Dr. A. Zimmermann's Java Scolytids identified
(Studies on the biology of Indonesian Scolytoidea, Nr. 5)

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A. ZIMMERMANN was a German professor of Phytopathology, who was attached to the staff of the Botanical Gardens in Buitenzorg (Bogor), and placed in charge of investigations on behalf of the coffee cultivation, from 1898—1901.

In 1899 ZIMMERMANN reported on a small twig boring Scolytid — indicated by the old-fashioned name "Bostrychid" — found to be injurious to hybrids of *Coffea arabica* × *C. liberica* in the Governmental Experimental Garden in Bogor in 1898. A rough sketch of the beetle and the galleries was given.

In a paper on the enemies of rubber-producing plants, published in 1901, ZIMMERMANN mentioned a borer — again indicated as a "Bostrychid" — occurring in dying branches of *Hevea brasiliensis,* which had been first infested by the bark-destroying fungus *Corticium salmonicolor.*

In the same year a comprehensive review of the enemies of the coffee plantations in Java was jointly published by J. C. KONINGSBERGER and A. ZIMMERMAN, in which the latter had written chapters on several insect groups, including one on the family of the "Schorskevers" (= bark borers) or *Scolytidae.*

In this chapter a general introduction to the family was given and 4 species were dealt with, viz.:

(1) "De Kleine Koffiebastkever (*Xyleborus fornicatus* Eichh.?" (= The Small Coffee bark borer)
(2) "De Groote Koffiebastkever" (= The Large Coffee Bark-borer)
(3) "De Gewone Dadapbastkever" (= The Common Bark-borer of the dadap tree)
(4) "De Langwerpige Dadapbastkever" (= The Oblong Bark-borer of the Dadap tree)

Several particulars about the morphology of these beetles and their methods of attack were mentioned and simple drawings were given of the legs and antennae of nrs. (2) and (3), the cross-section of a gallery of nr. (2) and the ambrosia fungus of the same species. Moreover, rather indistinct pictures of the beetles (1), (2), and (4) featured on one of the colour plates.

In my "Notes on some early contributions on Dutch East Indian Scolytids" (KALSHOVEN, 1932) I suggested that ZIMMERMANN's twig boring Scolytid of coffee of 1899 and 1901 (1) may have been *Xyleborus morigerus* Bldf., or *X. morstatti* Hag., and probably the former, that the borer (2) in diseased, moist wood of the rubber trees had probably been *X. kraatzi* Eichh. (today considered to be a synonym of *X. perforans* Wol.) or *X. similis* Ferr., that the large coffee borer (3) had not been *Eccoptopterus sexspinosus* Mots. (as HAGEDORN had suggested in 1912) but a larger species of the same genus, and that the slender beetle (4) almost certainly was *Platypus solidus* Walk.

In a recent paper (KALSHOVEN 1958) I enlarged on the assumption that the early reported twig boring Scolytid of coffee had been *X. morigerus* rather than *X. morstatti.* In a paper in the press I have given the reasons why coffee Scolytid (2) could be considered to be identical with *E. gracilipes* Eichh.

It may be pointed out here that none of ZIMMERMANN's specimens had been found in the collections at Bogor, nor in Leiden or Amsterdam.

Some time ago I noticed that, in 1943, the late M. W. BLACKMAN had published the description of *Scolytoplatypus hirsutus*, (which since has proved to be a synonym for *S. eutomoides* Bldf.), mentioning the data: "Buitenzorg, Java, collected in 1900 by C. ZIMMERMANN from Erythrina lithosperma". Very recently I made inquiries at the U.S. National Museum, Washington, as to whether more material of A. ZIMMERMANN (nec C. ZIMMERMANN*) was present in the collections. This proved to be the case, and Dr. W. H. ANDERSON spared no pains to gather all the specimens he could find and to have them forwarded to me in loan. We have not yet found out how ZIMMERMANN's specimens have come into the possession of the National Museum.

I want to express by sincere thanks to Dr. ANDERSON for his great helpfulness and to the Netherlands Organization for the Advancement of Pure Research (Z. W.O.) for enabling me to prepare the present study.

Specimens examined.

All the specimens received are mounted on pointed slips and have labels on which is printed "Buitenzorg, Java, Dr. Zimmermann", the other details being hand-written. One specimen in most of the small series has a second label mentioning an identification to the genus by Hopk. (A. D. HOPKINS). These same specimens have a cork disc bearing a number in pencil sticking to the pin. I suppose that ZIMMERMANN's specimens were originally preserved in spirit in small tubes with the numbers on the corks referring to a list, and that HOPKINS had the specimens mounted and the labels printed.

The consignment submitted includes the following specimens here identified by me:

Xyleborus morstatti Hag., 3 ♀ (one mature of dark brown colour, one not fully mature, one immature light brown, tegument shrunk). Specific data: "From Coffea arabica, March 1900". Nr. 15 on cork disc. Identified as "Xyleborus" by HOPKINS.

X. perforans Wol. (= *X. testaceus* F., = *X. kraatzi* Eichh.), 6 ♀. Data: "From stem of Hevea brasiliensis, March 1900". Nr. 6 or 9 on cork disc. "Xyleborus", det. Hopk. Three specimens have a label mentioning in pencil respectively: "perforans", "n.sp., prop. sacchari", and "kraatzi".

X. destruens Bldf., 3 ♀. Data: "From Theobroma cacao, March 1900". Nr. 3 on cork disc. "Xyleborus", det. Hopk.

X. laevis Eichh., 2 ♀ and 1 ♂. Data "From Theobroma cacao, April 1900". Nr. 11 on cork disc. "Xyleborus", det. Hopk.

*) C. ZIMMERMANN was an American entomologist, who published a Synopsis of the Scolytidae of N. America in 1868.

X. similis Ferr., 2 ♀. Data as former species. No identification label.

Eccoptopterus gracilipes Eichh., 4 ♀. Data: "From trunk of Coffea. March 1900". Nr. 2 on cork disc. "Xyleborus" det. Hopk. "Xyleborus gracilipes Eichh." det. S. L. Wood.

Platypus solidus Walk., 3 ♂. Data: "From Erythrina lithosperma, January 1900". Nr. 10 on cork disc. No identification label.

Additional remarks.

Judging from the numbers on the cork discs this collection of Zimmermann's Scolytids is not complete. Besides, in some respects it does not correspond with the notes found in Zimmermann's papers. In the species from the coffee plantations nr. (3) is missing. On the other hand Zimmermann apparently also collected Scolytids from diseased cacao trees, which have not been found mentioned in his papers.

With regards to the Scolytids of the coffee- and rubber-plantations my former assumptions appear to have been correct with one exception.

The great surprise, indeed, is, that the small twig borer of coffee found by Zimmermann in those early years is not *X. morigerus* but the "African" *X. morstatti* Hag. This takes away one of the main bases of my theory (Kalshoven 1958) that the latter species has been introduced into West Java shortly before 1919. It appears rather likely now that *morstatti* has been present in Java for as long as in Sumatra and Celebes. This sounds plausible, but then it remains unexplained why it did not appear in the coffee plantations of Central Java and East Java before 1924/1926. The rather rapid spread in these parts of the country, chronicled in my paper is too well observed and documented to leave any doubt about their being correct.

Concerning Scolytid nr. (3), "the common bark borer of dadap" (= *Erythrina lithosperma*, much used for shade trees in the coffee plantations of those times), Zimmermann gave the following details: intermediate in size between the small and the large coffee borer, viz. 2.4 mm, in habitus resembling the former species rather than the latter, dark brown, covered with short hairs, without spines on the elytra. It was very often found on the dadap in East Java. Where it had attacked branches of 1 cm thickness it was easily observed that a circular gallery had been bored around the pith, as a result of which the branches tended to break at these points. However, the borer was also found in older branches and in thick trunks. So far I have found no clue for a suggestion which species was meant by this nr. (3).

The species in question cannot have been the *Scolytoplatypus* which was also collected from *Erythrina*, as the latter is of larger size and has antennae which differ very much from those figured by Zimmermann as belonging to species (3). Besides *Scolytoplatypus* has so many characteristic features in its habitus and habits, that these can scarcely have remained unnoticed. Therefore, it is another puzzle, why Zimmermann did not mention the *Scolytoplatypus* in his paper. It may well have been that Zimmermann had not fully realized the astonishingly large variety of Scolytid wetwood-borers to be found in diseased and dying trees, and that he had not yet closely studied all the samples already collected by him

at the time he wrote his chapter on the bark beetles of the coffee plantations.

Scolytoplatypus eutomoides Bldf. has since been found to be a wide-spread and polyphagous ambrosia-beetle in Java (KALSHOVEN in press).

Passing to the cacao Scolytids the following remarks can be made:

Xyleborus destruens Bldf. The mentioning of a red-brown Scolytid, 4—5 mm in size, found more than once in diseased *Theobroma cacao* in Central Java, by ZEHNTNER (1901, p. 3 "Species I") is another early record of this species, as has already been pointed out by ROEPKE (1919) and myself (1932).

It is still more interesting that BLANDFORD after his description of *X. destruens* in 1896 made this statement: "I have received a good series from Java, where this species, in association with *Glenea novemguttata* Cast., and a species of *Heliopeltis* has inflicted very grave damage to cacao-plantations." It has not been found who was the person that collected the material and gave this information.

X. destruens has since become better known as a primary borer of teak, *Tectona grandis,* where the tree is not growing under optimal climatic conditions in Java (KALSHOVEN, 1920 et seq.).

X. laevis Egg. Some of the type specimens used by EGGERS in his diagnosis of the species in 1923, were indicated as originating from "Kendal, Java, on cacao". These specimens had been sent originally to HAGEDORN by K. W. DAMMERMAN, who found the beetles in heavily infested trunks of *Theobroma cacao,* in company with *X. destruens* and *X. similis,* received from Kendal, March 1911, according to the files of the Institute for Plant Diseases, Bogor, In DAMMERMAN's handbook (1919) the species has been wrongly recorded as *X. dolosus* Bldf.

X. similis Ferr. is about as wide-spread and polyphagous a species in Java as is *X. perforans* Wol.

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