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Ecological data on some neotropical Scolytidae, Platypodidae and Bostrychidae (Coleoptera), mainly of Surinam*) [1])

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When working at the Tropical Institute, Amsterdam (1952—1957), some cases came to my notice of small borers belonging to the *Scolytidae, Platypodidae* and *Bostrychidae* attacking newly felled timber in Surinam and causing the same well-known trouble as in other tropical regions. My interest in the neotropical representatives of these families was further aroused by the material handed to me by my friend J. G. BETREM who had collected it during the two months that he carried on investigations into the status of *Xyleborus morigerus* in coffee plantations near Cali, Colombia, in 1959. This led me to assembling and assorting the material of these families of West Indian origin to be found in the collections of the Leiden and Amsterdam museums. This material was rather scanty and partly unnamed but it still provided some interesting data. Recently Mr. P. H. VAN DOESBURG jr, entomologist at the Landbouwproefstation (Agricultural Experiment Station) at Paramaribo submitted some newly acquired *Scolytidae* which he had collected in the Surinam plantations. They provided some data on the habits and economic status of the little borers additional to those compiled by J. B. M. VAN DINTHER in his book on the Insect pests of cultivated plants in Surinam (1960), in which survey a few species collected by him but not fully identified, were mentioned. At my request I then received for examination the latter specimens kept in the collection of the Entomological Laboratory at Wageningen, and, through the kind cooperation of Dr. D. C. GEYSKES and Mr. VAN DOESBURG, also all the material preserved in the collections of the Surinam Museum and the Experiment Station at Paramaribo. My main interest was directed towards the ecological data and a search was made for information to be found in earlier reports and in the literature

*) Provisions of the UYTTENBOOGAART-ELIASEN STICHTING have facilitated the preparation of this paper.
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of adjacent countries. In this way sufficient relevant data accumulated to warrant the publication of the present paper. For the identification of species unknown to us and the verification of old names I applied to Professor S. L. WOOD, Provo, Utah, U.S.A. on various occasions. A few *Bostrychidae* were identified by the late Professor J. M. VRIJDAGH, Brussels.

SCOLYTIDAE**)

Hypothenemus eruditus Westw. 1834. Two specimens in split peas and one specimen in steamed rice, Paramaribo, 1941/1942, GEYSKES (L. P.).

H. georgiae (Hopk.) 1915. A dozen specimens, bearing the label "Surinam 1925" found among the collections of the R. Tropical Institute, Amsterdam, and now preserved at the Zoological Museum, Amsterdam. WOOD has already listed 24 hosts of this species from the southern states of the U.S.A.. WOLCOTT (1948) mentions the species from mummified guava fruit in Puerto Rico.

H. hampei (Ferr. 1867), the notorious coffeeberry borer, was not found in Surinam until 1951 (SCHEDL 1951, VAN DINTHER 1960). Seven beetles belonging to this species but labelled *Hypothenemus künnemanni* Reitt., taken from Para nuts, *Bertholletia excelsa,* probably imported from Brazil, are in the EVERTS collection of the Leiden Museum. They are dated: Amsterdam, Sept. 1919 and the Hague, June 1927, (VAN ELDIK). EVERTS listed the species in his 1927 paper.

H. setosus (Eichh. 1867). Four specimens ex dry branches of *Theobroma cacao,* Plantage Maasstroom, Surinam, Aug. 1961, VAN DOESBURG (L. P.). Previously recorded from *Mangifera,* under dry bark, Guadelope (EGGERS 1941).

H. obscurus (Fabr. 1801). The following can be added to what VAN DINTHER said about the species. EGGERS' identification of the harmless borer in dry coffee berries, noticed by STAHEL (1925), was published in 1929 after the examination of specimens received through the intermediary of the Tropical Institute, Amsterdam, in 1927. STAHEL had found the little borer breeding in the pulp of black berries of *Coffea liberica* submitted by the Slootwijk Estate. The beetles had mostly penetrated into the berries at the disk. As many as 20 larvae would occur in one fruit. Out of 70 beetles, collected from the material, 6 specimens measuring 1.01—1.30 mm were considered to be males, the rest, 1.31—1.70 mm being females. The percentage of infestation of the black berries from the estate varied from 10—41 for different fields (average 28%, 7500 berries examined). A similar occurrence of the borer in black berries, which are not harvested as a rule, was found in the Experimental Garden at Paramaribo, where percentages were found to be 35 for the Liberia coffee, 22 for Quillo, 18 for Abeocute and 3.5 for Robusta. — EGGERS recorded the same species in 1941 from

**) Annotations such as (L.P.) indicate that the specimens are preserved in certain collections: A.M. = Zoologisch Museum Amsterdam; E.L. = Entomologisch Laboratorium Wageningen; L.M. = Rijksmuseum voor Natuurlijke Historie Leiden; L.P. = Landbouwproefstation, Paramaribo.

dry pods of *Tamarindus* in Guadeloupe. Specimens from Cuba and Curacao in the collection of the Zoological Museum, Amsterdam, are 1.35—1.75 mm in size.

H. gracilis (Egg. 1929), the second harmless borer in black coffee berries (SCHEDL 1951, VAN DINTHER 1960), about 1 mm in size, has also been recorded by EGGERS (1941) from dry *Tamarindus* pods in Guadeloupe and also from galls on a *Clerodendron.*

Cryptocarenus heveae (Hag. 1912). A single specimen ex diseased *Carica papaya,* Febr. 1955, VAN DINTHER (E. L.). This species also occurs in Africa.

Poecilips persicae (Hopk. 1915). A score of specimens, 1.55—1.9 mm, boring in the rind of cacao pods (*Theobroma*), which showed primary infestation by *Phytophthora* blight, Plantage Peperpot, July 1955, VAN DINTHER (L. P.; E. L.). Four specimens, 1.75—1.95 mm in length, sieved from fallen mango leaves, Pinar del Rio, Cuba, May 1933, J. H. MACGILLAVRY (Z. M. A.).

In 1937 specimens of this beetle were found in kernels of *Caryocar nuciferus, Dilleniaceae,* packed in a soldered tin and received at the Tropical Institute, Amsterdam. The species was described as *Poecilips nuciferus* by SCHEDL (1938) but recently (1962 i.l.) was considered by the same author to be identical with *P. sannio* Schauf. The beetles had made irregular galleries in the brown, fleshy seedcoat, the white endospermum being scarcely touched. In fact the trouble caused by this borer was very slight, affecting only 1.5% of the kernels while much more damage had been done by four true stored-products insects (DIAKONOFF 1938). For the explanation of this uncommon occurrence of a *Poecilips* species the following particulars are given. The big fruits of *Caryocar*, 15 cm in diameter, are covered by a thick, tough exocarpium, and fall to the ground when ripening. They contain 1—4 seeds which are separately enclosed in an extremely strong woody mesocarpium, 6—12 mm thick and impenetrable to insects. To collect the edible, fat-containing seeds of 3 cm size, the shell has to be opened with a hammer. It may be presumed that under natural conditions in the forest, the *Poecilips* beetles will bore and live in the thick skin of the fruits. The infestation of the kernels, found in 1937, must have taken place after freshly collected fruits, harbouring *Poecilips* beetles in the exocarpium, had been opened, the shells cracked, and the contents left exposed for some time, before they were put in the tin.

A very large series of *Poecilips* beetles, ranging in size from 1.45—1.8 mm, collected by VAN DER DRIFT 1959 and now in the Zoological Museum, Amsterdam, appear to be identical with the specimens from the cacao pods, but have been identified as *P. sannio* Schauf. by Professor SCHEDL.

Coccotrypes carpophagus (Horn., 1879). A very common species in Surinam, breeding in the kernel of various palm fruits. The Experimental Station at Paramaribo has numerous specimens taken from seeds of *Atrocaryum segregatum* (awara), *A. sciophilum* (boegroemaka), *A. paramaca* (paramaka) and *Elaeis melanoccoa* (obé), June/July 1948, GEYSKES; Nov. 1950 HEYDE. From material presented by DR. GEYSKES to the Tropical

Institute specimens were forwarded for identification to Professor SCHEDL, who gave them the name *C. guyanensis*, in his reply. This remained a nomen nudum as he later described the beetle as *C. surinamensis* n. sp. (1949). In the meantime the first name had already been quoted in a report on investigations in 1948 (SPOON 1949). Professor WOOD considers the species as identical with the common Asiatic borer in palm fruits, like *Areca*, in Asia.

Neodryocoetes hymenaeae Egg. 1933. SCHEDL (1960) mentions the species as taken from *Dolichos lablab*, fam. *Leguminosae*, in Surinam. It has been described from beetles, 1.2—1.6 mm, collected from the pods of *Hymenaea courbaril*, fam. *Caesalpiniaceae*, in French Guyana and Costa Rica. These pods of the 'red locust' have a ligneous skin, they are 12 cm long, 5 cm broad, and do not burst open.

N. carabaeus Blkm. 1942. A few specimens, 1.6—1.9 mm, "uit peul" (= ex pod of leguminous plant), Surinam, 1911, W. C. VAN HEURN (L. M.). Some 50 specimens from locust, *Hymenaea courbaril*, Corantijn River, Wirana Kreek, 1919, DOUGLAS (Z. M. A.).

N. insularis (Egg. 1940) was recorded by BLACKMAN, 1942, as met with by quarantine in the U.S. in seeds of *Euterpe oleracea* (a palm tree) from Dutch Guiana, as well as in seeds of *Brownea* (Leguminosae) from Jamaica. EGGERS described it from specimens from dry pods of *Tamarindus* (Leguminosae) and rotten bananas from Guadeloupe.

Xyleborus (*Ambrosiodmus*) *coffeiceus* SCHEDL 1951 was described from specimens found boring in the stem of diseased *Coffea* on Plantage Jagtlust, April 1939, GEYSKES (L. P., A. M., E. L.).

X. (*A.*) *guatemalensis* Hopk. 1915 was originally found in diseased cacao. BETREM collected a score of specimens from borer-infested *Coffea arabica* in Colombia, 1959 (A. M., L. M.).

Xyleborus affinis EICHH. 1879 (syn. *mascarensis* EICHH. 1879), a widely distributed and somewhat variable species, occurring in the cultivated areas and the forests of Surinam (for synonymy and distribution of the species see SCHEDL 1960 and WOOD 1960). It is well represented in the catches of collectors like UYTTENBOOGAART, 1910, VAN HEURN, 1911, GEYSKES 1948/1950, preserved in the Netherlands museums. Ecological data: A score of specimens taken from pods of *Hymenaea courbaril* which were mainly inhabited by *Neodryocoetes carabaeus*, Corantijn River, Wirana Kreek, 1919, DOUGLAS; two specimens under bark of log of baboen (*Virola surinamensis*), Paramaribo, 1950, GEYSKES (Z. M. A.); four specimens in diseased stem of *Carica papaya*, Botanical Gardens, Paramaribo, Febr./March 1955, VAN DINTHER (L. P.); a single specimen in barked pole of *Triplaris* wood from Surinam, inspected after arrival in the Netherlands, 1957, KALSHOVEN (A. M.); a few specimens taken at lamplight on Plantage Berlijn, N. Commewijne, Aug. 1961, VAN DOESBURG (L. P.). BETREM collected a few specimens from borer-infested *Coffea arabica* in Colombia, 1959 (A. M.). WOLCOTT (1948) gives an extensive list of records in various plants in Puerto Rico. In Indonesia the species has been intercepted by the Plant Quarantine Service

in fruits of the palm tree *Borassus flabelliformis,* introduced from British Guiana, 1923. The Leiden Museum has a few specimens collected by UYTTENBOOGAART "in waren" (in commercial goods) in Rotterdam, Oct. 1908.

X. torquatus EICHH. 1868 (*X. badius* EICHH. 1868), a circumtropical species. Four specimens in the bark of baboen timber, *Virola surinamensis,* Paramaribo, Sept. 1950, GEYSKES (L. P.); a few specimens in a consignment of ambrosia beetles collected from newly felled logs, Surinam, March 1954, ZEEMAN (A. M.); eight specimens taken at light, Plantage Berlijn, N. Commewijne, Aug. 1961, VAN DOESBURG (L. M.).

X. ferrugineus (FABR. 1801), originally described from Cuba, since found distributed all over tropical America and also in Africa. Extensive notes have been published recently on the geographical distribution and synonymy of this species (SCHEDL 1960a, WOOD 1960), and most completely by BROWNE (1962) who also gives new particulars on its habits and an elaboration of records of host-plants. Data from Surinam: Three specimens in a mixed lot of *Scolytids* taken from pods of *Hymenaea courbaril,* Corantijn River, Wirana Kreek, 1919, DOUGLAS (A. M.); seven specimens in stems of diseased or dead *Coffea* tree, Plantage Jagtlust, April 1939, GEYSKES) (one specimen bearing the label in pencil writing '*X subaffinis* EGG.'); same host in the Experimental Garden at Paramaribo, Dec. 1950 (already reported by SCHEDL 1951 under its synonym *X. confusus* EICHH.); four specimens in stems of diseased *Carica papaya,* March 1955, VAN DINTHER (E. L.); five specimens taken at light, Plantage Berlijn, N. Commewijne, Aug. 1961, VAN DOESBURG (L. P.). WOLCOTT (1948) has published several records of the occurrence of the beetle in Puerto Rico.

BETREM's collection of *Scolytidae* from borer-infested *Coffea arabica,* Colombia, contained some 16 specimens. (A. M.)

X. cognatus BLDF., 1896. A single specimen caught at lamp-light, Plantage Berlijn, N. Commewijne, Aug. 1961, VAN DOESBURG.

Xyleborus sp., belonging to the *cuneolus* group, 2.15—2.25 mm. Eleven

FIG. 1. Cross cuts through cacao branches exposing the horizontal galleries of *Xyleborus* sp. group *cuneolus* (× 2). Photo P. H. VAN DOESBURG.

♀ ♀ and two ♂ ♂ extracted from branches of diseased *Theobroma cacao* tree, Plantage Maasstroom, Aug. 1961, VAN DOESBURG. The beetles had made horizontal galleries concentric with the circumference (fig. 1).

X. brasiliensis EGG. 1928. The specimens which EGGERS used for his description had been taken from galleries in the wood of a *Coffea* tree, at Campinas, St. Paulo, Brazil. In the collection of the Experimental Station, Paramaribo, there is a single specimen from stem of *Coffea,* Plantage Jagtlust, April 1939, GEYSKES. BETREM's material of beetles collected from borer-infested *Coffea arabica* in Colombia included some 25 specimens (A. M. L. M.).

X. spathipennis EICHH. 1868. A single specimen taken at light, Coppemane River, Tonckins Falls, Dec. 1943, GEYSKES; another specimen included in the lot of ambrosia beetles found on newly hewn logs, Surinam, March 1954, ZEEMAN; a third specimen among the *Xyleborus* beetles attracted to light trap, Plantage Berlijn, N. Commewijne River, Aug. 1961, VAN DOESBURG.

PLATYPODIDAE

Platypus sp. near *deyrollei* Chap., A few beetles, 5.5—6.0 mm, extracted from their pupal cells in a large balk of Demarara greenheart timber (*Ocotea rubiaei*) from British Guiana, lying in the yard of a timber firm at Amsterdam, March 1957, KALSHOVEN. The position of the pupal cells (see fig. 2) is typical of *Platypus* species.

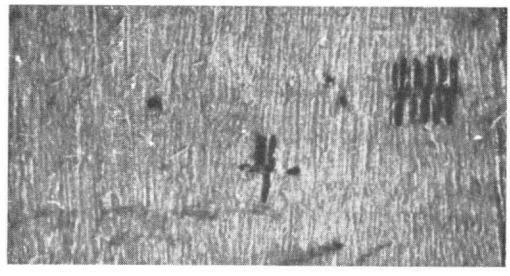

FIG. 2. Pupal cradles of *Platypus* sp. in Demerara greenheart from British Guyana (about natural size). Photo Kon. Instituut v. d. Tropen.

P. linearis STEPH. 1832 (syn. *P. rugulosus* CHAP. etc. see SCHEDL 1960b), apparently a very common neotropical species. It is well represented in the Netherlands museums due to the fact that the beetles, both female and male, are readily attracted by lamp-light, not only in the field but also in built up areas. Data: a few males in possentri, *Hura crepitans,* received by the Tropical Institute, Amsterdam, no date (A. M.); in logs of baboen, *Virola surinamensis,* Paramaribo, June 1958, GEYSKES (L. P.); numerous specimens in newly felled logs, March 1954, ZEEMAN; some 30 specimens from shipment of not fully seasoned, barked poles of *Triplaris surinamensis,* inspected at Amsterdam, April 1957, KALSHOVEN; in basralocus (*Dicorynia guinensis*) Sukosa, June 1961, EGGENBERGER. WOLCOTT (1948) calls the species the most abundant of *Platypus* beetles in Puerto Rico and mentions

its being found on flowers of *Inga vera* — a most unusual occurrence for the beetles of this group — besides its common occurrence in broken limbs of trees and in logs.

P. ratzeburgi CHAP. Two males in the lot of pinhole borers collected on newly felled logs, Surinam, March 1954, ZEEMAN (A. M.). In Puerto Rico the species has been found in logs of *Inga vera* and *I. laurina* (WOLCOTT 1948).

Tessarocerus dejeani CHAP.. A few specimens with the same data for Surinam as the preceding species. Both species have also been caught at lamp-light.

BOSTRYCHIDAE

Lyctus brunneus Steph. Only one species of Surinam timber has been so far reported as susceptible to infestation by this circumtropical powderpost beetle, viz. baboen, *Virola surinamensis*, fam. *Meliaceae*. Most probably it will be encountered more often and in other kinds of timbers too if searched for.

Heterobostrychus aequalis WAT.. This species belongs to the Indomalayan fauna. However, 4 specimens (3 ♀ and 1 ♂) appeared to be preserved in the Paramaribo collection with label 'in possem hout, Aug. 1958, RODENHUIS' (wood of possem = possentri = *Hura crepitans*). The identification was checked by Mr. T. J. SPILMAN of the U.S. National Museum. Dr. D. M. ANDERSON informed me that there are no previous records of the species having been established in South America or in the West Indies. The Museum has two specimens which have been intercepted in St. Lucia, B. W. I., in white pine wood from the United States, but the species is not known to be established in North America. In the Eastern Hemisphere, on the contrary, the beetle has a very wide distribution, from Madagascar to New Caledonia. In these regions it is a common borer in packing cases and plywood. It is clear that the borer may be transported in this way over long distances. Actually it has already been found repeatedly in Australia in timber imported from the Philippine Islands (FROGGATT 1927) and similarly in England in Indian, Malayan and Philippine woods (FISHER 1940). The occurrence of the borer in a native wood in Surinam probably proves that it has already got a foothold in this country. It is a large borer of 7.5—9.5 mm.

Xylopsocus capucinus F. Several specimens in plywood, Paramaribo, Sept. 1950, Jan. 1951 and a single specimen from parquet floor, Paramaribo, May 1957 (L. P.); several specimens in a shipment of barked poles of *Triplaris* from Surinam and inspected in the Amsterdam harbour, Oct. 1957, KALSHOVEN (A. M.); the wood of crates shipped from Surinam found infested with the borer on arrival in the Netherlands, Oct. 1959, KALSHOVEN; three specimens on the wing in the laboratory at Paramaribo, June 1961, VAN DOESBURG (L. P.).

Tetrapriocera longicornis OLIV. Rather abundant and actively boring in a shipment of barked, not fully seasoned poles of *Triplaris* from Surinam, inspected at Amsterdam, Oct. 1957 (KALSHOVEN; A. M.). According to

WOLCOTT (1948) the species is restricted to a xerophytic environment and attracted to light in great numbers.

Micrapate puncticollis KIES. A few specimens among the beetles collected from borer-infested *Coffea arabica,* Colombia, 1959, BETREM (A. M.).

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