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The Persian Date palm trunk borer (*Oryctes elegans*), a pest of date palm new to Israel (Coleoptera: Scarabaeidae: Dynastinae)

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ABSTRACT

A new pest of the date palm, the Persian Date palm trunk borer *Oryctes* (*Rykanoryctes*) *elegans*, is recorded from Israel for the first time. An identification key to and biological and distributional data of the species of *Oryctes* in Israel are given.

KEYWORDS: Coleoptera, Scarabaeidae, Dynastinae, *Oryctes*, alien species, pest, Arecaceae, *Phoenix dactylifera*, Middle East, Palaearctic, identification key.

תקציר

קרנפית התמר הפרסית, מזיק חדש של דקל התמר, מדווחת מישראל לראשונה. הזחלים של קרנפית התמר הפרסית מתפתחים בכותרת של גזע התמר, זאת בשונה מזחלים של קרנפית התמר הסינאית, שמתפתחים בתחתית הגזע. עיקר הפגיעה בידות אשכול הפרי. קרנפית התמר הפרסית הייתה ידועה מארצות הסובבות את המפרץ הפרסי, שם ידועה משכבר הימים כמזיק קשה של דקלי תמר. לאחרונה היא פלשה לישראל ונמצאה בבקעת הירדן; קיים חשש להתפשטותה לאורך הבקעה. המאמר מכיל מידע על תפוצתה, איורים ומפתח להגדרת שלושת מיני הקרנפיות בישראל.

מילות מפתח: חיפושיות, זבליתיים, קרנפית, מין פולש, מזיק, דקל, תמר, מזרח תיכון, פליארקטי, מפתח הגדרה.

INTRODUCTION

Oryctes Hellwig, 1798 belongs to the predominantly circum-tropical tribe Oryctini Mulsant, 1842, characterized by the apex of the posterior tibia with teeth, not truncated, unlike in closely related and ecologically similar Pentodontini Mulsant, 1842. *Oryctes* includes about 40 species, three-quarters of them Afrotropical, others Oriental and Palaearctic, with one species recorded in Melanesia. *Oryctes* comprises large beetles, body length 20–70 mm, with distinct sexual dimorphism: males are larger, with a long thick horn on the forehead, and a pronounced pronotal hump that is split at apex into 2 or 3 denticles; females are smaller, without a horn or with a very short one, the pronotal hump is less prominent, split at apex into 1 or 2 denticles. Twelve species are recorded from the Palaearctic Region: two Afrotropical and three Oriental, at the edge of their distribution range, the wide-Palaearctic *Oryctes nasicornis* (with 19 subspecies), and six mainly subtropical species.

The genus *Oryctes* was recorded from Israel for the first time by Bodenheimer (1937), as *Oryctes nasicornis grypus* Illiger 1803, the species occurring in the West

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Mediterranean. *Oryctes n. grypus* is characterized by the apex of the clypeus, albeit narrow like in *O. n. nasicornis*, but apically notched to some extent, resembling the clypeus of *O. agamemnon*, so it is unclear which of the two species was collected by Bodenheimer.

MATERIALS AND METHODS

All studied material is deposited in the National Collection of Insects, the Steinhardt Museum of Natural History, Tel Aviv University, Israel.

Examined material

Israel: 6♂ 1♀, Netiv haGedud [32°59'20"N 35°26'40"E, -300 m], 20.iii.2018, ex larvae from *Phoenix dactylifera*, S. Dobrinin.

Imaging and measurements

Drawings and measurements were made using a drawing tube and a stereomicroscope Leica M125. Drawings were scanned and processed using Adobe Illustrator 9.0. Total body length in dorsal view was measured along a straight line from the apex of the clypeus to the tip of the elytra.

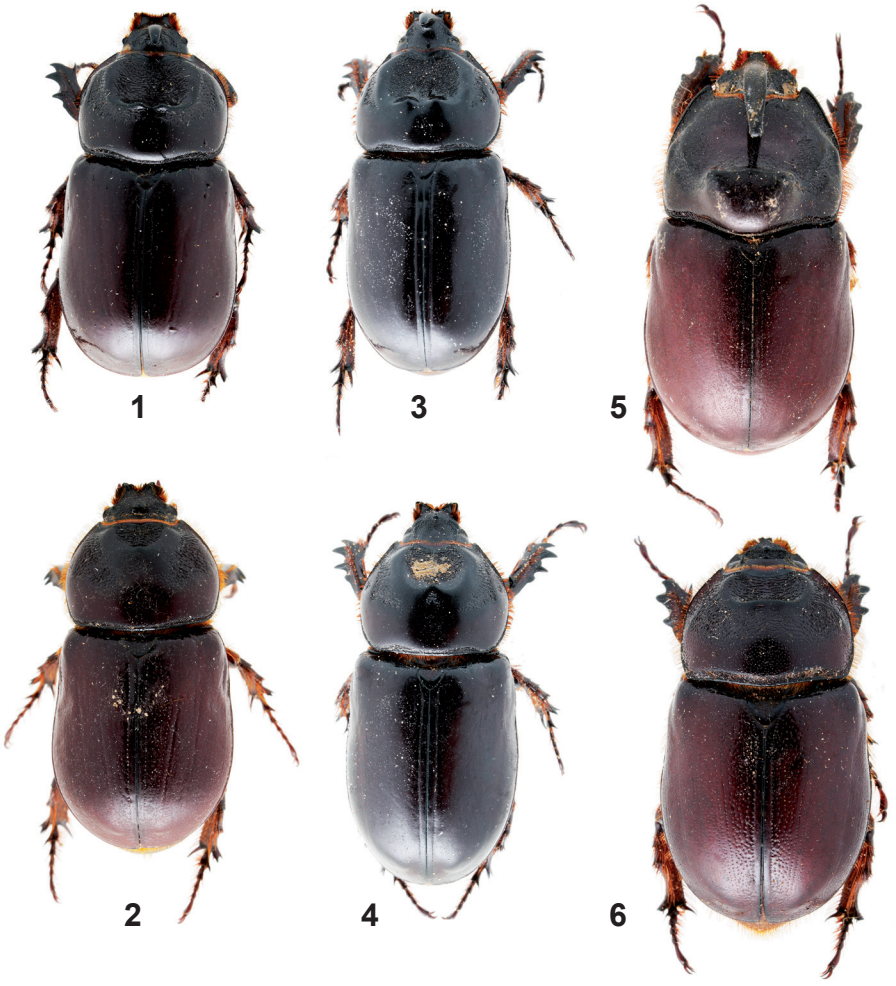
Images of the beetle habitus were taken by Amir Weinstein with a Sony A7RIII camera, lens Sony FE 90mm f/2.8 Macro G OSS, with two flashlights Godox TT685s and edited with Adobe Photoshop CS5.

RESULTS

A new pest of the date palm in Israel has been discovered recently in the Jordan Valley. The Persian Date palm trunk borer *Oryctes (Rykanoryctes) elegans* Prell, 1914 (Figs 3, 4, 8, 11, 14) was originally known only from the countries of the Persian Gulf (Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen) and from Pakistan (Endrődi 1973, 1980; Dechambre & Lachaume 2001; Krell & Bezděk 2016; Krell & Král 2017). The larvae of *O. elegans* attack the date palm (*Phoenix dactylifera*) trunks at the crowns, while adults are boring holes at frond bases and into the stems of inflorescences and stalks of the date clusters, causing them break and fall down (Hurpin & Fresneau 1969; Gharib 1970; Swair 1979; Bedford *et al.* 2015). The larvae considered in this article were found in the upper parts of the date palm trunks in Nativ haGedud, the central part of the Jordan Valley, and reared to adults by the junior author. It is unclear how *O. elegans* arrived in the Jordan Valley. It is a dramatic extension of the distributional range of this pest to the west. The current range of the species distribution in Israel is unclear, although there is evidence that it is spreading intensively along the Jordan Valley. According to unconfirmed data, *O. elegans* has already appeared also in the Arava Valley.

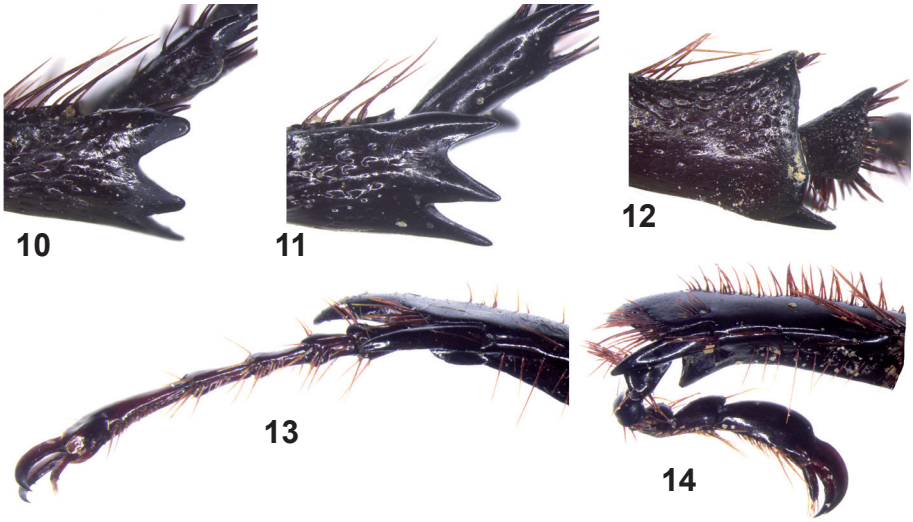
Until recently, only two species of *Oryctes* were present in Israel, viz. the East Mediterranean subspecies of the common Palaearctic European rhinoceros beetle (*Oryctes (Oryctes) nasicornis kuntzeni* Minck, 1914) (Figs 5, 6, 9, 12), occurring in the Balkan Peninsula, Asia Minor, Levant, Mesopotamia and Iran, and the Sinai

rhinoceros beetle (*Oryctes (Rykanoryctes) agamemnon sinaicus* Walker, 1871) (Figs 1, 2, 7, 10, 13), recorded only from Israel and the Sinai Peninsula in Egypt (Endrődi 1973, 1980; Chikatunov & Pavlíček 1997; Dechambre & Lachaume 2001; Blumberg 2008; Krell & Bezděk 2016). *Oryctes (O.) n. kuntzeni* occurs in the Northern and Central parts of Israel, in the Mediterranean zone, feeding on dead wood. *Oryctes (R.) a. sinaicus* is known as a serious pest of the date palm, attacking plants at the base of the trunk (Blumberg 2008). The main population of *O. a. sinaicus* is



Figs 1–6: *Oryctes* spp., habitus, dorsal view: (1, 2) *Oryctes (Rykanoryctes) agamemnon sinaicus*, male (1) and female (2); (3, 4) *O. (R.) elegans*, male (3) and female (4); (5, 6) *O. (Oryctes) nasicornis kuntzeni*, male (5) and female (6).

Figs 7–9: *Oryctes* spp., female, head, dorsal view: (7) *Oryctes (Rykanoryctes) agamemnon sinaicus*; (8) *O. (R.) elegans*; (9) *O. (Oryctes) nasicornis kuntzeni*.



Figs 10–14: *Oryctes* spp.: (10–12) distal part of left hind tibia, lateral view: (10) *Oryctes (Rykanoryctes) agamemnon sinaicus*, (11) *O. (R.) elegans*, (12) *O. (Oryctes) nasicornis kuntzeni*; (13, 14) right fore tibia, anterolateral view: (13) *Oryctes (R.) agamemnon sinaicus,* (14) *O. (R.) elegans*.

distributed along the Jordan Valley, from Elat in the south to the Sea of Galilee in the north, being particularly abundant in date plantations in the Arava Valley and along the Dead Sea. However, it was collected also in the Central Negev and even as far north as Majdal Shams on Mount Hermon (ca. 900 m asl), probably following use of the date palm as an ornamental tree.

An identification key the *Oryctes* species in Israel

1 Clypeus narrow, apically truncated (Fig. 9); male pronotum with broad, 3-toothed hump, female pronotum with 1-toothed hump (Figs 5, 6); hind tibia apicodistally with three wide rounded teeth, two outer ones wider, nearly or completely fused in spoon-like projection (Fig. 12); body length 23–40 mm; not associated with date palm trunks ..... *O. nasicornis kuntzeni*

– Clypeus broad, apicomedially widely concave or with deep triangular notch, apicolaterally produced into strong conical tooth (Figs 7, 8); male pronotum with 2-toothed hump, female pronotum with 1-toothed hump (Figs 1–4); hind tibia apicodistally with three distinct projected teeth; associated with date palm trunks 4

2 Fore tibia with strong anteroventral tooth at anterior tip of ventral carina in both sexes (Fig. 14); body narrow, parallel-sided; hind tibia apicodistally with two outer teeth pointed (Fig. 11); body length 32–39 mm; larvae develop in upper part of date palm trunk ..... *O. elegans*

– Fore tibia without anteroventral tooth ventrally (Fig. 13); body more rounded laterally; hind tibia apicodistally with two outer teeth rounded (Fig. 10); body length 24–39 mm; larvae develop in lower part of date palm trunk..... ..... *O. agamemnon sinaicus*

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