaves, female, F = 4. Knossos, 18.10.1990, *Agave americana*, female, F = 3. *Convolvulus sp.*, female, F = 2. *Eucalyptus sp.*, on the stem, female, male, F = 3. *Iris craetensis*, female, F = 2. *Malva silvestris*, female F = 1. *Vitis sp.*, female, F = 2. Heraklio, 19.10.1990, *Sedum sp.*, female, F = 3. Aegina, 20.10.1990, *Ampelopsis sp.*, on the branch and berry, female, F = 2. Hydra, 20.10.1990, *Capparis spinosa*, female, F = 2. Rhodes, 20.10.1990, *Hedera sp.*, female, F = 2. Hydra, 20.10.1990, *Capparis spinosa*, female, F = 2. Rhodes, 20.10.1990, *Hedera sp.*, female, F = 2. It was reported earlier by Argyriou (1983).

* *Aulacaspis rosae* (Bouche), Heraklio, 18.10.1990, *Rosa sp.*, on the branch, female, F = 3. It is a new species to the Greek fauna.

Carulaspis juniperi (Bouche), Thessaloniki, 9.3.1990, *Cyprus sp.*, on the stem female, F = 1. It was reported earlier by Argyriou (1983) as *C. visci*.

Carulaspis minima Targioni - Tozzetti, Thessaloniki, 9.3.1991, *C. visci sp.*, on the stem, female, F = 1. It was reported earlier from Greece by Kozar (1985).

* *Diaspidiotus osborni* (Newell and Cockerell), Knossos, 18.10.1990, *Platanus orientalis*, on the leaves and bark, female, F = 3. It is a new species to the Greek fauna.

Diaspis echinocacti (Bouche), Athens (Lycabetus), 17.10.1990, Cactaceae sp., female, F = 1. It was reported earlier by Argyriou (1983).

Discodiaspis salicorniae Gomez - Menor, Aegina, 20.10.1990, *Euphorbia triflora*, female, male, F = 1. It was reported earlier by Borchsenius (1966).

* *Duplachionaspis stanophri* Cooley, Knossos 18.10.1990, *Arundo donax*, on the leaves, female (red color), first instar larvae, eggs, F = 1. *Hyporheria hirta*, dead female, F = 3. Rhodes, 20.10.1990, *Andropogon hirtus*, female, F = 1. It is a new species to the Greek fauna.

* *Dynaspidiotus greeni* Balachowsky, Knossos, 18.10.1990, *Osiris alba*, female, F = 1. It is a new species to the Greek fauna.

Lepidosaphes beckii (Newman), Rhodes, 20.10.1990, *Citrus aurantium*, female, F = 2. It was reported earlier by Argyriou (1983).

* *Lepidosaphes malicola* Borchsenius, Athens, 16.10.1990, *Cercis siliquastrum*, female, F = 4. It is a new species to the Greek fauna.

* *Lepidosaphes minima* (Newstead), Knossos, 18.10.1990, *Ulmus minor ssp. canescens*, on the branch and stem, female, eggs, F = 3. Hydra, 20.10.1990, *Ficus sp.*, female, F = 3. It is a new species to the Greek fauna.

Lepidosaphes ulmi (Linnaeus), Athens, 16.10.1990, *Cercis siliquastrum*, female, F = 4. Aegina, 20.10.1990, *Ampelopsis sp.*, female F = 3. It was reported earlier by Argyriou (1983).

Leucaspis loewi Colvee, Knossos, 18.10.1990, *Pinus halepensis*, on the leaves, female, larva, F = 2. It was reported earlier by Borchsenius (1966).

Leucaspis pini Hartig, Thessaloniki, 9.3.1991, *Pinus sp.*, female, second instar larvae, pupa, F = 1. It was reported earlier by Borchsenius (1966).

Leucaspis pusilla Low, Hydra, 20.10.1990, *Pinus halepensis*, female, F = 2. It was reported earlier by Borchsenius (1966).

* *Lineaspis ciliciae* Balachowsky, Athens (Lycabetus), 21.10.1990, *Thuja sp.*, female, F = 1. It is a new species to the Greek fauna.

Melanaspis inopinata (Leonardi), Athens, 16.10.1990, *Cercis siliquastrum*, female, F = 1. It was reported earlier by Borchsenius (1966).

* *Mohelnaspis massiliensis* (Goux), Agios Prodromos (Galatista), 25.10.1990, *Vulpia bromoides*, female (orange and yellow color), F = 3. It is a new species to the Greek fauna.

Parlatoria oleae (Colvee), Athens (Lycabetus), 17.10.1990, *Olea sp.*, female, male, F = 3. *Rosa sp.*, on the leaves, female, male, F = 1. Heraklio, 18.10.1990, *Persica vulgaris*, on the branch, female, male, F = 3. Knossos, 18.10.1990, *Crataegus monogyna*, female, F = 2. Levadia, 21.10.1990, *Olea sp.*, female, male, larva, F = 2. Naoussa, 24.10.1990, *Mahonia sp.*, female, F = 2. It was reported earlier by Argyriou (1983).

Pseudaulacaspis pentagona (Targioni - Tozzetti), Heraklio, 18.10.1990, *Morus sp.*, on the branch, female F = 3. Naoussa, 24.10.1990, *Robinia pseudoacacia*, female, F = 3. It was reported earlier by Argyriou (1983).

Quadraspidotus cecconi Leonardi, Athens (Ly-

cabetus), 17.10.1990, *Ephedra* sp., on the stem, female, F = 1. Delphi, 21.10.1990, *Ephedra* sp., female, F = 2. It was reported earlier by Borchsenius (1966).

Quadraspidiotus perniciosus (Comstock), Naoussa, 24.10.1990, *Prunus domestica*, female, F = 3. It was reported earlier by Argyriou (1983).

* *Rhizaspidotus donacis* Leonardi, Knossos, 18.10.1990, *Aruno donax*, in leaf sheath, female (white color), F = 1. It is a new species to the Greek fauna.

Targionia vitis (Signoret), Naoussa, 24.1.1990. *Platanus* sp., female F = 1. It was reported earlier by Argyriou (1983).

Unaspis euonymi (Comstock), Naoussa, 24.10.1990, *Euonymus japonica*, female, F = 4. Thessaloniki, 9.3.1991, *Evonymus japonica*, on the stem, female (yellow color), male, eggs, F = 3. It was reported earlier by Argyriou (1983).

In the present work 31 new species were identified. Considering the fact that all these new records were made in few places in Greece, it shows that the scale - insect fauna of Greece needs further investigation. One species is supposedly new to science, while one has been recorded for the first time in Europe.

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KEY WORDS: Fauna, Homoptera, Coccoidea, Greece, new records.

Νέα Είδη Κοκκοειδών Εντόμων (Homoptera: Coccoidea) για την Ελληνική Πανίδα

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ΠΕΡΙΛΗΨΗ

Η γνώση της πανίδας των κοκκοειδών εντόμων της Ελλάδος είναι περιορισμένη. Για το λόγο αυτό έγινε προσπάθεια συλλογής και αναγνώρισης τέτοιων εντόμων κατά τη διετία 1990-91.

Κατά τη συλλογή αυτή συλλέχθησαν 71 είδη, που ανήκουν σε οκτώ οικογένειες, συγκεκριμένα στις Ortheziidae, Margarodidae, Pseudococcidae, Eriococcidae, Kermesidae, Cerococcidae, Coccidae και Diaspididae. Τα 31 ήταν νέα για την ελληνική πανίδα. Καταγράφηκαν επίσης το επίπεδο προσβολής, τα φυτά ξενιστές, καθώς επίσης και φαινολογικά δεδομένα. Τα αποτελέσματα δείχνουν ότι η πανίδα των κοκκοειδών εντόμων στη χώρα μας χρειάζεται επιπλέον μελέτη.