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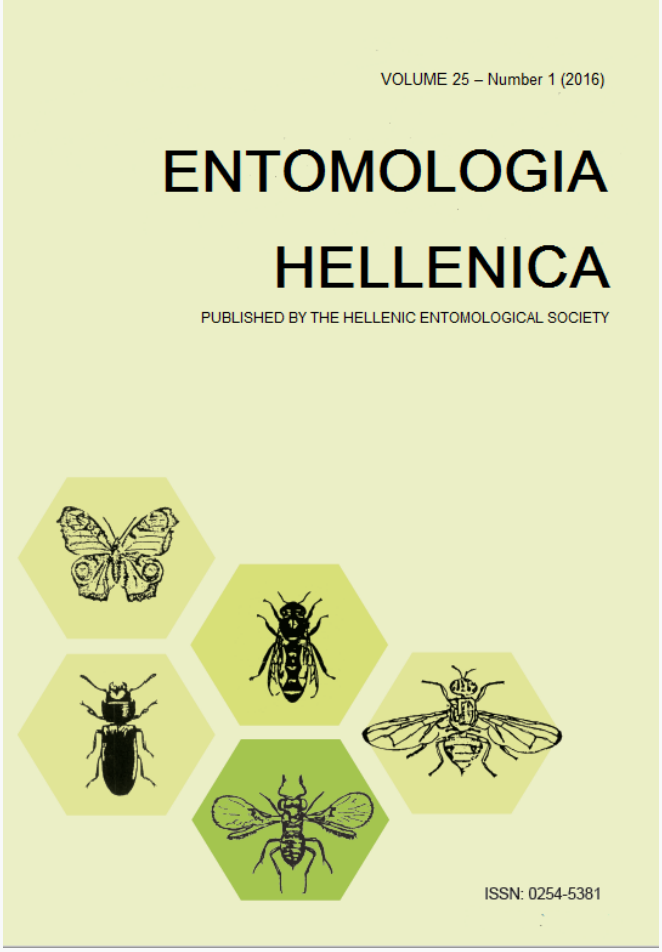

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SHORT COMMUNICATION

First record of the invasive species *Parasaissetia nigra* in Greece

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ABSTRACT

In June 2014, the nigra scale *Parasaissetia nigra* (Nietner) (Hemiptera: Coccidae) was recorded for the first time in Greece on pomegranate, *Punica granatum*. Its occurrence was observed in an ornamental pomegranate tree in the campus of the Agricultural University of Athens. Information on its morphology, biology and distribution is presented.

KEY WORDS: nigra scale, Coccidae, pomegranate.

Pomegranate is one of the first fruit trees cultivated in Greece and in the Mediterranean region in general. Fruits are consumed fresh or dried (Lionakis 1995, Lionakis and Lidakis 2004). The shape of the fruits is spherical or flattened spherical, their color varies from fallow to raspberry red and present a large, persistent calyx. Their weight ranges from 200-800 g; the edible part is represented by seeds, which are covered in a layer of juicy pulp. The number of seeds depends on the variety and is circa 600 seeds/fruit. Juice content is 40% in average of the total fruit weight. In the past, pomegranate was almost exclusively grown in gardens and used for family consumption. The main cultivation areas were the Aegean islands (Chios, Lesvos, Samos, Rhodos, Kalymnos, Kos), Crete, Peloponnese (Argos, Astros), Central Greece (Lamia) and Macedonia (Veria, Edessa, Pella) (Pontikis 1993). After 2007, cultivation has been expanded to new regions (Thessaloniki, Serres, Kavala, Rodopi etc.). Nowadays, the estimated total area with pomegranate orchards in Greece is about 1.500 ha (Drogoudi et al. 2012).

The main insect pests of pomegranate in Greece are: the pomegranate aphid, *Aphis punicae* (Passerini) (Hemiptera: Aphididae), the grape cane borer beetle, *Amphicerus bimaculatus* (Olivier) (Coleoptera: Bostrychidae), the flatheaded woodborer, *Capnodis tenebrionis* (L.) (Coleoptera: Buprestidae), the woolly whitefly, *Aleurothrixus floccosus* (Maskell) (Hemiptera: Aleyrodidae) and the ash whitefly, *Siphoninus phillyreae* (Haliday) (Drogoudi et al. 2012, Tsagkarakis 2012, Andreadis et al. 2016).

In this note, we report the first record in Greece of the nigra scale, *Parasaissetia nigra* (Nietner) (Hemiptera: Coccidae). Infestation was observed on June 15th 2014, on an ornamental pomegranate (cv. 'Chico') in the main campus of the Agricultural University of Athens (37.982684° N, 23.703876° E). Identification of the scale

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species was made by the second author. Female adults and crawlers of the scale were deposited in the personal collections of A.E. Tsagkarakis, Athens, Greece and of Yair Ben-Dov, Bet Dagan, Israel. As *P. nigra* is a quarantine pest for Greece the infestation was removed in a manner consistent with the provisions of phytosanitary legislation.

The nigra scale is widely distributed in the African, Australian, Asia, Nearctic, Neotropical, Oriental and Palaearctic zoogeographical regions of the world (EPPO 2015, Ben-Dov and Miller 2016). In the Palaearctic region it was recorded from the Azores, Belgium, Canary Islands, China (Inner Mongolia), Denmark, Egypt, England, France, Israel, Italy, Japan, Madeira Islands, Netherlands, Portugal, Saudi Arabia, Spain and Turkey (EPPO 2015, Ben-Dov and Miller 2016).

The adult female is elongate-oval, slightly narrowed anteriorly and 3-4 mm long. Its shape varies according to the host-plant, being irregularly oval, or narrowed in front, or strongly convex, or elongate and narrow. In general, on leaves, the scales are usually rather broadly oval and only moderately convex, while on twigs they tend to become narrow, elongate and relatively high convex. Males have not been observed (Nietner 1861, 1880; Newstead 1903, Green 1904, Steinweden 1930, Smith 1944, Zimmerman 1948, De Lotto 1970, Ben-Dov 1978).

Larval instars of *P. nigra* can be difficult seperated from those of several other soft scale species. Immature and young adult specimens of *P. nigra* are translucent-yellow and occasionally mottled. Crawlers are 0.35 mm long, with two black eyes placed anterolaterally; the adults are up to 5.5 mm long and 4 mm wide, yellow initially, often becoming shiny, dark brown to purple-black with age (Gill 1988). Thorough descriptions and comments on morphological variation in adult *P. nigra* are given by De Lotto (1967) and Ben-Dov (1978).

The occurrence of *P. nigra* on infested plants is often detected by the spots of honeydew, as well as by the sooty mould fungi which quickly covers the honeydew. In cases of heavy infestation, *P. nigra* may damage the host plant directly by sap depletion and by injecting toxins, whereas the honeydew and sooty mould may cover the whole aerial part of the plant.

In greenhouse conditions in Israel, Ben-Dov (1978) recorded up to 6 generations per year, whereas only one (and a partial second) generation occurs outdoors in California and Florida (Gill 1988).

Parasaissetia nigra is polyphagous, feeding on plants belonging to more than 77 families. Several agricultural crops and ornamental plants are attacked, including avocado, citrus, coffee, cotton, guava, mango, pomegranate and sandalwood (*Santalum album* L.) (Smith 1944, Ben-Dov 1978).

Several natural enemies are referred that can keep its population under economic thresholds such as the parasitoids *Metaphycus helvolus* (Compere) (Hymenoptera: Encyrtidae) (Ebeling 1959), *Coccophagus cowperi* Girault (Hymenoptera: Aphelinidae) and *Metaphycus* aff. *stanleyi* Compere (Hymenoptera: Encyrtidae) (Ben-Dov 1978), as well as the predator *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae). In certain cases those natural enemies were originally introduced to control the coccid *Saissetia oleae* (Olivier) (Bartlett 1978).

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Πρώτη καταγραφή του εντόμου *Parasaissetia nigra* στην Ελλάδα

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ΠΕΡΙΛΗΨΗ

Στην παρούσα εργασία γίνεται η πρώτη καταγραφή του είδους *Parasaissetia nigra* (Nietner) (Hemiptera: Coccidae) επί της ροδιάς στην Ελλάδα. Η παρουσία του είδους αυτού διαπιστώθηκε σε καλλωπιστική ροδιά, τον Ιούνιο του 2014, εντός της Πανεπιστημιούπολης του Γεωπονικού Πανεπιστημίου Αθηνών. Δίδονται πληροφορίες σχετικά με τα μορφολογικά και βιολογικά χαρακτηριστικά, όπως και για την εξάπλωση του εντόμου.

