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Remarks on the development and life history of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 (Coleoptera: Buprestidae)

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Abstract. *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 is newly recorded from Ra´s al-Khaimah (UAE). This study presents the first documentation of its preimaginal development, including larval gallery, pupal chamber, and exit hole. A larva was reared from *Caroxylon cyclophyllum* (Baker, 1894), confirming this plant as a host. Additionally, the female ovipositor is illustrated for the first time.

INTRODUCTION

The Buprestid fauna of the United Arab Emirates (UAE) remains poorly studied to this day. By 2011, only three works had been published addressing this beetle group in the UAE (Gillett & Gillett 2005, Howarth & Gillett 2008, Howarth & Gillett 2009). Much more extensive studies were later published by Bílý et al. (2011) and Kubáň et al. (2014). While Howarth & Gillett (2009) documented 22 species of Buprestidae from the UAE, Bílý et al. (2011) and Kubáň et al. (2014) expanded the known species count to 46, describing 11 species new to science. Among these, Bílý et al. (2011) reported *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 for the first time from the Arabian Peninsula. With the recent discovery of this species in the UAE, additional information regarding its preimaginal development, distribution, and morphology is now available.

MATERIAL AND METHODS

The results presented in this study are primarily based on field observations and the examination of root samples from *Caroxylon cyclophyllum* (Baker, 1894). During these investigations, the author collected a larva for rearing and further documentation. The root samples containing preimaginal stages were transferred into a plastic container, where a female *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 emerged after four weeks. The material examined in this study is stored in the author's collection. A Carl Zeiss Jena GSM stereomicroscope was used for the investigation. Detailed images were captured using focus-stacking techniques with a Canon EOS RP camera and a Canon MP-E65mm f/2.8 1-5x macro lens, along with an automated macro rail (Qool Rail 250, MJKZZ, Vienna).

All individual images were processed with Helicon Focus Lite software, and final image editing was performed using Adobe Photoshop CC and ImageJ.

RESULTS

Sphenoptera (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923
(Figs. 1-3)

Material examined: 1 ♀, United Arab Emirates, S Ra´s al-Khaimah town, 25°44‘08.7“N 55°53‘09.4“E, 31.03.-05.04.2025, ex larva from *Caroxylon cyclophyllum* (Baker, 1894), A. Pütz leg., det. & coll.

In April 2025, the author had the opportunity to visit the city of Ra´s al-Khaimah in the far northwestern part of the UAE, located along the Persian Gulf coast. During this visit, a desert landscape with Acacia trees (Fig. 1) was surveyed for its beetle fauna.

The focus was on documenting Buprestid species. A large number of *Agrilus lituratus* (Klug, 1829) were observed on the leaves of an Acacia species (*Acacia* sp.). No other Buprestid species were initially observed. The vegetation was largely dead or in the early stages of regrowth, suggesting that other potential species may have still been in preimaginal stages. Therefore, the author specifically examined the roots and root collars of dead, low-growing plants. During this investigation, a 2 cm long larva (L_3) (Fig. 2c) was discovered in the root collar of a dead *Caroxylon cyclophyllum* (Baker, 1894) [= *Salsola cyclophylla* Baker, 1894] **(**Chenopodiaceae) plant (Fig. 2a). This larva belonged to an initially unknown

Fig. 1. Habitat of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 at the Ra´s al-Khaimah site.

Fig. 2a-e. 2a- Dead host plant *Caroxylon cyclophyllum* (Baker, 1894) of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 at the Ra´s al-Khaimah locality; 2b- Larval gallery of a larva of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 at the Ra´s al-Khaimah locality; 2c- Larva (L_3) of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923; 2d- Opened pupal chamber of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 at the Ra´s al-Khaimah locality; 2e- Exit hole of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 at the Ra´s al-Khaimah locality.


2c


2d


2e

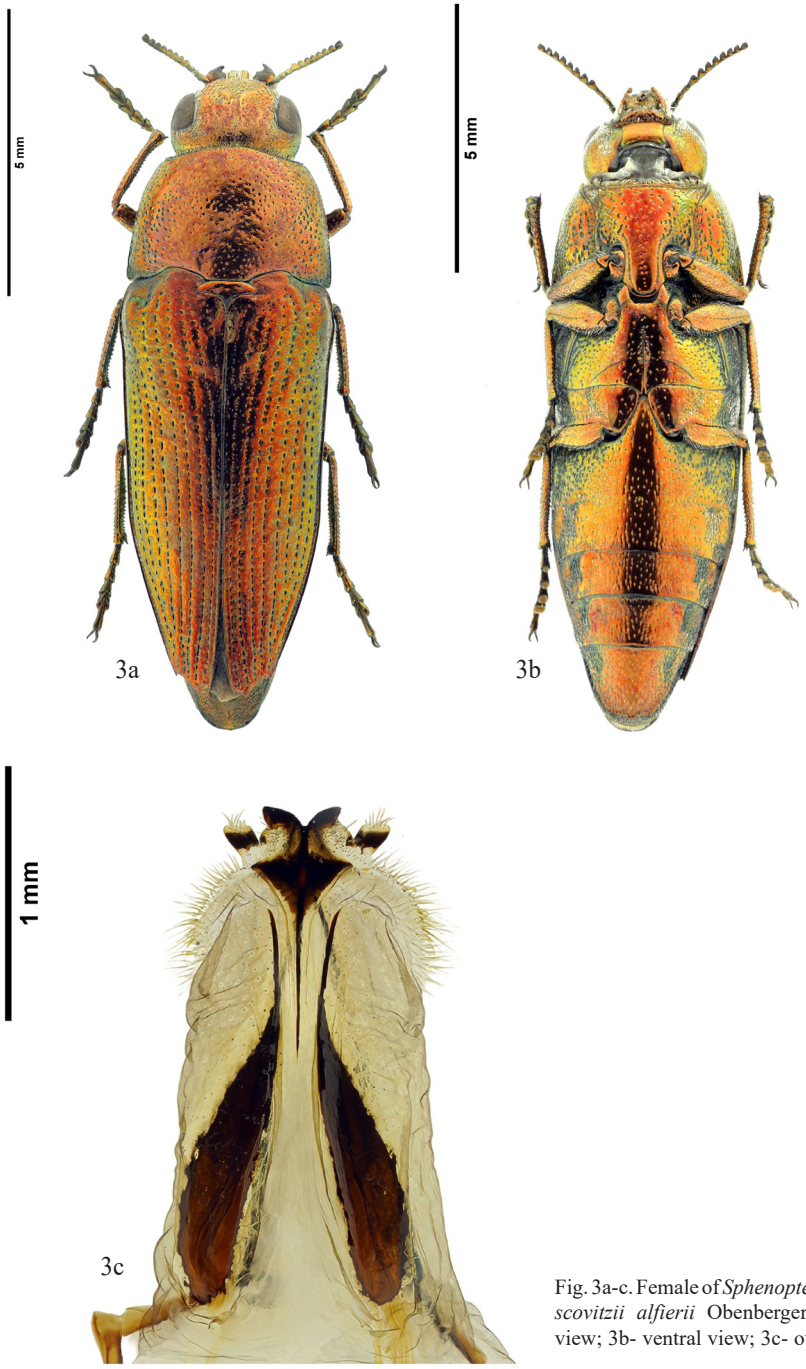

Fig. 3a-c. Female of *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923: 3a- dorsal view; 3b- ventral view; 3c- ovipositor.

Buprestid species. It was collected and transferred to a plastic container for rearing. On May 2, 2025, a female *Sphenoptera* species emerged from this larva, which was confidently identified as *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 (Fig. 3a-c).

Sphenoptera (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 was originally described by Obenberger (1923) from Egypt (Meadi). According to Bílý et al. (2011), the species is distributed in Algeria, Egypt (including Sinai), Israel, Saudi Arabia, Syria, and the UAE. Bílý et al. (2011) first reported *Sphenoptera* (*Chrysoblemma*) *scovitzii alfierii* Obenberger, 1923 from the UAE, from two locations (Um al-Quwain, Ajman industrial) along the western coast of the Arabian Peninsula. A new location in Ra´s al-Khaimah, situated to the north of these sites, extends the known distribution of the species in the northern part of the UAE. The species now appears to be present along coastal areas in the northwestern part of the UAE.

The life history of *S.* (*C.*) *scovitzii alfierii* had previously been poorly documented. This study provides the first detailed account of the development and biology of this subspecies in the northern part of the United Arab Emirates. The nominotypical subspecies *Sphenoptera* (*Chrysoblemma*) *scovitzii scovitzii* (Faldermann, 1835) feeds on the roots of *Caroxylon turkestanicum* (Litv.) Akhani & Roalson [= *Caroxylon* [= *Salsola*] *leptoclada* Gand.] and *Climacoptera turcomanica* (Litv.) Botsch. (Chenopodiaceae) (Volkovitsh 2004, Korotyaev et al. 2005).

For the first time, a host plant for *S.* (*C.*) *scovitzii alfierii* was documented through the rearing of a larva. Additionally, the larval gallery (Fig. 2b), pupal chamber (Fig. 2d), and exit hole (Fig. 2e) of the species were documented. The development from pupal stage to adult emergence lasted approximately four weeks. Notably, the larvae of *S.* (*C.*) *scovitzii alfierii,* just like those of the nominotypical subspecies cause gall-like swellings at the lower end of the roots of their host plants. As they develop, the larvae tunnel upward through the stem from the root area. Pupation and adult emergence occur in the stem. These findings suggest that the subspecies is at least partially adapted to halophytic species of Chenopodiaceae. Based on its known distribution, it appears that the species is associated with dry, hot, and salt-rich coastal habitats that provide suitable host plants.

The discovery of a female specimen also enabled the first photographic documentation of the ovipositor of this subspecies (Fig. 3c).

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