

# Notes on the *Taiwanocarilia atra* (Tamanuki, 1943) (Coleoptera: Cerambycidae) Studies on the Taiwanese Lepturinae, V

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**Abstract** Three male specimens of Taiwanese high mountain Lepturinae, *Taiwanocarilia atra* (Tamanuki, 1943) were examined. The differences among individuals are concluded to be infraspecific variation based on the structure of the male genitalia. The biology of the species is discussed based on collection data.

*Gaurotes ater* was first described by Tamanuki (1943) based on a female specimen with a habitus drawing (Fig. 1). The type specimen was collected in 1927 by a famous Japanese naturalist on biogeography, entomology, ethnology and cultural anthropology, Dr. Tadao Kano, at the summit of Mt. Yushan (= Mt. Niitakayama = Mt. Morrison) which is the highest mountain of Taiwan (alt. 3,952 m). Since then, no additional specimen had been collected until 1981 which was 54 years later rediscovered by Mr. Tateo Ito from a high altitude of Mt. Yushan. Based on this second specimen, Hayashi (1983) established a genus *Taiwanocarilia* and recorded it as *Taiwanocarilia atra* (Tamanuki, 1943). Fortunately we located this specimen (Fig. 2) in the collection of the late Taichi Shibata which has been preserved by Mr. Hiroyuki Konishi of Nara Prefecture. According to the memory of Mr. Tateo Ito, it was found in a hollow of a decayed part of conifer (alt. 3,400 m).

The second author illustrated a male of *Taiwanocarilia atra* in "The Atlas of Taiwanese Cerambycidae" (Chou, 2004). The illustrated specimen (Fig. 3) was collected in early morning (5:30 am) on the flowers of *Quercus stenophylla* Makino var. *stenophylloides* (Hayata) at Pilushi (alt. 2,250 m) in 2002. Simultaneously he illustrated an undetermined male specimen (Fig. 4) in the same book as *Taiwanocarilia* sp. which has a different elytral color but was collected on the same flowers in the afternoon (2:30 pm) of the same day. After a close comparison of these three males including their male genitalia, we concluded that these three specimens are the same species with slight infraspecific variation including elytral color.

However, some of their features do not coincide with the original description. Therefore we have been trying to locate Tamanuki's holotype specimen, but without success even though we have searched several Japanese collections.

In the present paper, we will discuss the identity of the species by focusing on the variation of the species.

We wish to express our heartfelt thanks to the following colleagues who offered us the chance to examine valuable specimens or provided help to locate the type specimen: Hiroyuki Konishi, Tateo Ito and Kiyoshi Ando (members of the Shibata group, Osaka), Shigehiko Shiyake and Kôzô Mizuno (Osaka Museum of Natural History, Osaka), Shuhei Nomura (National Museum of Nature and Sciences, Tsukuba),

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## *Taiwanocarilia* Hayashi, 1983

*Taiwanocarilia* Hayashi, 1983: 30. Type species: *Gaurotes ater* Tamanuki, 1943. (Stenocolini) — Nakamura *et al.*, 1992: 10 (Stenocolini) — Löbl & Smetana, 2010: 135 (Rhagiini) — Nakamura *et al.*, 2014: 19 (Rhagiini).

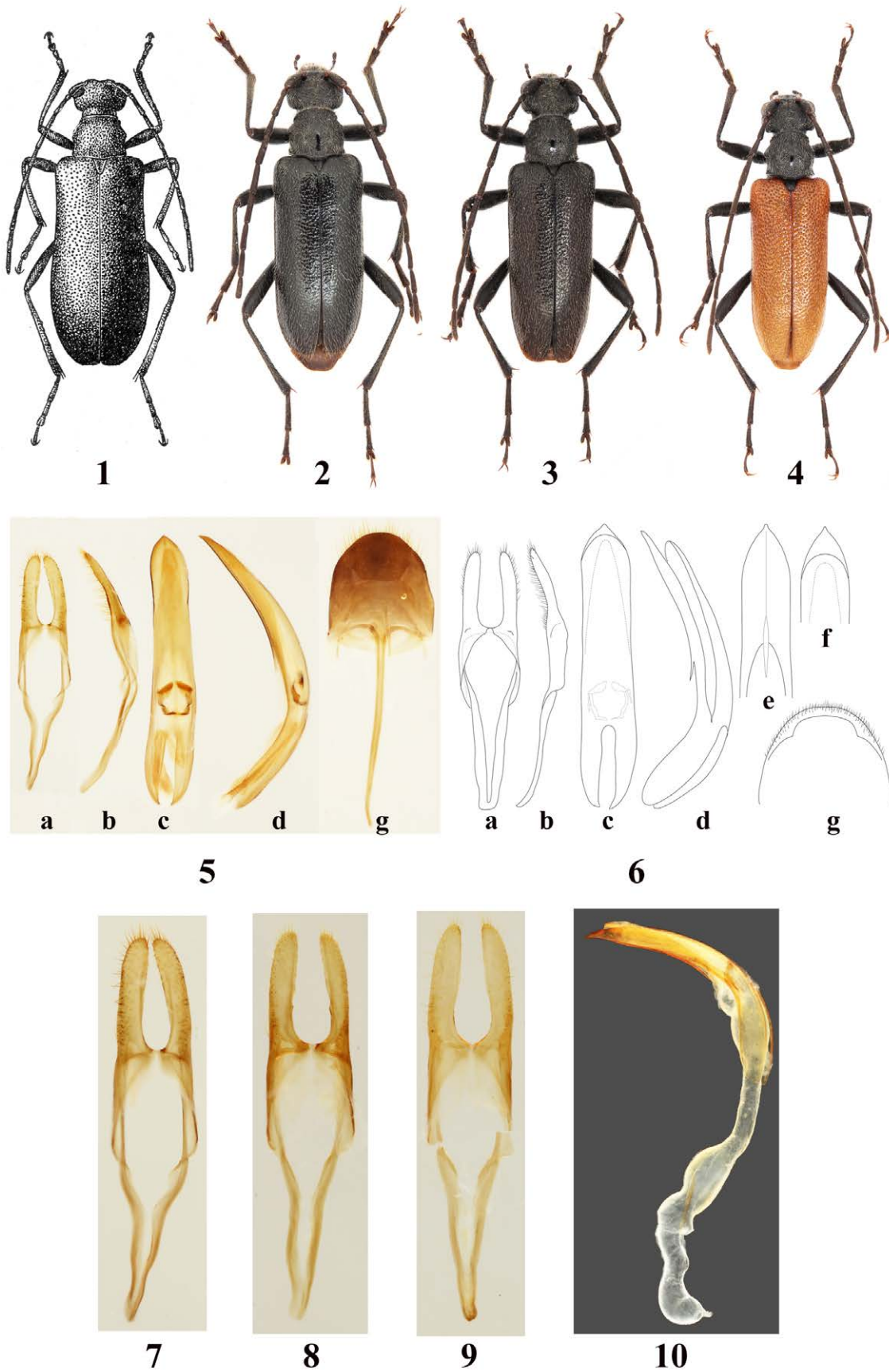
**Diagnosis.** Head rather short, obliquely to sub-vertically produced ahead; temples well developed, longer than eye diameter, nearly parallel-sided and roundly constricted to neck. Antennae a little shorter than body in male, and only arriving at basal two thirds of elytra in female. Pronotum broader than long with weak apical and shallow basal constrictions; sides obtusely tuberculate. Prosternum transversely excavated with short narrow process; procoxal cavities widely opened posteriorly. Mesosternal process gradually arcuately declivous anteriorly. Elytra nearly parallel-sided in male, or slightly widened posteriorly in female with rounded or obtusely truncate apices; sutural edges around scutellum scarcely elevated. Legs rather slender, hind tarsi with first tarsomere slightly longer than the following two tarsomeres united together.

**Notes.** The genus *Taiwanocarilia* is a quite unique member of Rhagiini and distinguishable by a key in the original description of Hayashi (1983). The general appearance of this species seems to have some relation with *Gaurotes*, *Acmaeops*, *Dinoptera* or *Lemura*, etc. of this tribe, but the structure of male genitalia, especially the shape of the tegmen (cf. Figs. 7–9) is completely different from that of these genera. It means that the systematic position of the genus *Taiwanocarilia* is needed to study in the future.

## *Taiwanocarilia atra* (Tamanuki, 1943)

*Gaurotes ater* Tamanuki, 1943: 214, fig. 226. — Gressitt, 1951: 64.

*Taiwanocarilia atra*: Hayashi, 1983: 31, pl. 1, fig. 1. — Chou,



Figs. 1–10. Habitus and male genitalia of *Taiwanocarilia atra*. — 1, Female figure in the original description; 2, male from Yushan (No. 1); 3, male from Pilushi (No. 2); 4, male from Pilushi (No. 3); 5, genitalia (No. 1); 6, genitalia (No. 2); 7, tegmen (No. 1); 8, tegmen (No. 2); 9, tegmen (No. 3); 10, endophallus (No. 2) without eversion. — a, Tegmen, dorsal view; b, ditto, lateral view, c, median lobe, dorsal view, d, ditto, lateral view, e, ditto, ventral view, f, ditto, antero-dorsal view, g, eighth abdominal tergite, ventral view.

2004 & 2008: 75.

*Taiwanocarilia* sp.; Chou, 2004 & 2008: 369.

**Translation of the original Japanese description of Tamanuki (1943).** “Body black except for mouthparts, antennae with the terminal of first, second and third antennomeres, each tibia, tarsi and most of hind femur which are tinged with reddish brown.

Head densely provided with fine and slightly deep punctures; maxillary palpomeres rather long with elongate securiform terminal palpomere; vertex with very fine short median line between antennal insertions. Antennae thin, reaching basal two-thirds of elytra; scape nearly same length as 3rd; 2nd longer than width; 4th slightly shorter than 3rd; 5th the longest and longer than 1st or 3rd; 6th and 7th slightly longer than 1st and 3rd, and stand next to the 5th; below 8th getting shorter in order and outer apex of terminal antennomere obliquely truncate.

Pronotum wide, densely but irregularly provided with punctures which are similar to head in size; midline region slightly depressed with irregular smooth line; apical and basal constriction indistinct with slightly curl up margins; disk with both sides of midline region scarcely bumped; lateral sides triangularly produced near middle. Scutellum elongate tongue-shaped, deeply depressed with deep median furrow.

Elytra slightly widened posteriorly, well covered the abdomen, provided with rather coarse punctures throughout, and grayish brown short pubescence on apical half; apices obtusely truncate.

Underside of body provided with irregular fine punctures and grayish pubescence. Legs moderate in length; hind tarsi with 1st tarsomere as long as 2nd and 3rd combined.

This new species resembles to *Gaurotes thalassina* Schrank, but different by completely different color; scutellum elongate with median narrow furrow; elytra deeply covered the abdomen and expanded posteriorly as like *Cerattia* sp. of *Chrysomelidae*.

Body length: Female, 9 mm.

Distribution: Taiwan (summit of Mt. Niitaka = Mt. Morrison).

Notes. This is an endemic species of Taiwan, but it seems to be very rare. The author could examine through the courtesy of Dr. Tadao Kano only one female which was collected by himself at the summit of Mt. Niitaka on July 15, 1927, and here recorded it as a new species. Further, this species has similar features at a glance to *Acmaeops* (*Dinoptera*) *Mulsant* by roundish elytra which deeply cover the abdomen.”

Specimens examined. 1♂ (specimen No. 1: 9.4×2.85 mm), near Pai-Yun Mountain Villa, 3,400 m, Mt. Yushan, Taiwan, 20-V-1981, T. Ito leg.; 1♂ (specimen No. 2: 8.7×2.6 mm), Piluchi, Nantou County, Taiwan, 2,250 m, Quercus, 12-V-2002, B.-W. Deng leg.; 1♂ (specimen No. 3: 8.0×2.35 mm), Piluchi, Nantou County, Taiwan, 2,250 m, Quercus, 12-V-2002, W.-I Chou leg.

Additional description for male. We were unable to examine the female specimen except for the original description with the habitus figure. The male specimens differ from the original description except for sexual characters as follows:

color mostly black except for elytra of specimen No. 3 which are entirely brown, instead of mouthparts, antennae with the terminal of first, second and third antennomeres, each tibiae, tarsi and most of hind femur are tinged with reddish brown; disk of scutellum slightly depressed without median furrow, instead of deeply depressed with deep median furrow; relative lengths of antennomeres are almost same as female, but third antennomere of specimen No. 2 and specimen No. 3 are shorter than scape.

Male genitalia of three specimens are shown in the Figs. 5–10. Lateral lobes of tegmen elongate and separated each other, provided with dense bristles ventrally and apically. Median lobe longer than tegmen, strongly bent ventrally at basal third in lateral view, provided with two pairs of sclerites at apical fourth and a rod-like flagellum near basal fourth of endophallus; apex in ventral view moderately pointed; median foramen of ventral plate provided with spear-like median process.

Biology. According to the specimen collecting data, the habitat of this species seems to be in high elevation mountain ranges with the flight period being from May to July. The larval host plant is possibly a coniferous tree and the adults sometimes visit the flowers of *Quercus stenophylla* Makino var. *stenophylloides* (Hayata).

Notes. Three examined males showed some variation in the proportions of the body, the color of the elytra or the relative lengths of the antennomeres. By our current understanding, this variation is infraspecific, and we consider that they belong to *Taiwanocarilia atra* (Tamanuki, 1943). However, further investigation based on additional material would be helpful to fully understand the range of morphological variation and species limits.

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