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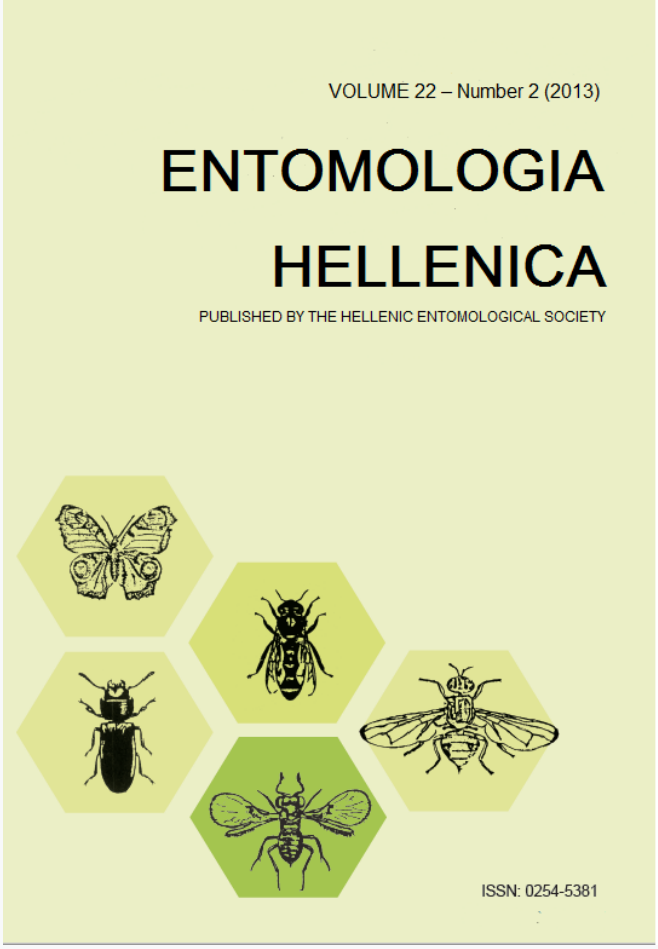

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SHORT COMMUNICATION

First record of *Phoenicococcus marlatti* in Greece

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ABSTRACT

In October 2013, the red date scale *Phoenicococcus marlatti* Cockerell (Hemiptera: Phoenicococcidae) has been recorded for the first time in Greece. Adult females were collected from the base of fronds of date palm from the Crete Island. Information on the species morphology, biology and distribution is presented.

KEY WORDS: first record, *Phoenicococcus*, red date scale.

Date palm (*Phoenix dactylifera* L.) is found in Mediterranean countries, Africa, part of Asia, North America and Australia. It is certain that it was cultivated as early as 4000 B.C. and is probably the most ancient cultivated tree in the world. Date palms are extensively cultivated for the highly nutritious date fruit (Zaid and de Wet 2002). In Greece there are no date palm plantations but this palm is well known as ornamental plant.

The family Phoenicococcidae includes only two species. *Phoenicococcus marlatti* Cockerell and *Phoenicococcus cribiformes* Wolff and Ketterl (Wolff and Ketterl 2005, Ben-Dov et al. 2013).

Even though its ancestry is uncertain, it is believed that *P. marlatti* originates from Africa. It is native to North Africa and the Middle East, but it has been found almost everywhere, where date palms are grown including Europe, Asia, the Caribbean Region, North America, Central America, and South America (Miller et al. 2007). It is probably found wherever date palm is cultivated, but it is not considered to be a serious pest (Dowson 1982).

The species occurs on Arecaceae primarily of genus *Phoenix*, but it can maintain itself on Myrtaceae (genus *Eucalyptus*). Other reported palm hosts include *Calamus* spp. and *Daemonorops* spp. (rattan palms), *Pandanus* sp., *Phoenix canariensis* (Canary Island date palm), *Phoenix reclinata* (Senegal date palm), *Phoenix roebelenii* (pygmy date palm) and *Washingtonia filifera* (California fan palm, Washington palm) (Stickney et al. 1950, Sinacori 1995, Ben-Dov et al. 2013). Additionally, red date scale has been reported from *Eucalyptus* sp. (family Myrtaceae) (Kozár and Drozdják 1998).

The aim of the present study was to report the first record of the red date scale *P. marlatti* in Greece. Samples were collected in October 2013 in Crete Island from fronds of *P. dactylifera*. The plants were imported from

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Spain in February 2013 and were replanted on Heraklion's coastal road. The population consisted of all instars of the scale. The literature data, description of the species infesting date palm and keys of species by Ben-Dov et al. (2013) and by Stickney (1934) were used by the authors to identify the species. Vouchers of the scale are deposited in the Laboratory of Agricultural Zoology and Entomology of the Agricultural University of Athens.

Adult females of *P. marlatti* have body small, spherical, about 1.5 mm long, red or reddish brown, embedded or nested in a mass of white, cottony wax on plant tissue which is often rubbed, exposing red color of body. The body margin has series of dermal papillae. The ducts are present, 8-shaped and tubular. The anal ring is without pores but with setae. The legs are reduced or absent. The spiracles have bar and no associated sclerotized area. The antennae have 1 segment. Wax forms around the body and often completely covers it as curly, shiny, white strands (Stickney et al. 1950, Avidov and Harpaz 1969, Miller et al. 2007). *P. marlatti* does not have a pair of cribiform plates in the anterior portion of the abdomen, as in *P. cribiformes* (Wolff and Ketterl 2005).

Female nymph passes through three instars to reach adulthood. Male passes through three instars, pre-pupa and pupa, with pupa appearing in a white cocoon (Stickney et al. 1950). Typically four generations per year occur in the U.S., and overlapping generations with all instars present concurrently are possible (Avidov and Harpaz 1969). Development time ranges from 60-158 days, depending upon temperature.

Red date scale usually establish at the base of fronds near the trunk or leaf midribs and

FIG. 1. Infestation of *Phoenix dactylifera* with red date scale, *Phoenicococcus marlatti*.

fruit stalks. Host plant leaves, stems, trunk, fruits, as well as exposed and underground roots may also be infested (Figs 1, 2 and 3). Extensive damage may occur and not be detected until pruning occurs. Premature leaf aging, drying of the fruit, disruption of normal plant metabolic functions, and even plant death may result from heavy infestations (Zaid et al. 2002).

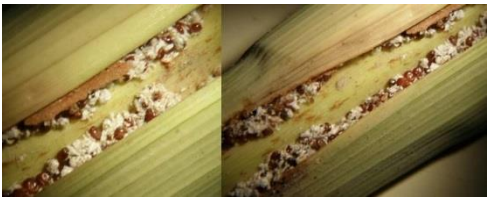

FIG. 2. Red date scale, *Phoenicococcus marlatti*, at the base of fronds of *Phoenix dactylifera*.

FIG. 3. Red date scale, *Phoenicococcus marlatti*, with white wax surrounding body.

Species of the family Eupodidae (Acari: Prostigmata), *Laemonphloeus* sp. (Coleoptera: Laemophloeidae), *Cybocephalus californicus* Horn (Coleoptera: Nitidulidae), *Chilocorus* sp. and *Pharoscymnus anchorago* (Fairmaire) (Coleoptera: Coccinellidae) are reported as predators of red date scale (Stickney et al. 1950, Zaid et al. 2002, Ben-Dov et al. 2013). Another predator of red date scale, found in Spain, is *Rhyzobius lophanthae* (Blaisdell) (Coleoptera: Coccinellidae) (Gomez 2002).

Management of red scale infestations begins with detection and identification of the pest. Regular monitoring will allow early detection and facilitate control. Inspection of plants prior to introducing them into the landscape or plantation is very important in reducing new infestations.

The first measure to prevent the spread of this insect is to remove all attacked leaves and burn them in order to stop the spread of the pest. Additionally, pruning in order to expose the base of the leaves and the pests directly to sunlight is recommended (Hazir and Buyukozturk 2013). A brisk wash spray of water can also be helpful in removing scales and reducing populations. Exposure of host roots to moist heat and hot water has been reported as a possible treatment (Stickney et al. 1950).

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Πρώτη καταγραφή του *Phoenicococcus marlatti* στην Ελλάδα

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ΠΕΡΙΛΗΨΗ

Στην παρούσα εργασία γίνεται η πρώτη καταγραφή του είδους *Phoenicococcus marlatti* Cockerell (Hemiptera: Phoenicococcidae) στην Ελλάδα. Η παρουσία του είδους αυτού διαπιστώθηκε από δειγματοληψία που πραγματοποιήθηκε τον Οκτώβριο του 2013 σε φυτά του είδους *Phoenix dactylifera* L. στο Ηράκλειο Κρήτης. Τα φυτά είχαν εισαχθεί τον Φεβρουάριο του 2013 από την Ισπανία και εγκαταστάθηκαν κατά μήκος της παραλιακής οδού του Ηρακλείου. Δίδονται πληροφορίες σχετικά με τα μορφολογικά και βιολογικά χαρακτηριστικά, όπως και για την εξάπλωση και αντιμετώπιση του εντόμου.