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Biological notes and host plants of some Papua New Guinean longicorn beetles (Insecta: Coleoptera: Cerambycidae)

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Abstract: Biological and distributional notes are provided on ten species of longicorn beetles (Coleoptera: Cerambycidae) from Papua New Guinea based on observations and collections by the first author in 1989. New larval host plant records are presented for *Dihammus fasciatus fasciatus* (Montrouzier), *Parapepeotes togatus* (Perroud), *Platycranium pustulosum* (Pascoe) (viz. *Ficus* spec., Moraceae) and *Chlorophorus austerus* (Chevrolat), *Dihammus australis* (Boisduval) and *Eczemotes granulosus* (Guérin-Méneville) [viz. *Hevea brasiliensis* (Willd. ex A. Juss.) Muell. Arg., Euphorbiaceae]. Both plant species have nutritious sweet sap in their stems and branches which act as beetle attractants. Other observations and distributional notes are provided for *Archetypus fulvipennis* (Pascoe), *Xylotrechus* sp. near *X. buqueti* (Laporte & Gory), *Oxymagis horni* (Heller) and *Trigonoptera spilonota spilonota* (Gestro). Brief comments are also made on *Olethrius tyrannus* Thomson and *Xixuthrus microcerus axis* Thomson.

Zusammenfassung: Für zehn Bockkäfer-Arten (Coleoptera: Cerambycidae) werden Angaben zur Biologie und Verbreitung gemacht, die auf Beobachtungen und Aufsammlungen von T. J. Hawkeswood aus dem Jahre 1989 beruhen. Neue Wirtspflanzen für die Larven von *Dihammus fasciatus fasciatus* (Montrouzier), *Parapepeotes togatus* (Perroud), *Platycranium pustulosum* (Pascoe) [nämlich *Ficus* sp., Moraceae] und von *Chlorophorus austerus* (Chevrolat), *Dihammus australis* (Boisduval) und *Eczemotes granulosus* (Guérin-Méneville) [nämlich *Hevea brasiliensis* (Willd. ex A. Juss.) Muell. Arg., Euphorbiaceae] werden vorgestellt. Beide Pflanzenarten haben nahrhaften süßen Saft in ihren Stämmen und Zweigen, der als Lockstoff auf Käfer wirkt. Mitgeteilt werden Beobachtungen und Bemerkungen zur Verbreitung von *Archetypus fulvipennis* (Pascoe), *Xylotrechus* sp. near *X. buqueti* (Laporte & Gory), *Oxymagis horni* (Heller) und *Trigonoptera spilonota spilonota* (Gestro). Kurze Anmerkungen werden auch über *Olethrius tyrannus* Thomson und *Xixuthrus microcerus axis* Thomson gemacht.

Introduction

During 1989, the first author made some extensive collections and biological field observations on longicorn beetles (Coleoptera: Cerambycidae) in the Passam area, East Sepik Province, Papua New Guinea (3° 48′ S, 143° 35′ E). This is the fourth paper to be presented as a result of this research, the previous three being detailed observations on the biology, host plants and behaviour of *Ceresium pachymerum* (Pascoe) (HAWKESWOOD & DAUBER 1990), *Dihammus tincturatus* Pascoe (HAWKESWOOD 1990) and *Gnoma boisduvali* Plavilstshikov (HAWKESWOOD & DAUBER 1992). Data on biology, host plants and distribution of ten additional species of Cerambycidae from Papua New Guinea are recorded here for the first time. Specimens are housed in the collections of the authors.

Results

Subfamily Prioninae
Tribe Macrotomini
Archetypus fulvipennis (Pascoe)

Material collected: 1 adult, Passam, 12 April 1989, T. J. Hawkeswood, attracted to fluorescent lights at night; 1 adult, near Passam, 10 July 1989, T. J. Hawkeswood, attracted to fluorescent lights at night.

Comments: GRESSITT (1951a) first recorded this species from Guadalcanal, Solomon Islands and later, GRESSITT (1959) recorded this species from a number of localities ranging from Aru (the type locality, PASCOE 1859) and Irian Jaya to the Solomon Islands. MCKEOWN (1947) also recorded the species from Queensland, Australia. Although the species has not been recorded previously from the Passam area nor from anywhere else in the East Sepik Province, this region is still within the known broad range of the species. Its nocturnal habits are typical for a prionine. The larval host plants are unknown and it is not known whether or not the adults feed. ILLIDGE (1924) recorded *Auracaria cunninghamii* Ait. ex D. Don (Araucariaceae) as a larval host plant for the related Australian species, *A. frenchi* (Blackburn) from north Queensland (HAWKESWOOD 1992). Since *Araucaria* is a genus well represented in Papua New Guinea, it is probable that *A. fulvipennis* will also be found to breed in *Araucaria.* [It is interesting to note that PASCOE (1859) briefly noted this species was only one of two prionine species collected by the famous biologist A. R. Wallace on the islands of Aru, indicating the rarity of this group in New Guinea; two other species of prionine were collected for me (T. J. H.) by some members of the indigenous population in New Guinea, namely *Olethrius tyrannus* Thomson and *Xixuthrus microcerus axis* Thomson, but these two species are not listed here as I did not collected them personally and was thus unsure of the dates and ecological data associated with them; however, I am certain that both were collected at night, possibly attracted to lights around buildings].

Subfamily Cerambycinae
Tribe Clytini
Chlorophorus austerus (Chevrolat)

Material collected: 1 adult, Passam, 23 Aug. 1989, T. J. Hawkeswood, from the dead wood of *Hevea brasiliensis* (Willd. ex A. Juss.) Muell. Arg. (Euphorbiaceae).

Comments: GRESSITT (1951b, 1959) recorded this species from a wide range of localities in Papua New Guinea and Irian Jaya but did not provide any biological details. The host plant record of *Hevea brasiliensis* in the Passam area is the first published larval host record for the beetle. There appear to be no other published biological information for *C. austerus*.

Xylotrechus sp. near *X. buqueti* (Laporte & Gory)

Material examined: 2 adults, Passam, 4 April 1989, T. J. Hawkeswood, found mating on a fallen log of *Citrus grandis* Osbeck (Rutaceae); 1 adult, Passam, 15 April 1989, T. J. Hawkeswood, on a branch of *C. grandis* Osbeck (Rutaceae).

Comments: *Xylotrechus buqueti* was originally described from Java but has not as yet appeared to have been recorded previously from Papua New Guinea (GRESSITT 1951b, 1959). The material mentioned above is very closely related to *X. buqueti* and differs only in the position of the elytral bands. The material may represent an undescribed species. DAUBER (1995) recorded *X. buqueti* from India, Andaman Islands, Burma, Thailand, Malaysia, Sumatra and Java. At Passam, beetles of *Xylotrechus* sp. were found on dead branches or fallen logs of *Citrus grandis* Osbeck but there was no evidence of the beetles breeding in the wood; they may have been attracted to the thick gum oozing from the branches and trunks of the *Citrus* trees in a similar manner to that described for the sympatric *Gnoma boisduvali* Plavilstshikov (HAWKESWOOD & DAUBER 1992). We are unaware of any published larval host plant records for *X. buqueti*.

Tribe Callidiopini
Oxymagis horni (Heller)

Material collected: 3 adults, Passam, 20 March 1989, T. J. Hawkeswood, attracted to fluorescent lights at night.

Comments: This is a rare species in the Passam area but may become a serious and common pest of *Theobroma cacao* L. (Sterculiaceae) in other areas of the New Guinea Region where this host plant is grown in large plantations (DUFFY 1963; SZENT-IVANY 1961, 1963; FRIEND & MACFARLANE 1974). [It should be noted that GRESSITT (1959) incorrectly synonymised this species with *Oxymagis vitticollis* (Fairmaire)]. This species was originally described by HELLER (1912) from the Gazelle Peninsula, New Britain (now East New Britain Province) as *Megaceresium horni*.

Subfamily Lamiinae
Tribe Monochamini
Dihammus australis (Boisduval)

Material collected: 3 adults, Passam, 26 May 1989, 5 & 23 June 1989, T. J. Hawkeswood, from dead, fallen logs of *Hevea brasiliensis* (Willd. ex A. Juss.) Muell. Arg. (Euphorbiaceae); 2 adults, Passam, 1 & 20 June 1989, T. J. Hawkeswood, from dead branches of *Hevea brasiliensis* (Euporbiaceae); 3 adults, Passam, 1 & 15 Oct. 1989, 1 Nov. 1989, T. J. Hawkeswood, from dead branches of *Hevea brasiliensis* (Euphorbiaceae).

Comments: This is one of the most common cerambycid species in the Passam area and appears to be widespread and common throughout northern Papua New Guinea where it is important in the nutrient recycling ecology of rainforests, attacking large, fallen logs and dead standing trees. SZENIVANY (1961) noted that this beetle was one of a number of Cerambycidae which had invaded cacao plantations (i.e. *Theobroma cacao* L., Sterculiaceae) in Papua New Guinea after the Second World War. DUFFY (1963) noted that the beetle often infested *Theobroma* but ranked it only as a minor pest. DUFFY (1963) also noted that the larval galleries, which in Bubia (Morobe Province) were no longer than 6 inches by $^1/_4$ to $^1/_2$ inch (15.0 cm × 8.0–12.0 mm), ascend for about one-third of their length and then follow the long axis of the tree. GRAY & WYLIE (1974) noted that the species was fairly common in the older Hoop Pine (*Araucaria cunninghamii* Ait. ex D. Don, Araucariaceae) plantations at Bulolo and Wau (both Morobe Province) and stated that the females lay their eggs on the freshly fallen trees or logs and that the resulting larvae cause extensive damage to the logs as they mature. WYLIE & SHANAHAN (1976) noted that seven fire-scorched *A. cunninghamii* trees at Bulolo, Morobe Province, were severely damaged by *D. australis* and that exit holes (measuring 1.0–1.5 cm in diameter) were noticed some 12 months after the fire and that larval tunnelling caused grooves measuring up to 10.0 mm wide and 4.0 mm deep in the outer sapwood, while vertical pupal chambers measuring 6–8 cm long and 1.0–1.5 cm in diameter, were excavated at a depth of approximately 5 cm in the sapwood. In the Passam area, the beetle was found only in the dead fallen trunks or branches of the rubber tree, *Hevea brasiliensis*, but no doubt it attacks the dead/dying wood of other plants in the area. Up to 30 larvae and pupae were collected from 3–5 metre lengths of the host wood by the senior author during April to June 1989. Only a few adults/pupae were present in the wood during May but during July to August, more pupae were found and some of these were bred to adults during October and November. The pupal stage at Passam lasts at least 3 weeks and the new adults emerge through a circular bore hole measuring 12–15 mm in diameter. The damage to the *Hevea brasiliensis* logs and branches at Passam was similar to that recorded by DUFFY (1963) and WYLIE & SHANAHAN (1976). The males of *D. australis* are usually much smaller in body size than the females and have longer antennae. *Hevea brasiliensis* represents a new larval host record for this species. GRESSITT (1952) provided a number of localities for this cerambycid which indicates a wide distribution in the New Guinea region; the present record for Passam is the most north-westerly published record for *D. australis*.

Dihammus fasciatus fasciatus (Montrouzier)

Material collected: 1 adult, Passam, 26 May 1989, T. J. Hawkeswood, from a small dead branch of *Ficus* sp. (Moraceae); 2 adults, Passam, 1 June & 20 June 1989, T. J. Hawkeswood, from dead branches (7–12 cm in diameter) of *Hevea brasiliensis* (Willd. ex A. Juss.) Muell. Arg. (Euphorbiaceae); 2 adults, Passam, 5 June & 23 June 1989, T. J. Hawkeswood, from dead, fallen log of *H. brasiliensis*.

Comments: This very variable species is widely distributed in the Oriental and Pacific regions, being found from northern Papua New Guinea to northern Queensland and Lord Howe Island (Australia) as well as other Pacific Islands (GRESSITT 1952, DUFFY 1963). GRESSITT (1956) noted that the larval host plant in the Micronesian region of the Pacific area was the rainforest tree, *Artocarpus altilis* (Park.) Fosberg (Moraceae), while in Australia, the species has been recorded tentatively as utilising the rainforest tree, *Ficus watkinsiana* F. M. Bail. (Moraceae) (WEBB 1987, HOCKEY & DE BAAR 1988) and an unidentified species of *Ficus* (Moraceae) (HOCKEY & DE BAAR 1988). Our record of the species from the dead wood of *Hevea brasiliensis* (Euphorbiaceae) adds a further new larval host record and appears to be only the second published larval host record for the beetle in Papua New Guinea; however, although (Anonymus 1969) recorded the species from lime trees, *Citrus limonia* Osbeck (Rutaceae), from Popondetta, Northern Province, Papua New Guinea, during February 1967, the identity of the beetles for this record is only tentative at this stage (ANONYMUS 1969) and hence may represent a different species of *Dihammus*. In addition, this record does not state specifically whether the beetles were breeding in the wood of the *Citrus* trees or were simply resting on the branches / foliage when collected.

In addition to the material from Passam listed above, two more adults were observed amongst leaves on a dying branch of a rough-leaved *Ficus* species near Passam on 19 June but the specimens were very wary and active and eluded capture.

The pupal chambers in the wood of *Hevea brasiliensis* from which the pupae / adults were extracted at Passam, varied from 20–26 mm long, 6–8 mm wide and 5–7 mm high, and were usually situated in the sapwood immediately below the inner bark layer.

Dihammus fasciatus is one of the most common cerambycid species in the Passam area and appears to be a dominant longicorn beetle throughout Papua New Guinea and on adjacent islands. It appears to be more common in this region than in Queensland (Hawkeswood, pers. obs.).

Eczemotes granulosus (Guérin-Méneville)

Material collected: 1 adult, Passam, 14 June 1989, T. J. Hawkeswood, collected dead and with fungus attack from pupal cell in fallen log of *Hevea brasiliensis* (Willd. ex Juss.) Muell. Arg. (Euphorbiaceae).

Comments: Little is known of this rare species and nothing appears to have been written on its biology. Thus the larval host record is the first for the species. No other host are known for *Eczemotes* (MCKEOWN 1947, DUFFY 1963).

Parapepeotes togatus (Perroud)

Material collected: 2 adults, Passam, 26 May & 2 June 1989, T. J. Hawkeswood, attracted to lights at night; 1 adult and several mature larvae, Passam, 12 June 1989, T. J. Hawkeswood, cut from fallen log of *Ficus* sp. (Moraceae) in rainforest.

Comments: MCKEOWN (1947) recorded this species (as *Dihammus togatus* Perroud) from Australia only. I have not seen any specimens of this species from Australia and it is possible that the type material originated from New Guinea. On 12 June 1989, I chopped several larvae and one adult from a fallen *Ficus* sp. (Moraceae) log measuring 12–15 cm in diameter, in the tropical rainforest around Passam. The larvae are large, measuring 25–35 mm in length and were situated in chambers measuring 4–11 cm long and 10–15 mm wide mostly about 10–15 mm below the surface of the wood. *Ficus* is the first recorded larval host plant for this distinctive tropical longicorn.

Platycranium pustulosum (Pascoe)

Material collected: 1 adult, Passam, 3 July 1989, T. J. Hawkeswood, bred from pupa in the stem of *Ficus* sp. (Moraceae); 1 adult, Passam, 2 August 1989, T. J. Hawkeswood, from the foliage of *Ficus* sp. (near *Ficus opposita* R.B.) (Moraceae).

Comments: This species was first described (as *Symphyletes pustulosus*) by PASCOE (1864) from Aru and was later described as *Rhytiphora latifasciata* by PASCOE (1875) from north Queensland (Cape York Peninsula) (MCKEOWN 1947). There appear to have been no published biological observations on the species since its original description and it has not been recorded previously from northern New Guinea. The host record is thus the first for the species. Nothing else appears to have written on the biology of the genus *Platycranium* (MCKEOWN 1947, DUFFY 1963).

Tribe Tmesisternini
Trigonoptera spilonota spilonota (Gestro)

Material collected: 1 adult, Passam, 10 June 1989, T. J. Hawkeswood, amongst grass near rubber plantation; 4 adults, near Passam, 9 Sept. 1989, T. J. Hawkeswood, crawling on fallen, dying branches of rubber, *Hevea brasiliensis* (Willd. ex A. Juss.) Muell Arg. (Euphorbiaceae).

Comments: GRESSITT (1984) recorded this species from Irian Jaya, Yapen Island and Papua New Guinea and cited specimens which had been collected from the Torricelli Mountains (West Sepik Province) and Gogol and Baku Station (both in Madang Province). The specimens from Gogol and Baku Island had been collected from the leaves of *Eucalyptus deglupta* Blume (Myrtaceae) (GRESSITT 1984). The specimens collected from near Passam on 9 Sept. 1989, were collected at the margins of an old rubber plantation and tropical hill rainforest (sensu ROBBINS 1968) and were active crawling or resting cryptically on the ends of fallen *Hevea* branches (1–5 cm thick) before capture. They became very active once disturbed and were difficult to catch. It is probable that *Hevea* is a larval host plant for *T. spilonota*, but no evidence was forthcoming despite extensive and intensive dissections of *Hevea* logs and branches in the area over a nine-month period. There appears to be no other biological details recorded in the literature for this beetle.

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