Contribution to the Knowledge of Scale Insects (Homoptera: Coccoidea) of Coniferous Trees from Turkey

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Abstract: To date, a total of 31 species of scale insects have been recorded on coniferous trees in Turkey. The scale insect families Margarodidae, Pseudococcidae, Cococcidae, Eriococcidae and Diaspididae consist of 3, 3, 6, 1 and 18 species, respectively. Thirteen out of 31 species were found in the European part of Turkey. From the zoogeographical standpoint, 3 are native, 11 are cosmopolitan and 17 are palearctic species.

Key words: Coccoidea, coniferous trees, Turkey

INTRODUCTION

Scale insects are a large one and contains forms that are minute and highly specialized. Many are so modified that they look very little like other Homoptera (Borror et al., 1992). About 150 species of scale insects are known to develop on coniferous trees in different countries of the world. They cause various types of damage, including discoloration, premature needle fall, reduction of shoot growth, death of branches and even of the whole tree (Kozarzhevskaya, 1995).

The scale insect fauna on coniferous trees of Turkey was studied in some detail by several researchers (Lindinger, 1906, 1909, 1912; Fähringer, 1922; Hovasse, 1930a, b; Özek and Hovasse, 1931; Acayt, 1943; Selmi, 1979; Düzsüneş, 1982; Yaşar, 1995; Kaydan et al., 2004; Ülgenfıkır et al., 2004). The purpose of this study was to improve the knowledge on the coniferous tree damaging scale insect fauna of Turkey.

MATERIALS AND METHODS

This study was conducted during 2003 and 2004 in Turkey (39° 90' N, 35° 00' E). Some scale insects mentioned in the present study were collected in the field and the rest previously recorded in Turkey were taken from the literature. Collecting and preserving methods used in this study were based on the literatures of Schaff (1986) and Çanakçioğlu (1993).

Group and family of the scale insects given below are based mainly on the generic classification taken from Schmutterer (1972). Species under families are arranged in alphabetical order.

RESULTS

To date, totally 31 scale insect species on coniferous trees have been recorded by several researchers in Turkey. Distribution and host plants of these species were given below:

- Group Arachaeococcidae
- Family Margarodidae


Palaeococcus fusicipennis (Burmeister, 1835): Recorded on Pinus brutia in Istanbul (Schimitschek, 1944).

- Group Neococcidae
- Family Pseudococcidae

Planococcus vovae (Nasonov, 1999): Recorded on Calocedrus decurrens, Cupressus sp., C. goveniana, C. sempervirens, Juniperus sp., J. excelsa, J. virginiana,

Pseudococcus caricus (Gennadius, 1883): Recorded on Pinus nigra in Muğla (Gennadius, 1883).

Pseudococcus viburni (Signoret, 1875): Recorded on Cephalotaxus harringtonia in Istanbul and Bursa (Selmi, 1979).

- Family Coccidae


In this study, C. hesperidum was found on Cedrus libani in Istanbul and Adapazar. Selmi (1979) reported that C. hesperidum had 3 generations per year in Marmara region.


Nemolecanium aptii (Bodenheimer, 1941): Recorded on Abies nordmanniana in Bolu (Bodenheimer, 1941, 1953).

Parthenolecanium pomeranicum (Kavecki, 1954): Recorded on Taxus baccata in Ankara and Istanbul (Selmi, 1979; Ulgen Türk and Toros, 1999).


Pulvinaria floccifera (Westwood, 1870): Recorded on Cephalotaxus harringtonia and Taxus baccata in İstanbul and Bursa (Selmi, 1979).

- Family Eriococcidae

Eriococcus araucariae Maskell, 1879: Recorded on Araucaria sp. in Istanbul (Bodenheimer, 1953).

- Family Diaspididae


In this study, A. cedricola was found on Cedrus libani in Afyon. Selmi (1979) found that A. cedricola overwinters as the adult stage in Marmara Region.

Aonidia mediterranea (Lindinger, 1910): Recorded on Cupressus sempervirens and Pinus sp. in Antalya and Aydın (Erler et al., 1996; Karsavuran et al., 2001).

Aspidiotus nerii (Bouche, 1833): Recorded on Cedrus libani, Picea abies and Taxus baccata in İzmir, İzmir and Istanbul (Tuatay et al., 1972; Çanakçıoğlu, 1977; Selmi, 1979).


Chrysomphalus dictyospermi (Morgan, 1889): Recorded on Taxus baccata in Istanbul (Selmi, 1979).

Dynaspidotus abieticola (Koroneos, 1934): Recorded on Abies concolor, A. nordmanniana subsp.


Lepidosaphes ulmi Linnaeus, 1758: Recorded on Cupressus sp. (Bodenheimer, 1953).

Leucaspis knemion Hoke, 1925: Recorded on Pinus sp. in Gaziantep (Uygün et al., 1998).


Parlatoria oleae (Colvee, 1880): Recorded on Juniperus sp. and Pinus sp. in İzmir and Aydın (Gül-Zümreölgl, 1972; Karsavuran et al., 2001).

Parlatoria parlatoriae (Sulc, 1895): Recorded on Abies nordmanniana subsp. bormuelleriana in Bursa, Bolu and Çankırı (Bodenheimer, 1941, 1949, 1953).

**DISCUSSION**

Uygün et al. (2004) reported that 25 eocid species have been recorded on coniferous species in Turkey. The number of scale insect species recorded has reached 31 on coniferous trees in Turkey, recently.

Acanthomytilus cedricola Balach. and Al., Aspidiotus nerii Beh., Carulaspis minima (Targ.), Coccus hesperidum L., Eriococcus araucariae Mask., Lepidosaphes newsteadi (Sulc), Leucaspis lovi Colv., Leucaspis pusilla Lw., Marchalina henleinica (Genn.), Parthenolecanium pomeranicum (Kaw.), Physokermes piceae (Sohr.), Pseudococcus viburni (Sign.) and Pulvinaria floccifera (Westw.) were recorded in the European part of Turkey. The other scale insect species were only recorded in the Asian part of Turkey.

Pseudococcus viburni (Sign.) (Selmi, 1979), Coccus hesperidum L. (Çanakçıgl, 1977; Çanakçıgl et al., 1982; Selmi, 1979), C. psedumagnoliarum (Kuw.) (Çanakçıgl, 1977), Pulvinaria floccifera (Westw.) (Selmi, 1979), Eriococcus araucariae Mask. (Gül-Zümreölgl, 1972), Aonidia mediterranea (Lind.) (Erler et al., 1996), Aspidiotus nerii Beh. (Çanakçıgl, 1977; Selmi, 1979; Tuatay et al., 1972), Chrysomphalus dyctyspermis (Morq.) (Selmi, 1979), Lepidosaphes ulmi (L.) (Bodenheimer, 1953) and Parlatoria oleae (Colv.) (Gül-Zümreölgl, 1972; Karsavuran et al., 2001) cause damage on deciduous trees besides conifers.
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