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A note on the identity of Xyleborus species, formerly reported as twig-borers of coffee in Tonkin

by

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Early reports on the Tonkin beetle

Shortly after a detailed description had been published of severe damage done to *Coffea robusta* by a small twig-boring *Xyleborus* in plantations in Central and East Java (Wurth 1908) a note appeared that specimens had been received in Paris of a twig-borer doing similar damage to *Coffea arabica* in Tonkin, the beetle being considered to be identical with the Javanese species (Marchal 1909). The latter species had been given the name *Xyleborus coffeae* by Wurth. Much later it would be found that *X. coffeae* was a synonym for *X. morigerus* described by Blandford in 1894 from specimens boring in living stems of orchid-plants which had come from New Guinea (Kalshoven 1926).

The same journal containing Marchal's note included a paper by the field entomologist L. Duport, who reported that the twig-borer had since long been found in the coffee plantations of Tonkin and had already been brought to the attention of the planters.

This referred to the work of another field entomologist, L. Boutan, who stayed in Tonkin on a scientific mission from 1904—1907, and published a paper in 1907 on the diseases and pests of *Coffea arabica,* mainly dealing with another injurious insect, "the Indian borer", *Xylotrechus buqueti* Chevr., fam. Cerambycidae. In his introduction Boutan shortly mentioned a small twig-borer which killed the branches and which he considered to be identical with the twig-borer listed by Koningsberger & Zimmermann (1901) as found in coffee hybrids

in Bogor, West Java. Unfortunately the name "Xyleborus fornicatus Eichh.?" had been given to the borer in this latter paper, which name BOUTAN took over without the "?". WURTH in 1908 already explained that the West Java coffee twig-borer certainly was not the same as the tea shot-hole borer of Ceylon, and a recent examination of specimens collected by ZIMMERMANN in 1900 has shown that the correct identification of this beetle is *X. morstatti* Haged. (KALSHOVEN 1959). BOUTAN specified that the little twig-borer had been found in nearly all plantations in Tonkin and that he had seen severe damage done to some 20 ha in one instance. However, he thought a control could be easily effected by the systematic removal and burning of infested branches.

DUPORT in his more elaborate note of 1909 reported that coffee plantations in two different areas had appeared to suffer from a destructive invasion of the twig-borer in May 1908 and that swarming of the beetles had been observed. However, the occurrence of Chalcidid parasites had been also noticed, and in the month of August the outbreak had completely stopped.

In 1911 DUPORT gave additional details on the infestation which had been small in 1909 and 1910, becoming severe again in 1911. The new outbreak provided an opportunity for further observations — particularly on seasonal fluctuation —, but again it soon subsided, apparently by the activity of parasites.

In a report on his work at the field station of Gho-ganh in 1914, DUPORT (1915) mentioned the fact that the twig-borer had been extraordinarily rare during the year in the experimental plots near the station and had not caused any appreciable damage in other plantations in Tonkin.

In all the three publications of DUPORT the name of the beetle was cited as *Xyleborus coffeae* WURTH.

IDENTITY OF THE TONKIN BEETLE

With regard to the question of the original distribution of both twig-boring *Xyleborus* species it was thought expedient to check — if still possible — the correctness of the identification of the Tonkin beetle. The determination had been made by MARCHAL apparently only on the strength of the comparison of his specimens with the description and figures published by WURTH. No indication has been found by me in the literature that his conclusion was confirmed by a specialist in the difficult family of the Scolytidae.

Most fortunately it appeared that some material was still preserved in the collection of the division of Entomologie Agricole Tropicale at the Museum National d'Histoire Naturelle in Paris and Professor P. VAYSSIÈRE was kind enough to submit it to me for examination.

The sample consisted of 7 mounted specimens all carrying the labels: "Krempf, Oct. 1908, Miss. Scient. Indoch. — Caféier". As Professor VAYSSIÈRE informed me, Mr. KREMPF was a young zoologist who assisted in the field-work in Indochina in 1905 and subsequent years, and his specimens might be considered without doubt to have come from the same origin as those of BOUTAN and DUPORT.

Upon examination the sample, most surprisingly, appeared to be a mixed one, including 4 specimens of *X. morigerus* and 3 of *X. morstatti*. The specimens of

morigerus are 1.6—1.7 mm in length and have the same rather light brown colour as the commonest variety in Java. The specimens of *X. morstatti*, a less variable species, have the usual very dark-brown colour.

Discussion

The identification of part of the beetles from Tonkin as *X. morstatti* provides additional information about the apparently wide distribution of this species in Asia since early years. Data on its possibly initial occurrence in Indonesia have been given in my paper of 1958, where they were supplemented by Browne with data on more recent collections of the beetle in Malaya. For the sake of completeness it may be pointed out that the species was definitely recorded from India by Beeson in 1930, while he suggested, with some reserve, that Speyer's records (1923) of the occurrence of *X. compactus* Eichh. in Ceylon might also have to be referred to *X. morstatti*. A study of the taxonomic position of *X. compactus*, originally described from Japan but repeatedly mentioned from other parts of Asia in early publications, appears to be very necessary.

As a result of the fact that two twig-boring *Xyleborus* species were found to occur in Tonkin in 1908, there are still some uncertainties left. For instance the question arises whether both species occurred simultaneously in the same plantations at the time or were found in different localities. It may further be asked to which species the observations of Duport particularly referred. In this connection it is of interest that, according to this author, the beetle he had before him was light brown ("brun plus au moins clair") as long as it still inhabited its gallery, but dark-brown ("brun foncé") when it was fully mature. A similar change of colour of mature beetles of *X. morigerus* after leaving the brood-chambers has not been noticed in Java, albeit that adults of very different colour, from yellowish to various shades of brown in accordance with their different stage of maturity, are to be found in one and the same brood-chamber. Moreover, there is another complexity in the fact that *X. morigerus*, in the Indomalayan region, appears to occur in a few varieties, one of them shining black. *X. morstatti* does not show such variability and its beetles are constantly very dark brown or black. Therefore the colour indications by Duport give no definite clue to the answer. However, the figure of the beetle published by Duport in 1911 shows a clearly elongated beetle, the ratio of length/width being 9.5 : 4.5. This elongated form is a ready feature to distinguish *X. morstatti* from the more compact *X. morigerus*. So it appears somewhat likely that Boutan, calling the twig-boring beetle black, as well as Duport, have both been studying *X. morstatti* mainly if not exclusively.

The fact that Duport observed beetles in the act of swarming further supports the assumption that he dealt with *X. morstatti*, for the recent and very important studies of Lavabre (1958, 1959) on the habits of this species in coffee plantations in Africa, have shown that the beetle swarms at day time — viz. during the hottest hours at noon — while the swarming of *X. morigerus* beetles appears never to have been observed and therefore may be nocturnal.

Still the question posed is not settled entirely satisfactorily for why, it may be asked, has the brown species escaped the attention of both investigators? Here

the answer may be that where both species occur in each other's company *X. morigerus* appears to occupy — or is being forced — to a second plan, as was the case in West Java, Sumatra and Celebes in the early years (KALSHOVEN 1958, 1959).

Another point of interest concerns the *Coffea* species which were attacked in Tonkin and elsewhere. The French scientists agree in their reports that the Tonkin borer had been found in *C. arabica,* the only species planted with success in Indochina. ZIMMERMANN who first detected a *Xyleborus* twig-borer in West Java in 1899/1901 found his specimens in *C. arabica* and in hybrids of *C. arabica* × *C. liberica* (KALSHOVEN 1958, 1959). However twig-borer damage — by *X. morigerus* — did not become of real importance in Java, before *C. robusta* was planted to a rapidly increasing extent, replacing the formerly cultivated *C. arabica* in C. and E. Java. Later it appeared that *C. robusta* was very susceptible to the attack by *X. morstatti* too when this species invaded the provinces mentioned. Similarly, according to LAVABRE, *C. canephora robusta* is the species attacked by the twig-borer — *X. morstatti* — in Africa, where the borer is not found in *C. arabica.* Curiously enough, recent reports about the appearance of the oriental *X. morigerus* in the coffee plantations of Columbia, S. America, show that here it is *C. arabica* again, which is affected (communication by Dr. J. G. BETREM).

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Mythimna l-album L. en M. albipuncta F. (Lep., Noctuidae). Van *l-album* heb ik twee gave ♀♀ meer dan een week gevangen gehouden, zonder dat ze eitjes hebben afgezet. Een derde exemplaar, dat erg afgevlogen was, heeft na een dag of vijf een vijftigtal eitjes gelegd, die zonder uitzondering onbevrucht zijn gebleken.

Hetzelfde heb ik ondervonden met *albipuncta.* Alle 23 eitjes, die ik kreeg, waren onbevrucht.

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