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Biological observations on *Matsucoccus josephi* (Hemiptera: Matsucoccidae) in Turkey

ABSTRACT

Observations on the biology of *Matsucoccus josephi* Bodenheimer & Harpaz (Hemiptera: Matsucoccidae) were made at four natural red pine (*Pinus brutia* Tenore, Pinaceae) forestry of Antalya (1), Aydın (1) and Muğla (2) in the years 2009-2010. Samples branches of red pine were collected twice during March - November, once in winter months. In addition pheromone traps were used to monitor male scale insect and predators. All stages of *M. josephi* were counted. Some individuals were preserved into 70 % ethyl alcohol for the identification of life-stages. Nymphs and adults predator that feed on *M. josephi*, were reared into jars with their host. As results, *M. josephi* is overwintered second stage (cyst) under the bark of pine trees and has 4 generations (at least). *Elatophilus hebraicus* Pericart (Hemiptera: Anthocoridae) was common and effective predator in Turkey.

Key Words: *Pinus brutia*, Mediterranean, Predator, *Elatophilus pachycnemis*, Pine bast scale, Turkey

INTRODUCTION

All matsucoccids inhabit Holarctic region, feed on *Pinus* spp., and some are very serious pests of natural pine forests and plantations. In the Mediterranean area (Algeria, France, Israel, Italy, Morocco, Portugal, and Spain), *M. feytaudi* Ducasse, *M. josephi* Bodenheimer & Harpaz and, to some extent, *M. pini* (Green) may cause considerable injury to pine forests. High populations, shortened needles, weakened crowns, chlorosis in mature trees, cause needle drop and the deformation or death in young trees (Gill 1993). *Matsucoccus josephi* is called the Israel pine bast scale. It is known in Cyprus, Greece, Israel, Jordan, Lebanon and Turkey (Ben-Dov, 1981; Mendel, 1998; Ülgentürk *et al.*, 2012; Pellizzari *et al.*, 2015). *Matsucoccus josephi* is a serious pest in pine forests, particularly causing severe damage to young Aleppo pine, *Pinus halepensis* in Israel (Ben-Dov, 1981; Mendel, 1998). It is a bisexual and multivoltine species, five-six generation in a year in Israel (Bodenheimer & Harpaz, 1955). *Elatophilus hebraicus* Pericart (Hemiptera: Anthocoridae) is specific

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predator of *M. josephi* in Red pine and Aleppo pine forest of the East Mediterranean (Mendel *et al.*, 1991). On the other hand, *M. josephi* can play an important role in transmitting the fungal (*Sphaeropsis sapinea* (Fr.) Dyko & Sutton) inoculum to the host tree (*P. halepensis*) as well as enabling its penetration to the shoots through wounds in the bark (Madar *et al.*, 2005). Nowadays 18 coccoid species have been known as pine trees pest in Turkey (Ülgentürk *et al.* 2012; Kaydan *et al.*, 2013). *Matsucoccus josephi* was recorded firstly in Southern Anatolia of Turkey by Mendel *et al.* (1994). Afterwards Ülgentürk *et al.* (2012) determined its distribution and hosts (*P. brutia*, *P. halepensis* and *P. pinea*) in West part of Turkey. Except its distribution and host, there is not much information about *M. josephi* in Turkey. The aim of this study is to present the biology and natural enemies of *M. josephi* in Turkey.

MATERIAL AND METHODS

In survey, sampling was carried out twice per week during spring and summer in the years of 2009 and 2010. Bast scales were collected from 20 cm infested branches of *Pinus brutia* Ten. (Pinaceae) in pine forest of Antalya (1), Aydın (1) and Muğla (2). Samples were examined under stereomicroscope. Biological stages of *M. josephi* were mounted using the methodology of Kosztarab & Kozár (1988) and identified according to Foldi (2004). Nymphs and adults predator that feed on *M. josephi* were reared into jars with their host. In addition, pheromone traps were hanged to determine male flights.

RESULTS AND DISCUSSION

M. josephi was overwintered as second stage (cyst) underneath the bark of pine trees (fig. 1b) and has 4 generations (at least). First adult male (fig. 1c) and female with eggs beside of cysts were found the end of March in Muğla (fig. 1a). Male and female with eggs were observed four times in March-April, May-June, July-August and the end of September. The adult females were settled for oviposition on the lower stems at the base of needle-bunches on inflorescences, old cones and underneath the outer layers of bark. Female produced a loose white ovisac and deposited her eggs with 188- 293. Eggs are pale yellow. Nymphs and adults of *E. hebraicus* were observed when feeding on cysts of *M. josephi*. Hundreds of adult predator [560. 6 (291-751)] (fig. 1d) and male of bast scale [863 (640-1088)] were determined on pheromones traps. The observations were pointed at that the population of *E. hebraicus* is at high levels and it is effective on bast scale in these areas. On the other hand large predator population on sticky traps were showed a strong kairomonal attraction to the sexual pheromone of *M. josephi*.



Fig. 1. - Female (a), cysts (b), male (c) of *Matsucoccus josephi* and *Elatophilus hebraicus* Pericart.

REFERENCES

- BODENHEIMER F. S., HARPAZ I., 1955. Description of the various stages of *Matsucoccus josephi* n. sp., p. 12-22. In: Bodenheimer F. S. and Neumark S. (eds), – The Israeli pine *Matsucoccus*, Kiryath Sepher Ltd., Keren Kayemeth le Israel Afforestation Dept. Jerusalem, 122 p.
- BEN-DOV Y., 1981. Redescription of *Matsucoccus josephi* Bodenheimer and Harpaz (Homoptera: Coccoidea: Margarodidae). – Israel Journal of Entomology, 15: 35-51.
- FOLDI I., 2004. The Matsucoccidae in the Mediterranean basin with a world list of species (Homoptera: Sternorrhyncha: Coccoidea). Ann Soc Entomol Fr 40:145–168
- GILL R. J. 1993. The scale insects of California Part 2. The minor families (Homoptera: Coccoidea): Margarodidae, Ortheziidae, Kerridae, Asteroleptidae, Iacanodiaspididae, Cerococcidae, Acleridae, Kermesidae, Dactylopiidae, Eriococcidae and Phoenicococcidae. California, 241 pp
- KAYDAN M. B. ÜLGENTÜRK S. & ERKILIÇ L., 2013. Check list of Coccoidea (Homoptera: Sternorrhyncha). Türk. entomol. bült., 3 (4): 157-182.
- KOSZTARAB M., KOZAR F., 1988. Scale insects of Central Europe. Akadémiai Kiadó, Budapest, 456 p.
- MADAR, Z., SOLEL Z. & KIMCHI M., 2005. Enhancement of *Sphaeropsis* Canker of Aleppo Pine by the Israeli Pine Bast Scale. Phytoparasitica 33 (1): 28-32
- MENDEL Z., CARMİ E., PODOLER H. 1991. Relations between the genera *Matsucoccus* (Homoptera: Margarodidae) and *Elatophilus* (Homoptera: Anthocoridae) and their significance. Annals of the Entomological Society of America, 84: 502-507.

- MENDEL Z., ASSAEL F., SAPHIR N., ZEHAZI A., KAFISHEH W. 1994. New distribution records of *Matsucoccus josephi* and *Pineus pini* (Homoptera) on pine trees in parts of the near east. *Phytoparasitica*, 22: 9-18.
- MENDEL Z., 1998. Biogeography of *Matsucoccus josephi* (Homoptera: Matsucoccidae) as related to host resistance in *Pinus brutia* and *Pinus halepensis*. *Canadian Journal of Forest Research*, 28: 323-330.
- PELLIZZARI G., CHADZIDIMITRIOU E., MILONAS P., STATHAS G. & KOZAR F., 2015. Check list and zoogeographic analysis of the scale insect fauna (Hemiptera: Coccoomorpha) of Greece *Zootaxa* 4012 (1): 57-077
- ÜLGENTÜRK S., EVREN N., AYHAN A., DOSTBİL Ö., DURSUN O. & CİVELEK H. S., 2012. Scale insect (Hemiptera: Coccoidea) species on pine trees of Turkey. *Journal Turkish Zoology*, 36 (5): 623-636.