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FAUNISTIC STUDIES ON THE COCCIDAE ON ORNAMENTAL PLANTS IN ANKARA, TURKEY.

ABSTRACT

FAUNISTIC STUDIES ON THE COCCIDAE ON ORNAMENTAL PLANTS IN ANKARA, TURKEY.

The coccid species present in parks, gardens and greenhouses in Ankara, Turkey, and their host plants were studied in 1992, '94, '95 and '96. Thirteen species of Coccidae were detected on ornamental plants: two species of *Eulecanium*, four species of *Parthenolecanium* and one species each from the genera *Coccus*, *Filippia*, *Palaeolecanium*, *Physokermes*, *Pulvinaria*, *Saissetia* and *Sphaerolecanium*. The most common species was *Parthenolecanium corni*, found on 36% of the infested ornamental plants. *Physokermes picea* was found on four species of *Picea*, of which it infested 16.3% of the plants surveyed. *Filippia follicularis* was detected on 2% of *Fraxinus* spp. while *Physokermes piceae*, *Filippia follicularis*, *Parthenolecanium persicae* and *P. pomeranicum* were recovered on 16, 2, 1 and 1% of the infested plants respectively.

Key words: Coccoidea, Coccidae, urban, ornamental plantings, hosts, geographic distribution.

INTRODUCTION

Soft scale insects (Hemiptera: Coccoidea: Coccidae) are the third most abundant family in the Coccoidea in terms of species, and many attack agricultural, ornamental and greenhouse plantings throughout the world. The economic importance of the group is perhaps considerably underestimated because isolated infestations on ornamental plants are usually overlooked and the death of a plant is often attributed to some other cause. In addition to the loss of plant sap caused by feeding, these scales eliminate a large amount of honeydew which serves as a medium for the growth of sooty mould fungi. These fungi not only inhibit photosynthesis but, due to their dirty or sooty appearance, cause the ornamental plants to lose their aesthetic value (Williams & Kosztarab, 1972; Hamon & Williams, 1984).

In Turkey, the most comprehensive study of Coccidae so far undertaken was by Bodenheimer (1953). More recent collections are those of: Çanakçioglu (1977), who collected 40 species of Coccoidea from forest trees and shrubs, 10 of them Coccidae; Öncüer (1977), who found seven species when studying the coccids on fruit trees in Izmir province (Aegean Region); Selmi (1978), who found 15 species of Coccoidea causing damage to conifers in Marmara Region, four of which were coccids; Özkazanç & Yücel (1984),

who identified 11 coccoid species on trees in gardens, parks and plantations in Central Anatolia, four of them Coccidae, and lastly Yasar (1990), who reported 8 species of Coccidae on ornamental plants in Izmir province.

In Turkey, there is a trend to plant more ornamental plants, especially in large cities such as Ankara, where more than 100,000 ornamental trees have been planted in the last few years. There have been few studies on the effect of coccids on ornamental plantings and therefore this study was undertaken.

MATERIALS AND METHODS

Coccids were sampled from a range of parks, gardens and greenhouses in Ankara between 1992 and 1996. Samples were collected from 1-2 year old branches from all infested plants once a week between 1st April to the 15th June and twice a month between 15th June and 30th October from the four sides of each plant. Specimens were slide mounted using the method of Kosztarab & Kozár (1988) and some of the dry and mounted material has been deposited at the Department of Plant Protection, Ankara University, Turkey. The percentage infestation was calculated as a proportion of the total number of infested plants.

RESULTS AND DISCUSSION

A total of 8 genera and 13 species belonging to the family Coccidae were found. The most common species was *Parthenolecanium corni* (Bouché), which was collected on 36% of the infested ornamental plants, while the percentage of plants infested with *Eulecanium tiliae* (L.), *Coccus hesperidum* L. and *Eulecanium ciliatum* (Douglas) was 14%, 12% and 10% respectively. *Physokermes picea* (Schrank) was found on 16.3% of *Picea* spp. *Filippia follicularis* (Targ.) was detected on 2% of *Fraxinus* spp., while *Parthenolecanium pomeranicum* (Kawecki) and *P. persicae* (Fabricius) were each collected only once. *F. follicularis* and *P. pomeranicum* were new records for the fauna of Ankara and Central Anatolia. However, several species which had been recorded in this region by earlier authors (Bodenheimer, 1953; Çobanoglu, 1993) were not found in this survey, namely: *Eulecanium transvittatum* (Green) and *Parthenolecanium tamaricis* (Bodenheimer) but these species probably have a narrow host range on indigenous hosts.

About a third of the species found are considered pests of fruit crops and are targeted in pest control programs in Turkey, e.g., *C. hesperidum*, *E.*

ciliatum, *P. corni*, *Palaeolecanium bituberculatum* (Signoret) and *Sphaerolecanium prunastri* (Fonscolombe).

LIST OF SOFT SCALE SPECIES, WITH HOST PLANTS

Coccus hesperidum Linnaeus: only found on house plants; only ♀ found. Hosts: *Acer pseudoplatanus*, *Aloe* sp., *Citrus* sp., *Dianthus barbaratus*, *Dieffenbachia* sp., *Euphorbia pulcherima*, *Ficus benjamina*, *Hedera helix*, *Howardia* sp., *Nerium oleander*, *Pilea cadieri*, *Rosa* sp., *Saintpaulia* sp. and *Schefflera arbicola* hybr. (Dates: II, III, IV, V, VI, VII, IX: 1992, '94 -'96).

Eulecanium ciliatum (Douglas): common in parks and gardens in Ankara; a harmful species on some species of Aceraceae and Rosaceae, on which dense populations can cause the branch tips to dry up and even the death of the whole plant. Previously only known from Ankara; both ♂ and ♀ found. Hosts: *Acer campestre*, *A. pseudoplatanus*, *A. pseudoplatanus* var. *atropurpurea*, *Crataegus* sp., *C. monogyna*, *C. oxyacantha rosea*, *Cydonia vulgaris*, *Prunus domestica*, *P. spinosa*, *P. persica*, *Ribes aureum* and *Rosa plena* (Dates: IV, V: 1994, '96).

Eulecanium tiliae (Linnaeus): previous records: Central Anatolia, Mediterranean, Marmara and Black Sea regions; both ♂ & ♀ found. Hosts: *Acer platanoides, A. pseudoplatanus*, *Aesculus hippocastaneum*, *Betula* sp., *Cercis siliquastrum*, *Cornus alba* var. *gibirica*, *Crataegus cruscalia*, *C. oxyacantha*, *C. monogyna*, *Cydonia vulgaris, Malus communis*, *Platanus orientalis*, *Populus* sp., *P. nigra*, *Prunus amygdalus*, *Rosa* sp., *Tilia* sp. and *Ulmus campestre* (Dates: IV, V: 1992, 1994-'96).

Filippia follicularis (Targioni Tozzetti): has particularly large populations on *Fraxinus* spp. in Ankara. Previous records: Mediterranean, Aegean and Marmara regions. Both ♂ & ♀ found. Hosts: *Fraxinus* sp., *F. americana* and *F. excelsa* (Dates: IV, V: 1992, '95).

Palaeolecanium bituberculatum (Signoret): here only collected on Rosaceae. Previous records: Central, South-East and East Anatolia regions. Both ♂ and ♀ found. Hosts: *Malus* sp., *Malus floribunda*, *Crataegus cruscalia*, *C. monogyna*, *C. oxyacantha* and *Crataegus* sp. (Dates: IV, V, VI, VIII, IX: 1992, '94, '95).

Parthenolecanium corni (Bouché): commonest species in Ankara; both ♂ and ♀ encountered in all samples. Previous records: all regions. Hosts: *Acer negundo*, *A. platanoides*, *Aesculus hippocastaneum*, *A. lutea*, *Ailanthus altissima*, *Betula verrucosa*, *Cercis siliquastrum*, *Colutea arborescens*, *Cornus alba* var. *gibirica*, *Corylus maxima* var. *atropurpurea*, *Crataegus oxyacantha rosea*, *Fraxinus* sp., *F. americana*, *F. excelsa*, *Ginkgo biloba*, *Gleditsia*

triacanthos, *Hibiscus syriacus*, *Juglans regia*, *Koelreuteria paniculata*, *Laburnum vulgare*, *Liriodendron tulipifera*, *Lonicera tartarica*, *Ligustrum* sp., *Malus* sp., *Morus alba*, *M. nigra pendula*, *Philadelphus coronarius*, *Prunus armeniaca*, *P. domestica*, *P. cerasifera* var. *pissardii nigra*, *P. serrulata* var. *shidare sakkura*, *Pyracantha coccinea*, *Quercus* sp., *Ribes* sp., *Robinia pseudoacacia*, *Sambucus nigra*, *Sophora japonica*, *Tamarix tetrandra*, *Tilia cordata*, *Ulmus campestris* and *Viburnum lantana* (Dates: IV, V, VII: 1992, '94 -'96).

Parthenolecanium persicae (Fabricius): previous records: Black Sea and Aegean regions. Host: *Cercis siliquastrum* (Date: III: 1992).

Parthenolecanium pomeranicum (Kawecki): previous records: Marmara region. Host: *Taxus baccata* (Date: IV: 1994).

Parthenolecanium rufulum (Cockerell): previous records: Central Anatolia, Black Sea and Marmara regions. Hosts: *Quercus robur*, *Quercus* sp. (Dates: IV, V: 1992, '94 -'96).

Physokermes piceae (Schrank): common and harmful on *Picea* spp. in parks and gardens in Ankara; both ♂ and ♀ were found. Previous records from Turkey: Central Anatolia and Marmara regions. Hosts: *Abies pinsopa*, *Picea excelsa*, *P. pungens*, *P. pungens* var. *glauca*, *P. excelsa* var. *maxwelli* and *P. orientalis* (Dates: VI, V, VI: 1992, '94 -'96).

Pulvinaria vitis (Linnaeus): previous records: Aegean, Central, West Anatolia, Marmara and Mediterranean regions. Hosts: *Acer* sp., *Betula* sp., *Crataegus* sp., *Populus alba*, *P. nigra*, *Populus* sp., *Pyrus communis* (Dates: III, V, VI, VII: 1992, '94 -'96).

Saissetia coffeae (Walker): only collected from house plants; only ♀ noted; previous records: Central Anatolia, Aegean and Marmara regions. Hosts: *Hippeastrum* sp., *Nephrolepis exaltata* and *Sedum* sp. (Dates: II, III, IX: 1995, '96).

Sphaerolecanium prunastri (Fonscolombe): a very common and harmful species on stone fruits; both ♂ and ♀ found. Previous records: Central, South-East and West Anatolia, and the Marmara regions. Hosts: *Prunus armeniaca*, *P. cerasifera*, *P. cerasifera* var. *Pissardii Nigra*, *P. domestica, P. serrulata* var. *shidare sakkura*, *Prunus* sp. (Dates: IV, V, VI: 1992, '94, '95).

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