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Notes on a small collection of Lucanidae from northern Papua New Guinea

(Insecta, Coleoptera)

By Trevor J. Hawkeswood and Hugues E. Bomans

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An annotated list is provided for 5 genera and 9 species of Lucanidae (Coleoptera) collected from the Passam area, East Sepik Province, Papua New Guinea during 1989. The species collected are: *Cyclommatus gestroi* Nagel, *Figulus excavatus* Bomans, *F. incertus* Bomans, *F. nitidulus* Gestro, *F. papuanus* Gestro, *F. weinreichi* Bomans, *Gnaphaloryx opacus* Burmeister, *Metopodontus bison* (Olivier) and *Serrognathus pilosipes* (Waterhouse). Information on biology and/or distribution is reviewed for each species. The rubber tree, *Hevea brasiliensis* (Willd. ex A. Juss.) M. A. (Euphorbiaceae), is a newly recorded host plant for *Figulus excavatus*, *F. incertus*, *F. nitidulus*, *F. papuanus*, *Metopodontus bison* and *Serrognathus pilosipes*; *Macaranga quadriglandulosa* Warb. (Euphorbiaceae) for *Serrognathus pilosipes*; *Citrus grandis* Osbeck (Rutaceae) for *Gnaphaloryx opacus* and *Spathodea campanulata* Beauv. (Bignoniaceae) for *Metopodontus bison*. The Lucanidae of the Passam region are partial to the dead wood of tree species from the families Bignoniaceae and Rutaceae and in particular, Euphorbiaceae – all of these families contain plants with mucilaginous sap or latex which are rich in sugars and nutrients. It is most likely for this reason that the Lucanidae are most commonly encountered in fallen logs belonging to these plants.

Trevor J. Hawkeswood, 49 Venner Road, Annerley, 4103 Brisbane, Queensland, Australia.

Hugues E. Bomans, “Les Grandes Murailles”, Route d’Aleyrac, 26770 Taulignan, France.

Introduction

During a 9-month stay in northern Papua New Guinea during 1989, collections of Coleoptera were made by the senior author. Generally, collecting was difficult due to very bad weather and inaccessibility to suitable collecting areas due to rugged terrain, hostile inhabitants and the lack of roads and walking tracks for access. However, despite these problems, a small quantity of Lucanidae were obtained and is described in the annotated list below.

Materials and Methods

Study area

The collection of Lucanidae and other Coleoptera were undertaken in and around the township of Passam, East Sepik Province (3°48'S, 143°35'E). The region receives an average monthly rainfall ranging from 130–225 mm, and maximum daily temperatures range from 29°C to 35°C, while minimum daily temperatures range from 18°C to 22°C throughout the year. The humidity of the Passam area remains high all the year round, ranging from 70% to 95%. There is higher humidity during December to April which corresponds to larger amounts of cloud cover, which varies from 65% to 92%. The average altitude of the area is 360 metres. The vegetation is lowland rainforest with over 200 tree species and numerous vines and ferns; there are also integrated plantations and gardens of tropical crop species such as coconut, taro, papaw, rubber trees, etc.

Collection of beetles

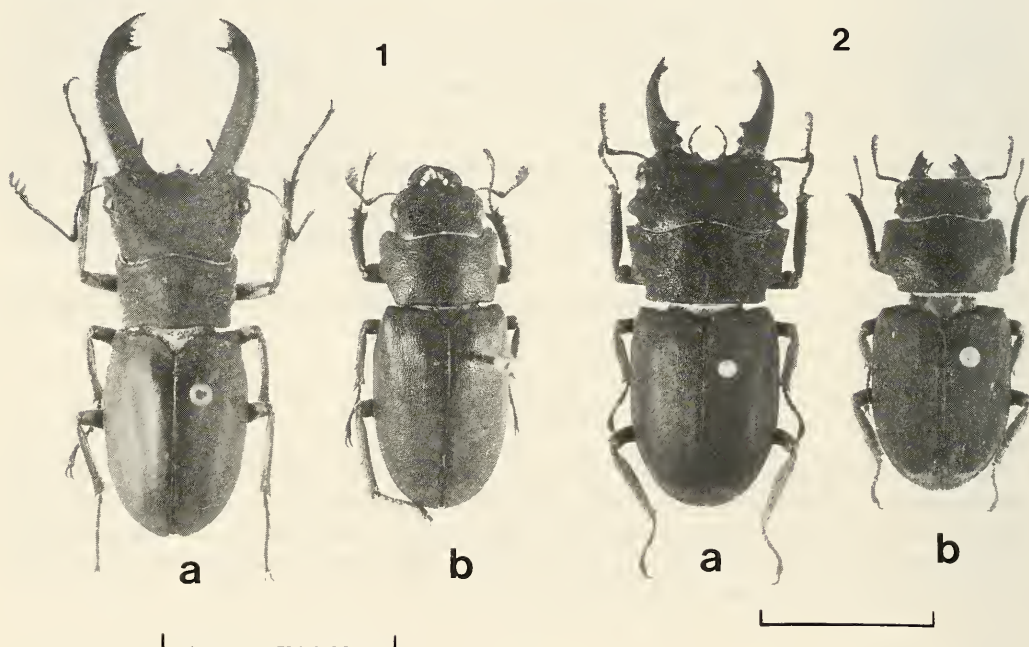
Random and opportunistic collecting was undertaken from March to December 1989 whenever the weather permitted. Beetles were collected either from house lights at night or logs etc. in the rainforest and adjoining areas. The rotten logs were systematically cut open with bush knives and the decayed wood material carefully sifted. Only logs of a small number of tree species appeared to be utilized by the tropical Lucanidae in the area. All of the specimens listed in this paper have been deposited in the collection of the junior author, Dr. H. Bomans.

Annotated List of Species

Cyclommatus gestroi Nagel

(Figs 1 a, b)

Material: 1 ♂, Passam, 15 Sept. 1989, TJH, attracted to house lights at night; 1 ♀, Passam, 11 Sept. 1989, TJH, captured alongside a dirt road at night.



Figs 1 & 2.— 1. *Cyclommatus gestroi* Nagel. 1 a. ♂, Passam, 15 Sept. 1989. 1 b. ♀, Passam, 11 Sept. 1989. 2. *Gnaphaloryx opacus* Burmeister. 2 a. ♂, Passam, 3 April 1989. 2 b. ♀ (Scale lines = 15 mm).

Comments: This species was previously known only from the Fly River (Western Province, PNG) (Nagel 1931, de Lisle 1980) but some identified specimens from Wau, Morobe Province are in the collection of the Smithsonian Institution, Washington, USA (Bomans, unpub. data) and therefore considerably extend the known range of the beetle. The collections from Passam noted above also extend the known distribution about 500 km north-west from Wau, Morobe Province.

Figulus excavatus Bomans

Material: 2, (sex not determined), Passam, 14 Mar. 1989, TJH, collected from under the bark of a fallen *Hevea brasiliensis* (Willd. ex A. Juss.) M. A. (Euphorbiaceae) trunk, measuring about 14–18 cm in diameter.

Comments: Previously known from only 4 specimens, one of which, the holotype of the species, was collected on the Managalase Plateau, Northern Province, PNG, Nov. 1972, by R. Hornabrook (Bomans 1986 b, 1988). Since then the following specimens have been noted in some European and United States museums by one of us (H. E. B.): 2 ex., Wau, Morobe Province, and 1 ex., Port Moresby, Central Province (both in coll. of Minet, Paris); 1 ex., Jawarere, Central Province, 12 April 1918 (in coll. of the Field Museum of Natural History, Chicago, USA); 1 ex., south-east New Guinea, Feb. 1893 (in coll. of the Museo Civico di Storia Naturale di Genova, Italia). The collections from Passam therefore extend the known range of the beetle north-west from Wau by about 500 km. *Hevea brasiliensis* is the first published host plant for *F. excavatus*.

Figulus incertus Bomans

Material: 1 ♂ + 1 ♀, Passam, 29 Mar. 1989, TJH, collected from the dead rotten wood of a fallen log (12–13 cm in diameter) of *Hevea brasiliensis* (Euphorbiaceae).

Comments: Previously only known from one specimen collected from Redscar Bay, (9°7'S, 146°43'E), Central Province, PNG (Bomans 1987). The collections from Passam extend the known distribution of the species by approx. 780 km. *Hevea brasiliensis* is the first published host plant for *F. incertus*.

Figulus nitidulus Gestro

Material: 2, (sex not determined), Passam, 14 Aug. 1989, TJH, from a dead, rotten log (14 cm in diameter) of *Hevea brasiliensis* (Euphorbiaceae).

Comments: Gestro (1881) described this species from the Fly River, Western Province, PNG. One of us (H. E. B.) has noted the following material in museums in Europe and the United States, which add to the known distribution of the species: – 2 ex., Wau, Morobe Province, 14 Sept. 1961, J. Sedlacek (in coll. of J. Sedlacek); 1 ex., Mussau Island, Bismarck Archipelago, New Ireland Province (in coll. of Minet, Paris); 1 ex., Dobodura (near Popondetta), Northern Province, Mar.-July 1944, Darlington (in coll. of Field Museum of Natural History, Chicago, USA). The collection from Passam noted above extends the known distribution of the beetle about 500 km north-west from Wau, Morobe Province. *Hevea brasiliensis* is the first published host plant for *F. nitidulus*.

Figulus papuanus Gestro

Material: 1 ♂, Passam, 20 Mar. 1989, TJH, collected from a dead, rotten log (22 cm in diameter) of *Hevea brasiliensis* (Euphorbiaceae).

Comments: Although Gestro (1881) first described this species from the Fly River, Western Province, PNG, the species is now known to be widely distributed from northern Irian Jaya to north, north-eastern and eastern PNG, including East and West New Britain Provinces. Bomans (1988) listed specimens from Kassem Pass, Eastern Highlands Province and the Golgol River, Madang, Madang Province, PNG. *Hevea brasiliensis* is the first published host plant for *F. papuanus*.

Figulus weinreichi Bomans

Material: 1, (sex not determined), Passam, 21 Oct. 1989, TJH, attracted to house lights at night.

Comments: This species has been recorded previously only from Kaiapit, (6°15'S, 146°15'E), Morobe Province, PNG (Bomans 1986 a). Thus the record from Passam extends the known distribution of this species some 440 km to the north-west of Kaiapit.

Gnaphaloryx opacus Burmeister

(Figs 2 a, b)

Material: 1 ♂, Passam, 3 April 1989, TJH, collected from an old, abandoned borehole/pupal chamber (14 mm in diameter) of a cerambycid beetle in the dead trunk of a *Citrus grandis* Osbeck tree (Rutaceae).

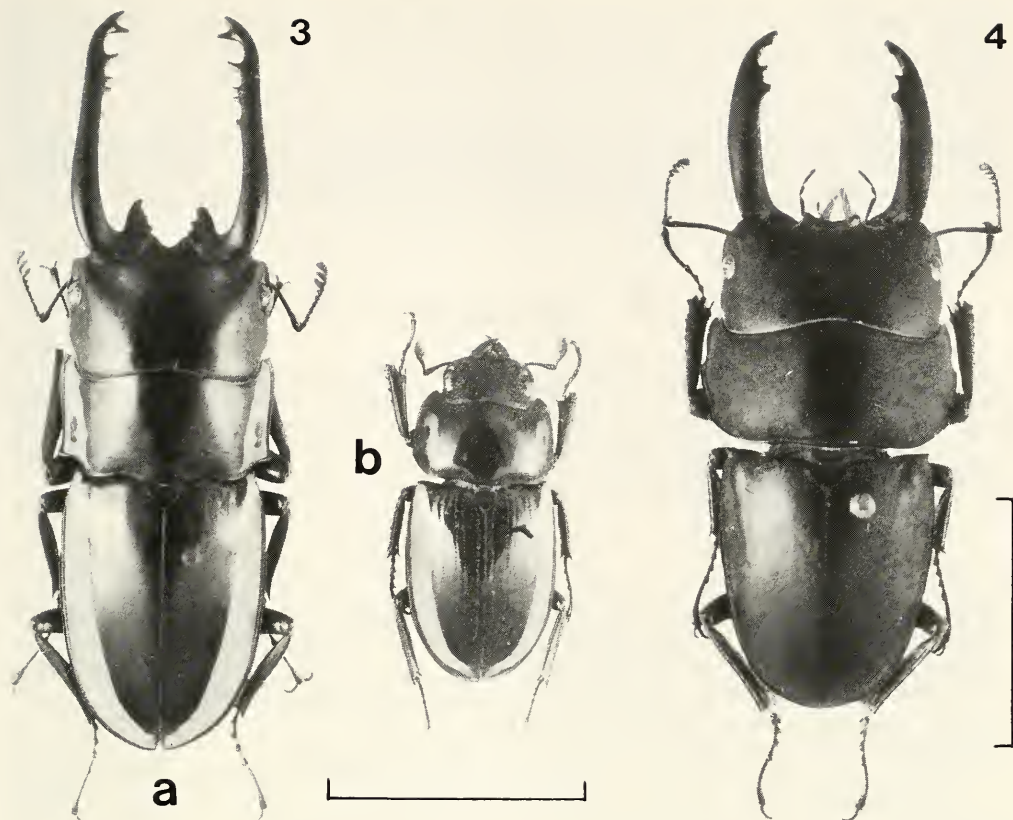
Comments: It is most probable that the adult was emerging from its host wood accidentally through the abandoned cerambycid chamber. This is a rarely recorded species and no other host plants are known.

Metopodontus bison (Olivier)

(Figs 3 a, b)

Material: 1 ♂ + 1 ♀, Passam, 2 April 1989, TJH, collected from the base of a dead, fallen tree (28–30 cm in diameter) of *Hevea brasiliensis* (Euphorbiaceae); pupal chamber of male measured 62 mm long, 28 mm wide and 21 mm high; that of the female measured 36 mm long, 18 mm wide and 15 mm high; 1 ♂ + 1 ♀, Passam, 12 May 1989, TJH, from the dead rotten tree base (ca. 45 cm in diameter) of *Hevea brasiliensis* (Euphorbiaceae); 1 ♂, near Passam, 23 June 1989, TJH, from a dead log of *Spathodea campanulata* Beauv. (Bignoniaceae); 1 ♂, near Passam, 2 Sept. 1989, TJH, attracted to house lights at night; 1 ♀, Passam, 5 Sept. 1989, TJH, found dead in a pupal chamber in a fallen log of *Hevea brasiliensis* (Euphorbiaceae), (pupal cell measured 32 mm long, 17 mm wide and 14 mm high).

Comments: This is a common and widespread species in the South-East Asian region (Bomans 1971). *Hevea* and *Spathodea* have not been recorded previously as host plants for this beetle. Froggatt (1936 a, b) and Froggatt & O'Connor (1940) noted that this species fed on the male inflorescences of coconut, *Cocos nucifera* L. (Arecaceae) in Papua New Guinea and the Solomon Islands and that it occasionally damaged the female flower buds but there appear to be no recent reports of this phenomenon.



Figs 3 & 4.— 3. *Metopodontus bison* (Olivier). 3 a. ♂, Passam, 2 April 1989. 3 b. ♀, Passam, 2 April 1989. (Scale line = 25 mm). 4. *Serrognathus pilosipes* (Waterhouse). ♂ Passam, 10 Aug. 1989. (Scale line = 10 mm).

Serrognathus pilosipes (Waterhouse)
(Fig. 4)

Material: 1 ♀, Passam, 5 April 1989, TJH, collected from a pupal chamber in the dead, rotten trunk of *Hevea brasiliensis* (Euphorbiaceae) (pupal cell measured 25 mm long, 16 mm high and 17 mm wide and was surrounded by large amounts of chewed wood packed behind and around the beetle); 1 ♀, Passam, 7 May 1989, TJH, collected from a pupal chamber in a dead, fallen log of *Hevea brasiliensis* (Euphorbiaceae) (pupal cell measured 28 mm long, 17 mm wide and 14 mm high); 1 ♂ + 1 ♀, Passam, 10 Aug. 1989, TJH & H. Kalambe, collected from the dead, partially rotted portion of a trunk (8–12 cm in diameter) of a living tree of *Macaranga quadriglandulosa* Warb. (Euphorbiaceae) – the dead portion was situated near and around the intersection of a major branch and the trunk; 1 ♀, Passam, 11 Oct. 1989, TJH, attracted to house lights at night.

Comments: This species has been recorded previously from the Solomon Islands (Waterhouse 1883, Froggatt 1911, de Lisle 1972) and appears to be very widespread in the Papua New Guinea region. Froggatt (1911: 10, 12) recorded this species (listed by Froggatt as *Eurytrachelus pilosipes* Waterhouse) as a very serious pest of coconuts (*Cocos nucifera* L.) in the plantations of the Solomon Islands where it was responsible for a great deal of damage to the young coconut palms by boring

into the stems under the shelter of the base of the leafstalks. Froggatt (1911: 10, 12) further noted: "Upon some of the smaller islands of the Russell Group, where clearing and burning off of the natural forest was going on, and probably their natural food was being destroyed in a wholesale manner, the natives were paid in tobacco for all the beetles they brought in, and over 3,000 were collected and brought in during the month of May on the Island of Ufa. I was told that the natives found many of them early in the morning upon the Papaw trees [*Carica papaya* L.].". *Hevea brasiliensis* and *Macaranga quadriglandulosa* have not been recorded previously as host plants for *S. pilosipes*.

Acknowledgements

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Autor(en)/Author(s): Hawkeswood Trevor J., Bomans Hugues E.

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