

First record of the African powder post beetle, *Lyctus africanus* Lesne 1907 (Insecta: Coleoptera: Bostrichidae: Lyctinae), from Jordan

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Received: June, 1, 2023; Revised: June, 14, 2023; Accepted: June, 24, 2023

Abstract: The African powder post beetle, *Lyctus africanus* Lesne 1907 is recorded from Jordan for the first time. Specimens were collected from infested wood in Jordan Valley near the Dead Sea. The distribution and available data about this beetle are given.

Keywords: New records, wood packing, wood inspection, *Lyctus africanus*.

Introduction

Beetles of the family Bostrichidae are about 570 species in 90 genera often named as powder post beetles because of their ability to reduce wood or bamboo to a thin external shell covering the frass produced by the boring activities of the adults and larvae (Beaver *et al.*, 2011, Zhang 2011). Records of the bostrichid fauna of the Middle East are rare, only Iran (Damoiseau 1969; Liu *et al.*, 2016) and Palestine (Halperin & Damoiseau 1980; Halperin & Geis 1999; Chikatunov *et al.*, 2006) have been well studied. The subfamily Lyctinae (previously treated as family Lyctidae) have about 70 species in 12 genera worldwide. The powder post beetles are slender and uniformly colored brown to black, and 2-7 mm long. The head is prominent from above, and the antennae have a two-segmented club. (Norman and Triplehorn 2005) The genus *Lyctus* Fabricius, 1792 is the largest of the subfamily with 25 species worldwide (Borowski 2007). *Lyctus* species may completely destroy wooden furniture, beams, tool handles, and hardwood floors. They live beneath the surface for months, and timbers from which the adults have emerged appear with tiny holes. Painted or varnished wood is not attacked (Norman and Triplehorn 2005).

Lyctus africanus was first described by Lesne in 1907 from Africa. Gerberg (1957) revised the New World Lyctidae, provided an illustrated and detailed description of *L. africanus*, and listed two synonyms of *L. africanus*: *L. politus* Kraus, 1911, and *L. spinifrons* Stebb, 1914. *Lyctus africanus* was previously recorded from Palestine, Pakistan, Turkey; India, Nepal (Liu & Beaver 2018), Papua New Guinea (Liu 2010), and Thailand (Beaver *et al.*, 2011). *Lyctus africanus* is considered a pan-tropical species expected to become a cosmopolitan species, including, Madagascar, USA, and Northern Territory in Australia (Gerberg 1957). Gardner (1933) recovered *L. africanus* and described its larva from bamboo, *Bambosa* sp. (Poaceae). More than 85 hosts were listed from India (Beeson & Bhatia 1937). It was recorded from Liquorice (*Glycyrrhiza glabra*) (Leguminosae) and other dry roots (Gerberg 1957 and Cymorek 1961). Iwata (1982) recorded this species from *Morus alba* (Moraceae) in Japan.

Halperin & Geis (1999) recorded seven species of Lyctinae (including *L. africanus*) from Palestine and Sinai and discussed their damage and prevention. Only one species from Lyctinae was previously recorded from Jordan, *Acantholyctus cornifrons* (Lesne) (Liu and Geis 2019).

The objectives of this paper are to officially record *L. africanus* from Jordan for the first time, and to provide available data about its biology and distribution.

Materials and Methods

The powder post beetles were collected by the second author from a hotel east of the Dead Sea in the Jordan Valley. The hotel had

many wooden structures and decorations from which woody powder was falling down on many places causing annoyance to the hotel staff and visitors. The wood was badly affected and turned into powder (Figure 1A). Powder post beetles and pieces of damaged wood were taken to the University of Jordan for Identification by the first author. The beetles were identified

using the key of Liu and Geis (2019), and then the identification was confirmed by checking the original description of Lesne (1907), the detailed description of Gerberg (1957), and by comparing our specimens to the paratype color photos of *L. africanus* provided by the Types Virtual Collections, in the Royal Belgian Institute of Natural Sciences. Digital images were taken by a 65

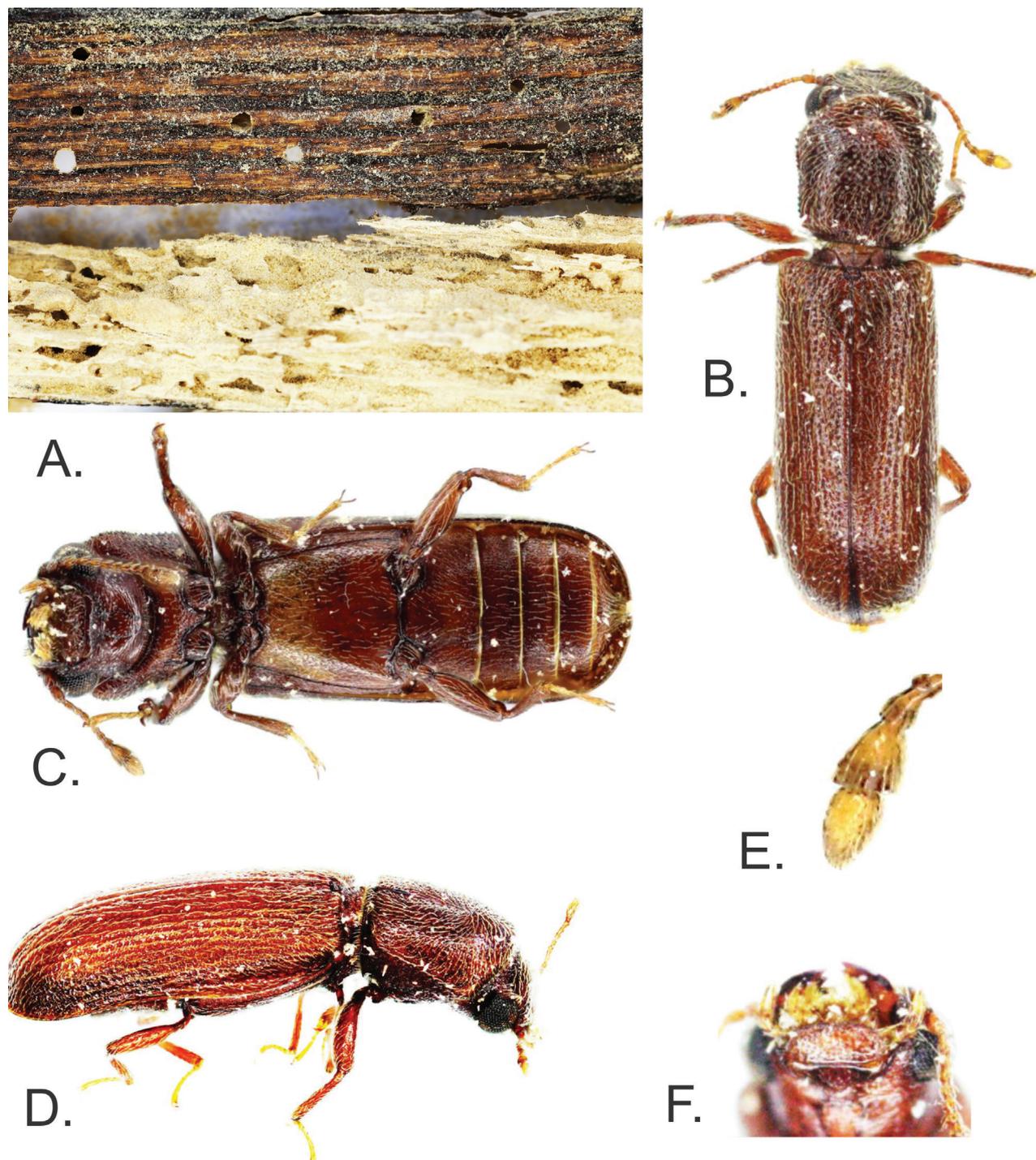


Figure 1. A. Symptoms of infested wood (above, outside symptoms; below, inside symptoms). B. Dorsal view of *Lyctus africanus*. C. Ventral view. D. lateral view. E. Antennal club. F. Head and mandibles.

mm macro lens mounted on a Canon (Tokyo, Japan) 5D Mark IV camera with continuous LED ring light. Several images were taken at different focusing distances, and then they were stacked using Helicon Focus software and processed by Adobe Photoshop as needed. Voucher specimens of the collected samples were preserved in the University of Jordan Insect Museum.

Results and Discussion

Lyctus africanus Lesne 1907 is recorded from Jordan for the first time. This species most probably entered Jordan in wood imported from India. The hotel administration mentioned that infested wooden structures at the hotel were imported from India in which the species is well known to occur. However, another possibility, but less likely, is that the pest could have come from Palestine. Halperin & Geis (1999) recorded the following seven species of Lyctinae from Palestine and Sinai and discussed their damage and prevention: *Lyctus linearis* (Goeze) and *L. planicollis* Le Conte; *L. africanus* Lesne; *L. brunneus* (Stephens); *L. parallelcollis* Blackburn; *Minthea rugicollis* Walker; *Trogoxylon impression* (Comolli); and *Acantholyctus comifrons* Lesne. Two of these species are found in both countries (*L. africanus* and *Acantholyctus comifrons*). The other five species may eventually be found in Jordan.

L. africanus (Figures 1B-F) resembles *brunneus* (Steph.), from which it is differentiated by the contiguous, continuous, unelevated lateral lobes of the postclypeus and frontal lobes. The female can be distinguished by the heavy fringe of hairs on the distal margin of the fourth sternite, which is lacking in the latter species. *L. africanus* is smaller than *brunneus*.

Fourteen species of *Lyctus* have Eurasian distribution. *Lyctus brunneus* is cosmopolitan and *L. africanus* is pan-tropical. The origin of the Eurasian species is difficult to determine because their original distribution was greatly changed by international trade (Liu and Geis 2019).

Powder post beetles are frequently

intercepted in wood packaging. Several species are highly polyphagous (Booth *et al.*, 1990). Many powder post beetles can attack treated wood such as wooden packing materials after treatment. Therefore, their presence does not necessarily indicate that the treatment was not effective (Haack *et al.*, 2014). Powder post beetles are among the major pests of wooden packing materials shipped to the EU mainly from India and China. *Lyctus* species are considered the most abundant invasive pests in the Bostrichidae. Interceptions of species of Lyctinae have increased rapidly in the EU since 2009 (Eyre *et al.*, 2018). As wooden packing materials continue to be used in international trade and as long as the global warming continues, increasing changes in the powder post beetle's fauna of the subfamily Lyctinae are expected in the Eurasian area (Liu and Geis 2019).

Conclusion

After recording *L. africanus* Lesne 1907 from Jordan for the first time, only two species of Lyctinae are known to occur in Jordan so far. This proves that species of subfamily Lyctinae as well as the family Bostrichidae need investigation in Jordan. Plant protection authorities in Jordan should pay special attention to Lyctine species that may enter the country and should alert workers at trade ports to carefully inspect wooden packaging materials used in shipments entering Jordan.

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