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SHORT COMMUNICATION

Rosemary beetle *Chrysolina americana*: A new invasive leaf beetle (Coleoptera: Chrysomelidae: Chrysomelinae) in Israel

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The Rosemary Leaf Beetle (*Chrysolina (Taeniochrysea) americana* (Linnaeus, 1758)) does not occur in Americas, it was given this name erroneously. It is distributed around the Mediterranean Sea in southern Europe, North Africa, the Near East and the Middle East (Balachowsky 1963), although the only available records from the Near East are from Turkey (western and south-western provinces) (Gül-Zümreoğlu 1972; Tuatay *et al.* 1972; Kısmalı 1973; Aslan *et al*. 2003). I failed to find any additional record of *C. americana* from the Near East. *C. americana* is actively expanding its distribution to the north; it appeared in the UK in 1963, and is now considered to be established there (Johnson 1963; Halstead 1996; Barclay & Mann 2002; MacLeod 2002). In recent decades it has been recorded from Belgium, Germany, Switzerland (Kippenberg 2015), The Netherlands (Beenen & Winkelman 2001) and Latvia (Telnov *et al.* 1997; Bukejs & Telnov 2010). *C. americana* feeds and breeds mainly on the leaves of rosemary (*Rosmarinus officinalis* L.) and lavender (*Lavandula* species), but also on thyme (*Thymus* spp.), sage (*Salvia* spp.), Russian Sage (*Perovskia atriplicifolia* Benth.), and possibly other plants in the Lamiaceae family (Balachowsky 1963; Bibolini 1964; Halstead 1996; Barclay & Mann 2002; MacLeod 2002; CABI 2016). *C. americana* is flightless and therefore restricted in its dispersal ability, but can be easily transported together with its host plants (MacLeod 2002). In the UK, *C. americana* is now considered a pest of lavender, rosemary and thyme (MacLeod 2002).

The fauna of the Israeli Chrysomelinae (Coleoptera: Chrysomelidae) was surveyed by Friedman *et al*. (2005), summarizing around 80 years of intensive collecting, based on the National Collection of Insects, The Steinhardt Museum of Natural History, Israel National Center for Biodiversity Studies, Department of Zoology, Tel Aviv University (SMNHTAU). Sixteen species of *Chrysolina* were recorded, not including *C. americana*. *Chrysolina* are mainly spectacular, large and colorful beetles, usually dwelling freely on their host plants (both larvae and adults), often easily collected or photographed by both professional and amateur entomologists, and among the better studied and better known groups of beetles.

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Figs 1–6. (1) *Chrysolina americana* in copula on *Salvia fruticosa*, (2) *C. coerulans angelica* in copula, (3) *C. americana* on *Rosmarinus officinalis*, (4) *C. americana* feeding on *S. fruticosa*, (5) *S. fruticosa* heavily grazed by *C. americana*, (6) *S. fruticosa* shrub in the private garden in Karmel, Haifa, hosting a large population of *C. americana*. (Fig. 2 courtesy Oz Rittner, Fig. 3 courtesy Ayala Zaltzman, Figs1, 4–6 courtesy Dudu Adam)

Table 1. Photo-records of *Chrysolina americana* in Israel.

Locality	Date	Host plant	Photographer
Haifa	12.xii.2014	*Rosmarinus officinalis*	Amro Sweedan
Haifa	29.x.2015	*Rosmarinus officinalis*	Ayala Zaltzman
Haifa	4.iv.2015	*Rosmarinus officinalis*	Amro Sweedan
Ma'yan Zevi	2.v.2015		Inbal Ben Yaakov
Haifa, Karmel	xii.2015	*Salvia fruticosa*	Dudu Adam
Haifa, Karmel	20.i.2016	*Salvia fruticosa*	Dudu Adam
Haifa	8.iii.2016		Shir Lee
Nesher	24.iii.2016	*Salvia fruticosa*	Anat Mi
Haifa	8.iv.2016		Ronen Ladani
Binyamina	27.iv.2016	*Salvia* sp.	Arye Barkan
Haifa	16.vi.2016	*Rosmarinus officinalis*	Zeev Kliot

The discovery of a new regional species in the highly populated and intensively surveyed coastal region was thus unexpected.

At the beginning of 2016 I noticed several photographs of unfamiliar *Chrysolina* in the Arthropods, Reptiles and Amphibian Photography public group on Facebook. The beetles on the pictures were identified by Ali Heibi, one of the group administrators, as *Chrysolina americana*. I undertook a collecting trip to Haifa on 17 April 2016, collected seven specimens of the beetle on the Greek Sage *Salvia fruticosa* Mill. in the private garden of Dudu Adam (professional photographer and amateur naturalist), in the Karmel neighborhood, Haifa, and verified the identification. These beetles are mounted and deposited in the SMNHTAU. I continued to monitor photographs added to the Facebook group, which now contains 11 records of *C. americana*, all from the Haifa district (Table 1). These are eight records from Haifa, one from Nesher (adjacent to Haifa) and two from Ma'yan Zevi and Binyamina, 30 km and 40 km, respectively, from Haifa. The oldest record is from December 2014. The beetles have been found on *R. officinalis* (Fig. 3), *S. fruticosa* (Figs 1, 4, 5) and *Salvia* sp. Numerous beetles were observed throughout the winter of 2015–2016 (December–March), feeding and copulating on a small shrub of *S. fruticosa* in the above-noted private garden in Karmel, Haifa (Dudu Adam, pers. comm.) (Figs 1, 4–6).

This is the first record of *C. americana* from Israel and from the eastern Mediterranean south of Antalya, Turkey (37°N).

C. americana (Figs 1, 3, 4) generally resembles the *Chrysolina coerulans angelica* (Reiche & Saulcy, 1858) (Fig. 2), widely distributed in Israel and feeding and breeding on wild mint (*Mentha longifolia* (L.) Huds.). *C. americana* is similar to *C. c. angelica* particularly in its size, body form and rainbow-like bright glowing coloration of the head, pronotum and elytra, with green, purple and blue longitudinal stripes. However, these species can be easily distinguished by the following characters: elytral punctation is arranged in double rows of punctae in *C. americana*, while not arranged in any order in *C. c. angelica*; punctae on the

pronotum are concentrated on the sides, leaving the medial area of the pronotum completely smooth in *C. americana*, while they are spread evenly in *C. c. angelica*; the longitudinal stripes display two colours—bluish green and purple—in *C. americana*, and three colours—green, red and blue (mainly medio-laterally)—in *C. c. angelica*.

The two facts—that *C. americana* was not found in Israel before 2014 and all findings to date have been in Haifa or in close proximity to Haifa—lead to the conclusion that *C. americana* is not a previously overlooked local species, but, rather, an invasive species, which has passively arrived in Israel in recent years, possibly through the Haifa Port, Israel's main maritime gateway in the eastern Mediterranean.

The flora of Israel comprises 118 species in 33 genera of Lamiaceae (Feinbrun-Dothan & Danin 1990), some of them rare or endemic, some used in conventional and folk medicine and in the local cuisine, some spectacular plants with attractive inflorescence and a pleasant aroma, but all of them of certain importance in their biotopes. Some Lamiaceae are cultivated (spices and those of medical importance). Consequently, *C. americana* has a potential to pose a real threat, both to the natural plant communities and to farmers.

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