

SHORT COMMUNICATION

First record of *Kermes echinatus* on *Quercus ilex*

G.J. STATHAS*, E.D. KARTSONAS AND P.J. SKOURAS

*Technological Educational Institute of Peloponnese, School of Agricultural Technology,
Department of Crop Production, 24 100 Antikalamos, Greece***ABSTRACT**

The scale insect *Kermes echinatus* Balachowsky (Hemiptera, Coccoidea, Kermesidae) was recorded on *Quercus ilex* in November 2012 in Kalamata and in December of the same year on the same host species in Athens. *Quercus ilex* is recorded for the first time as the host of this scale. This scale is first recorded in continental Greece. The population of the scale in both areas consisted mainly of first instar nymphs, whereas in Kalamata individuals of the scale in advanced developmental stages were recorded. Preliminary studies indicate that natural enemies are active against *K. echinatus*. Moultings of larvae and pupae and adults of *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae) were found on colonies of the scale. Parasitoid exit holes were recorded on female adults of the scale. Some data on morphology and infestation of the scale on *Q. ilex* are given.

KEY WORDS: Kermesidae, morphology, predator, scale insect

Scale insects of the family Kermesidae are characterized by post-reproductive females sclerotised, almost globose, often gall-shaped. Twenty *Kermes* species have been recorded in Europe and in the Mediterranean countries, living on deciduous and evergreen *Quercus* species (Pellizzari et al. 2011).

Four *Kermes* species were recorded so far in Greece, namely *Kermes ilicis* (L.) on *Q. ilex* (Hoy 1963, Kozár et al. 1991), *K. quercus* (L.) on *Quercus* sp. (Kozár et al. 1991), *K. vermilio* Planchon on *Q. coccifera* and *K. greeni* Bodenheimer (= *K. palestinensis* Balachowsky) on *Quercus coccifera* (Argyriou 1983, Pellizzari et al. 2011). Of the above recorded species *K. greeni* is known only in Crete.

In November 2012, a *Kermes* species was found on *Q. ilex* in the town of

Kalamata and in December of the same year on *Q. ilex* in the National Garden of Athens (Fig. 1). On the basis of first instar morphology it was identified as *Kermes echinatus* Balachowsky (Fig. 2). For a long time *K. echinatus* was known in Israel only, of *Quercus calliprinos* and *Q. coccifera* (Balachowsky 1953, Ben-Dov et al. 2012, Spodek et al. 2012), but in April 2010 and again in June 2011, *K. echinatus* was collected of *Q. coccifera* in the area of Aradena of Crete by Porcelli et al. (2013).

The recent record in Kalamata and Athens is the first record of this species in continental Greece, moreover *Q. ilex* is a new host plant of the scale. These data expand the known distributional area of this species recorded so far only in Israel and Crete. Vouchers of permanent slides of the scale are deposited in collections of the DAFNAE De-

*corresponding author, e-mail: gstathas@teikal.gr, georgestathas@hotmail.com

partment, University of Padova, Italy, in the Plant Protection Institute of the Hungarian Academy of Sciences, Hungary and in the Laboratory of Agricultural Entomology and Zoology of the Highest Technological Educational Institute of Kalamata.

The *K. echinatus* population that was recorded in the above mentioned areas, consisted mainly of numerous first-instar nymphs. In Kalamata, individuals of advanced developmental stages were recorded (Fig. 3). Dead adult females of various ages and empty male puparia were also recorded on the infested plants. The first-instar nymphs have a deep red colour and an elliptical shape (Figs 2, 3a). Their length varies between 0.4 and 0.5 mm, while their width is approximately 0.2 mm. The post-reproductive female has a sub-spherical shape (Fig. 3b). At the collecting date the post-reproductive females were 3.6–4.5 mm long, 3–5.7 mm wide and 2.5–3.3 mm high. The male scale cover is white, felted, elongate oval, 1.5–1.6 mm long and 0.5–0.6 mm wide (Fig. 4). The morphology of the first-instar nymph and of the reproductive females is described by Spodek and Ben-Dov (2012).



FIG. 1. *Quercus ilex* infested by *Kermes echinatus* (photo by G. Stathas).

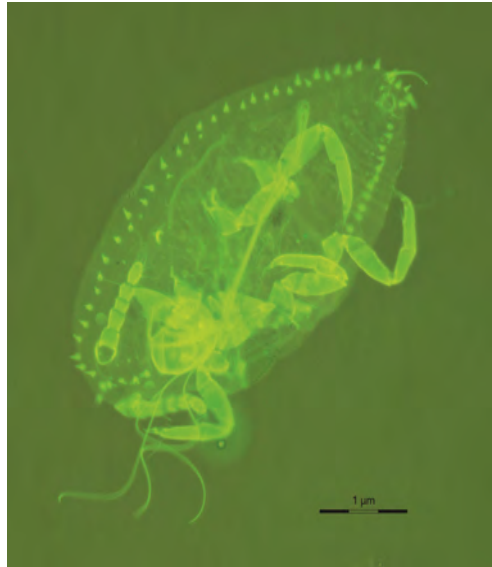


FIG. 2. Slide of 1st instar nymph (under UV lamp) (photo by G. Stathas).

The *K. echinatus* was found to infest the shoots of *Q. ilex*. Heavy infestations cause branch dieback (Fig. 1). First-instar nymphs settle on all parts of the shoots. Individuals that develop into reproductive females are found only on branches (Fig. 3), whereas male nymphs settle mainly on the undersurface of leaves (Fig. 4).

Larvae and adults of the predator *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae) were found in the colonies of *K. echinatus* in Kalamata. Dead parasitized post-reproductive females, each of which with 3–5 exit holes by unidentified parasitoids, were also recorded in both areas.

Regular samplings are carried out from November 2012 onwards in order to study the phenology and ecology of *K. echinatus*. Preliminary observations indicate that the scale overwinters in the first-instar stage.



FIG. 3. Colony of *Kermes echinatus*, on *Quercus ilex*: a) 1st instar nymphs, b) post reproductive female (photo by G. Stathas).

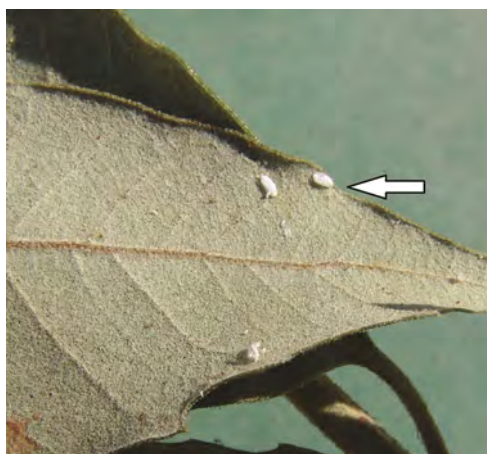


FIG. 4. Male scale covers on leaves of *Quercus ilex* (photo by G. Stathas).

Acknowledgments

The first author would like to express his gratitude to Professor Giuseppina Pellizzari, DAFNAE Department, University of Padova, Italy, for identification of *Kermes echinatus* and to Dr Ferenc Kozár, Plant Protection Institute, Hungarian Academy of Sci-

ences, for his assistance in offering useful information and bibliography on Kermesidae.

References

- Argyriou, L.C. 1983. Faunal analysis of some scale insects in Greece. Proceedings of the 10th International Symposium of Central European Entomofaunistics, Budapest, 15-20 August 1983, 364-367.
- Balachowsky, A.S. 1953. Sur les *Kermes* Boitard (Hom. Coccoidea) des chênes du bassin oriental de la Méditerranée. Rev. de Pathol. Végét. et d'Entomol. Agric. de France 32: 181-189.
- Ben-Dov, Y., D.R. Miller and G.A.P. Gibson. 2012. ScaleNet: a database of the scale insects of the World. Available in: <http://www.sel.barc.usda.gov/scalenet/query.htm> (accessed 28.11.2012)
- Hoy, J.M. 1963. A catalogue of the Eriococcidae (Homoptera: Coccoidea) of the world. New Zealand Department of Scientific and Industrial Research Bull. 150: 1-260.
- Kozár, F., S. Paloukis and N. Papadopoulos. 1991. New scale insects (Homoptera: Coccoidea) in the Greek entomofauna. Entomol. Hellen. 9: 63-68.
- Pellizzari, G., F. Porcelli, G. Seljak and F. Kozár. 2011. Some additions to the Scale insect fauna (Hemiptera: Coccoidea) of Crete with a check list of the species known from the island. J. Entomol. Acarol. Res., Ser.II, 43(3): 291-300.
- Porcelli, F., S. Convertini and G. Pellizzari. 2013. Description of nymphal female instars and adult female of *Kermes echinatus* Balachowsky (Hemiptera, Coccoidea, Kermesidae). Zootaxa (in press).
- Spodek, M. and Y. Ben-Dov. 2012. Morphology of the first-instar nymph and adult of *Kermes echinatus* Balachowsky, with a comparison to *K. vermilio* Planchon (Hemiptera, Coccoidea, Kermesidae). ZooKeys 246: 11-26.
- Spodek, M., Y. Ben-Dov and A. Protasov. 2012. Taxonomy of *Kermes greeni* Bodenheimer (Hemiptera: Coccoidea: Kermesidae) with a new synonymy. Zootaxa 3545: 67-75.

Πρώτη καταγραφή του *Kermes echinatus* σε *Quercus ilex*

Γ.Ι. ΣΤΑΘΑΣ, Ε.Δ. ΚΑΡΤΣΩΝΑΣ ΚΑΙ Π.Γ. ΣΚΟΥΡΑΣ

ΤΕΙ Πελοποννήσου, Σχολή Τεχνολογίας Γεωπονίας
Τμήμα Φυτικής Παραγωγής, 24 100 Αντικάλαμος

ΠΕΡΙΛΗΨΗ

Το κοκκοειδές έντομο *Kermes echinatus* Balachowsky (Hemiptera, Coccoidea, Kermesidae) βρέθηκε σε *Quercus ilex* στην Καλαμάτα, το Νοέμβριο του έτους 2012 και το Δεκέμβριο του ίδιου έτους στην Αθήνα. Το *Q. ilex* καταγράφεται για πρώτη φορά ως ξενιστής του κοκκοειδούς αυτού. Στην Ηπειρωτική Ελλάδα, το κοκκοειδές *K. echinatus* καταγράφεται για πρώτη φορά. Ο πληθυσμός των ζώντων ατόμων του εντόμου που βρέθηκαν στις δύο περιοχές, αποτελείτο κυρίως από νύμφες πρώτης ηλικίας. Στην Καλαμάτα παρατηρήθηκαν και μεμονωμένα άτομα προχωρημένης ηλικίας. Από προκαταρκτικές παρατηρήσεις που έγιναν, φαίνεται το *K. echinatus* να έχει φυσικούς εχθρούς. Στην Καλαμάτα βρέθηκαν σε αποικίες του κοκκοειδούς εκδύσεις προνυμφών, νύμφες και ακμαία του αρπακτικού εντόμου *Chilocorus bipustulatus* L. (Coleoptera: Coccinellidae). Επίσης, παρατηρήθηκαν ακμαία θήλεα άτομα του κοκκοειδούς τα οποία έφεραν οπές εξόδου παρασιτοειδούς. Στην εργασία παρουσιάζονται ορισμένα στοιχεία από παρατηρήσεις επί της μορφολογίας και του τρόπου προσβολής του εντόμου επί του *Q. ilex*.