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Author(s)	NIISIMA, Y.
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On some Japanese Species of the Scolytini.

BY

Y. Niisima, *Ringakushi*.
Professor of Forestry.

(Plate II.)

Over one hundred species of the Japanese *Scolytidae* have already been recorded by F. CHAPUIS,¹⁾ W. EICHHOF²⁾ and W. F. H. BLANDFORD.³⁾ Of those species, six were known as belonging to the genus *Scolytus* of the group *Scolytini*; but their host-trees and economical relations have not yet been made clear, except that *Scolytus japonicus* CHAP.⁴⁾ attacks plum trees. The species herein described were collected in Hokkaido, chiefly in the vicinity of Sapporo, except one which was sent from Gifu by Mr. Y. NAWA. Among the six previously known *Scolytus*, the four species, viz. *Scolytus esuriens* BLFD., *Sc. agnatus* BLFD., *Sc. aratus* BLFD. and *Sc. japonicus* CHAP., were recorded as collected in Hokkaido, all from the Junsai-numa region near Hakodate; but I was able to collect only three of them, and *Scolytus agnatus* BLFD. has escaped my notice. I have carefully collected and noted the host-trees and the works of the insects and found that the trees chiefly attacked in Hokkaido are the common elm, *Ulmus campestris* SM.; and out of the six which I describe in this paper, the five species were collected on elm trees. It seems to me not improbable that there are yet more species to be found in Hokkaido besides those already known and my three new species, for I have frequently seen the apparently undescribed works of a *Scolytus* in the bark of the birch, *Betula alba* L. var. *vulgaris* DC., and moreover I have many specimens, which I think, could be grouped into two or three new species; one of them is one which W. F. H.

1) Bruxelles, Ann. Soc. ent. Belgique. 1875, pp. 197-199.

2) Ibid., 1875, pp. 200-203; also D. ent. Zs. Berlin. 1877, pp. 117-126.

3) London, Trans. Ent. Soc. 1893, pp. 422-425; Ibid., 1894, pp. 77-80.

4) Bruxelles, Ann. Soc. ent. Belgique. 1875, p. 199.

BLANDFORD¹⁾ described as an ill-developed form of *Scolytus esuriens* BLFD. Twenty five specimens of this form have been collected by me; and they were all found in the same trees together with that of *Scolytus esuriens* BLFD. In the course of my study I hope to be able to clear up such unsettled and doubtful cases.

I express here my sincere gratitude to Prof. S. MATSUMURA, for giving me many valuable European specimens of *Scolytidae*. Also I am indebted for gifts of interesting specimens to Messrs Y. NAWA, M. ISHIDA and N. MITSUHASHI.

***Scolytus esuriens* Blandford.**

London, Trans. Ent. Soc., 1894, p. 77.

Plate II. fig. 1-3.

Food plant. *Ulmus campestris* SM.

Distribution. Hokkaido: the Junsai-numa (BLANDFORD); Sapporo and Koton (NIISIMA).

Scolytus esuriens BLFD. is a common species in Hokkaido and is very variable in size and colour. The females are generally larger than the males; out of my seventy six specimens, the size of the females varies from 4.5 to 6.5 mm. and that of the males from 3.8 to 4.5 mm. The colour of elytra is black, with sides and apex more or less reddish, the reddish shade differing very much according to the specimens. Eight of the specimens which I have collected in the bark of an elm tree at Sapporo have very clearly edged elytra of reddish colour at the base, side and apex, and are nearly allied with the specimens of *Scolytus Geoffroyi* GOETZE from Europe in their shade. Nearly all other specimens have the black elytra, with a slight reddish tinge at the side and apex. In very few specimens, the elytra is entirely reddish.

It is a distinguishing character of *Scolytus esuriens* BLFD. that the males have three compressed hairs at the extremities of the last abdominal segment (Fig. 2); but not so in the females (Fig. 3).

This species attacks the bark of the dead elm. I have collected many specimens in the firewood of elm, chiefly of large trunks; but once I found

1) London, Trans. Ent. Soc. 1894, p. 78.

many of them working in still living trees with green leaves, though already weak and half dead.

The work (fig. 1) is made within the bark slightly grooving the surface of the wood. The primary or egg gallery is longitudinal and straight, sometimes one end is slightly curved; 30 to 55 mm. long, 2.5 mm. wide; the entrance opened at one end obliquely toward the outside. The secondary or larval mines are made chiefly perpendicular to the primary gallery each with a pupa case at the extremity; they are 45 to 75 mm. long.

The beetle bores its galleries from June to the beginning of July and pass the winter in the larval state. The bark of the attacked wood peels off during the next summer, if the wood was fresh or newly felled when first attacked; but the bark is found firmly attached to the wood and decays with it, when the tree was dead and quite dry at the time of the first entrance of the insect.

***Scolytus chikisanii*¹⁾ sp. n.**

(Plate II. fig. 4, 5.)

Female: 4.3 mm. long, black, with antennæ, tibiæ and tarsi reddish brown. The front of the head subconvex; very thinly haired near the mouth. Vertex convex, finely punctate. Prothorax about as long as wide, its anterior margin reddish with moderately strong oval dots; the dots closer and deeper at sides and apex. Elytra as wide as the prothorax but little longer, and narrowed behind; slightly reddish and separately rounded at the apex; the suture near the scutellum and the surface around it deeply depressed; interstices flat, each with one row of fine dots; puncta on the outer interstices large and strong, not distinguishable from those on the striæ. Underside black with yellowish short hairs; the side and posterior margins of each segment reddish; slightly concave to the second and third segments; the posterior margin of the second, third and fourth segments thickened but not provided with a small median tubercle on each of them.

1) I have collected this species in the firewood of the elm, which is called the "chikisani" by Ainu, the aborigines of Hokkaido; so I have applied that name to this species.

Male : 4 mm. long. The front of the head flat, with thin yellowish hairs which are longer near the mouth ; and fine aciculated scratches are similar to those in the female. The second, third and fourth abdominal segments thickened at the posterior margins and each with a small median tubercle at its middle.

Food plant. *Ulmus campestris* SM.

Distribution. Hokkaido : Sapporo and Mt. Moiwa (NIISIMA).

Scolytus chikisanii is nearly allied to *Scolytus pruni* RATZ. ; but they are clearly distinguishable from each other by the puncta on the elytra ; in *Scolytus pruni* RATZ. the puncta on the striæ are fine and those on the interstices finer, while in *Scolytus chikisanii* the dots on the striæ are deep and strong, and those on the interstices very fine. This difference is also to be noticed in the dots on the interstices of *Scolytus frontalis* BLFD., its alternate interstices have irregular double rows of dots.

I have collected seven females and two males in the bark of the firewood and dead trunks of the elm tree at Sapporo and on Mt. Moiwa in May and June. The work of *Scolytus chikisanii* is allied to that of *Scolytus esuriens* BLFD. in general characteristics ; but is more deeply grooved in the bark. The secondary galleries are arranged more closely and turned upward on the wood, their extremities crossing each other. The inner part of the attacked bark is thoroughly decayed and it can easily be peeled off. In some cases, the beetle bores deeply into the wood ; but for what purpose I can not ascertain.

***Scolytus curviventralis* sp. n.**

(Plate II. fig. 6, 7.)

Female : 3.7 mm. long, black, with antennæ and tarsi yellowish, tibiæ redbrown. The front of the head subconvex with aciculate scratches on its surface, and with a few short yellowish pubescence near the mouth. Vertex finely and closely punctate. Prothorax, with closely scattered fine dots, deeper and closer at the anterior margin, where it is not reddish. Elytra about $\frac{1}{2}$ longer than the prothorax, little depressed around the scutellum ; the posterior margin, being weakly rounded separately, and

finely toothed; the dots on the interstice finer than those on the striae, forming a single row. Underside black, with short yellow hairs; the second abdominal segment strongly concave, the posterior margins of the second to the fourth segment thickened.

Male: 3.1-3.4 mm. long. The front of head flat, with a few long yellowish curled hairs near the mouth. Prothorax, elytra and abdomen just as in the female.

Food plant. *Ulmus campestris*, SM.

Distribution. Hokkaido: Mt. Moiwa, near Sapporo, (N. MITSUHASHI and NIISIMA).

Scolytus curviventralis is very much like *Scolytus chikisani*; but the former is distinguishable from the latter by the dots on the prothorax, the finely toothed apical margin of the elytra and the strong concavity of the abdominal segments. In the middle of June, I got a male specimen at Mt. Moiwa under the bark of an elm tree; while at the beginning and the end of the same month, Mr. M. MITSUHASHI collected a male and a female at the same place.

The work of *Scolytus curviventralis* is not yet made clear.

***Scolytus æquipunctatus* sp. n.**

(Plate II. fig. 8, 9.)

Black, shining, 2.4-2.6 mm. long; antennæ, tibiæ and tarsi yellowish. The front of head flat in both sexes with long aciculate scratches from mouth to vertex, margined with long curled yellowish hairs; vertex convex, closely punctate. Prothorax as long as broad with shallow oval dots. Elytra as wide as prothorax and little longer, rounded at apex; surface depressed around the scutellum; interstices narrow, each with a single row of dots but never double; the dots on the interstices just the same as or rarely a little finer than those on the striae, but arranged more distantly. Underside black, with thin yellowish pubescence, abdominal segments simple, not concave.

Food plant. *Ulmus campestris* SM.

Distribution. Honshiu: Gifu (Y. NAWA), Hokkaido: Sapporo and Tomakomai in Prov. Iburi (NIISIMA).

Scolytus aequipunctatus is the smallest species of the Japanese *Scolytus* yet recorded, and it is nearly allied to *Scolytus multistriatus* MARSH. in appearance; but the former is distinguishable from the latter by having no oblong process in the second abdominal segment and by the black colour of its elytra, and it differs from *Scolytus japonicus* CHAP. by the stronger dots on the interstices.

The work of *Scolytus aequipunctatus* that I found under the bark of an elm tree at Mt. Moiwa, has a very close resemblance to that of *Scolytus japonicus*; but is not so deeply grooved on the wood. The primary gallery is straight and 15–20 mm. long, the secondary mines are irregularly curved. The attacked tree was not yet quite dead having green leaves still on its branches; but it was weak and unhealthy. The beetle appears from the middle of June to the end of July.

***Scolytus japonicus* Chap.**

Bruxelles, Ann. Soc. ent. Belgique, 1875, p. 199.

London, Trans. Ent. Soc., 1894, p. 77.

(Plate II. fig. 10.)

Food plant. Plum tree (M. LEWIS), apple tree.

Distribution. Honshiu and Kiushu (M. LEWIS), Hokkaido; Junsainuma (BLANDFORD), Maruyama, near Sapporo (N. MITSUHASHI), Kotoni near Sapporo (M. ISHIDA).

My specimens, which were collected at Kotoni by Mr. M. ISHIDA, the assistant of Entomology in our college, and at Maruyama, a small hill near Sapporo, by M. MITSUHASHI, are much larger than those described by F. CHAPUIS; but the structure of the head and the abdomen, colour and markings of the elytra are exactly identical. My specimens are seven in number and are 2.8–3.5 mm. long.

I was informed by M. LEWIS¹⁾ that *Scolytus japonicus* CHAP. attacks

1) Bruxelles, Ann. Soc. ent. Belgique. 1875, p. 199.

the plum tree ; but at Kotoni, a village near Sapporo, it attacked the apple tree. The beetles appear about the middle of August and bore into the bark. The primary gallery is longitudinal, short and straight, being 10-30 mm. long and 2 mm. wide, and deeply grooved on the surface of the wood. The secondary galleries are long and narrow ; some of them change their direction at distance of 30 or 40 mm. from the primary and appear as if they were branched (Fig. 10).

Healthy and vigorous trees are attacked by this species not only on their large main stems, but also on their branches of about 30 mm. in diameter. The attacked trees are gradually weakened and many of them are finally killed, so that this insect is very injurious to apple culture.

***Scolytus aratus* Blandford.**

London, Trans. Ent. Soc., 1894, p. 79.

Food plant. *Ulmus campestris* SM.

Distribution. Hokkaido : Junsai-numa (BLANDFORD), Sapporo (NIISIMA).

I have collected three female specimens of this species on the bark of a dead elm tree in the middle of July. They are all furnished with yellowish white hairs near the apex of the last abdominal segment ; the hairs are moderately long, not "breviter piloso" as W. F. H. BLANDFORD described ; but I have no male specimen and I can not here delineate the difference between the male and female of this interesting species.

Explanation of Figures in Plate II.

- Fig. 1. Work of *Scolytus esuriens* Blfd. in the bark of elm tree.
Natural size.
- Fig. 2. Abdominal segments of *Scolytus esuriens* Blfd. ♂, ventral view.
- Fig. 3. " " " " ♀, " "
- Fig. 4. *Scolytus chikisani*, sp. n. ♀, dorsal view. 11×.
- Fig. 5. " " , lateral view. 11×.
- Fig. 6. *Scolytus curviventralis*, sp. n. ♂, dorsal view. 13×.
- Fig. 7. " " , lateral view. 13×.
- Fig. 8. *Scolytus aequipunctatus*, sp. n. ♂, dorsal view. 24×.
- Fig. 9. " " , lateral view. 11×.
- Fig. 10. Work of *Scolytus japonicus* Chap. on the wood of apple tree.
Natural size.

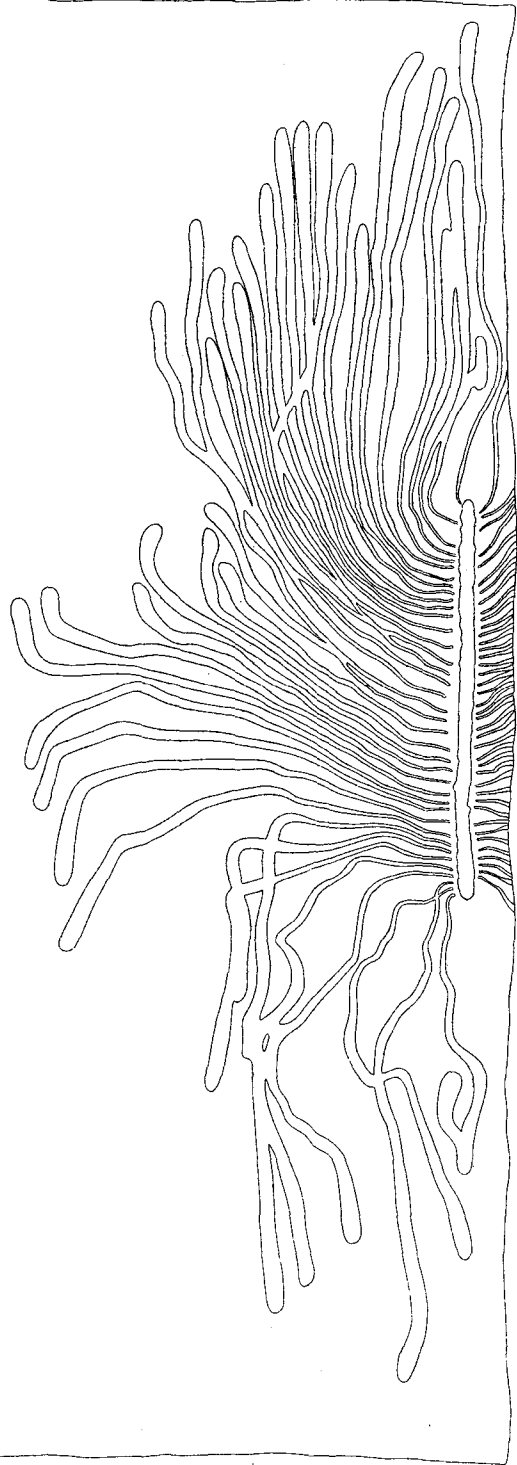


Fig. 1



Fig. 2 ♂



Fig. 3 ♀

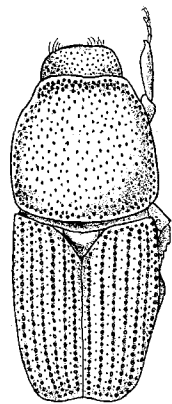


Fig. 4

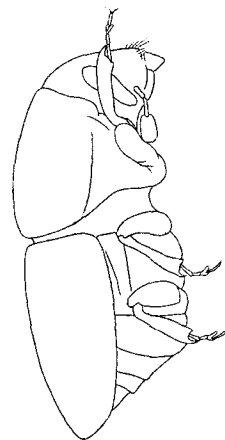


Fig. 5

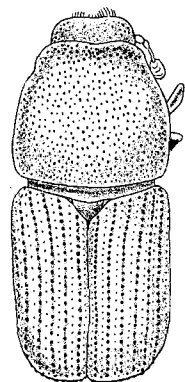


Fig. 6

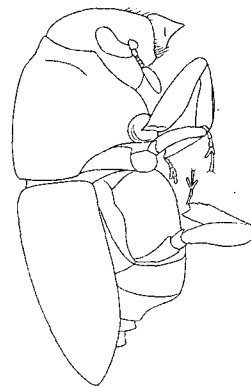


Fig. 7



Fig. 10

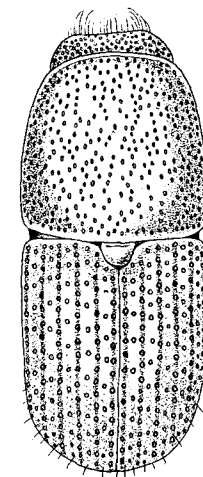


Fig. 8



Fig. 9

Niisima del.