

**A New Species of the Genus *Caraphia* from Taiwan, with
Consideration of the Status of the Genus (Coleoptera: Cerambycidae)
Studies on the Taiwanese Lepturinae, II**

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Abstract *Caraphia taiwana* CHOU et N. OHBAYASHI, sp. nov. is described from Taiwan for the eleventh species of the genus. The tribal status of the genus *Caraphia* is briefly reviewed and discussed. A checklist of the species is given with drawings of male genitalia of *C. lepturoides* (MATSUSHITA), *C. ebenina* HOLZSHUH and *C. borneana* VIVES.

Introduction

A distinctive new species of the genus *Caraphia* was found from Taiwan, and we would like to describe it for the second contribution to the Taiwanese Lepturinae.

Up to now, ten species and a subspecies have been included in the genus *Caraphia* (cf. check list on later pages). GAHAN (1906) first established the genus *Caraphia* under the subfamily Lepturinae, and described two species, *C. cribrata* and *C. minor* from Burma. BOPPE, 1921 affiliated *Caraphia* to the group Toxotini in his generic revision of Lepturinae. The third species *C. laticeps* was described by PIC (1922) as a species of the genus *Microrhabdium* KRAATZ (the group Rhagii of the subfamily Lepturinae sensu BOPPE, 1921). Later, it was transferred to the genus *Encyclops* under the Xylosteini by GRESSITT (1951), to the genus *Neosalpinia* by VILLIERS and CHÛJÔ (1970) and to the genus *Caraphia* by HAYASHI and VILLIERS (1985).

Subsequently the fourth species, *C. lepturoides* (MATSUSHITA, 1933) was recorded from Japan under a new genus, *Neosalpinia*, which was placed in the tribe Callidiopini of the subfamily Cerambycinae. Later on, MITONO (1938) threw doubt on its position and suggested its relationship with the genus *Caraphia*. HAYASHI (1950) proposed to transfer the genus *Neosalpinia* from Cerambycinae to Lepturinae based mainly on the structure of its hind wing venation, and

he (1955, 1960) placed it in the tribe Xylosteini in view of the feature of eyes which are coarsely faceted. OHBAYASHI (1963) downgraded *Neosalpinia* to a subgenus of *Caraphia*.

After a blank of 37 years, the fifth species, *Caraphia laosica* was described from Laos by GRESSITT and RONDON (1970) under the tribe Xylosteini. Then HAYASHI and VILLIERS (1985) revised the genus *Caraphia* and placed it in the tribe Xylosteini. Also they added one species from Thailand in 1987. HOLZSCHUH (1984, 1989, 2003) described three species of the genus *Caraphia* under the subfamily Lepturinae from Nepal, Vietnam and Malaysia, but he did not refer to the tribal affiliation. N. OHBAYASHI (1982) first transferred the genus *Caraphia* from Xylosteini to Lepturini. However, we suspected it to be classified in the Lepturini because of its peculiar structure of male genitalia, female reproductive organ (A. SAITO, 1989) and also other external characteristics. In this occasion, we are going to discuss the systematic position of the genus *Caraphia* on later pages because of its instability.

Caraphia taiwana CHOU et N. OHBAYASHI, sp. nov.
(Figs. 1, 2)

Male. Body dark reddish brown; head, antennal scape, prothorax and elytra deeply and closely punctured with scale-like pale yellow hairs arising from the punctures; the hairs slightly curved and recumbent on the head, scape and prothorax, but suberect on the elytra; the hairs on the elytra arranged in 12 longitudinal rows; second to the last segment of antenna densely furnished with very thin appressed pubescence; ventral surface moderately punctured with curved recumbent pale yellow pubescence; the punctures rather deep except for abdominal sternites which are shallowly punctured; legs moderately covered with pale yellow pubescence.

Head nearly as long as wide, widest across eyes; labrum very short, transverse; clypeus produced in front, trapezoidal; frons oblique with sides carinate in reverse parenthesis shape as] (]; gena short; antennal insertion distinctly elevated; vertex depressed in U-shape; eyes very large, coarsely faceted, deeply emarginate near the middle of lobes around antennal insertions, dilated around to ventral surface. Antennae long and slender, about 1.5 times as long as body length and the middle of seventh segment exceeding the elytral apex; scape as long as third, 5th the longest, 6th, 7th and 8th same in length, 5th to the last segments square pole shaped; relative lengths of segments as follows: 70 : 15 : 70 : 76 : 103 : 100 : 100 : 100 : 93 : 90 : 90.

Prothorax widest near base, 1.07 times as long as wide, almost parallel-sided in basal half, then slightly convergent apicad with weak constriction at some distance behind apex; disc lightly convex above with a transverse depression near base; apex marginate, 0.8 times as wide as basal width.

Prosternum lightly depressed transversely in front of coxal cavity; prosternal process narrow and lightly arcuate (or almost flat in the paratype), triangularly dilated apicad and overlapping epimera.

Mesonotum with undivided stridulatory files. Scutellum short lingulate with median longitudinal depression.

Elytra about 2.6 times as long as basal width, widest near base, nearly parallel-sided to basal three-fourths, then gently narrowed toward truncate apices; disc lightly swollen on both sides behind scutellum, provided with 12 rows of quadrate shaped deep setigerous punctures which become more or less shallower toward apex.

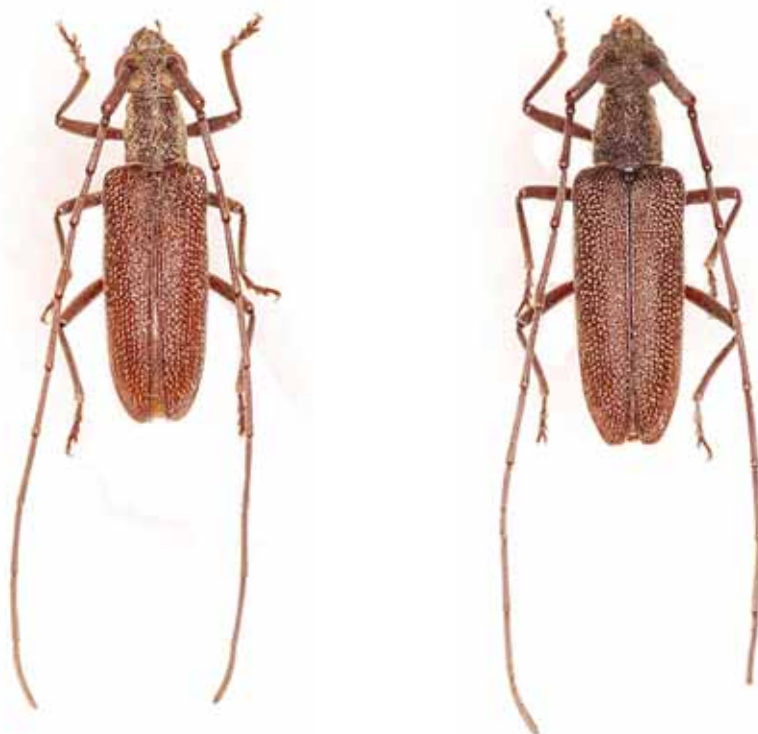


Fig. 1. Habitus of *Caraphia taiwana* sp. nov., holotype (left) and paratype (right).

Legs moderately long and slender; femora sublinear; tibiae slightly curved outward with very short tibial spurs; tarsi short with first segment as long as second and third combined; first, second and third tarsal segment dilated apicad, respectively; third tarsal segment deeply cleft.

Length from the tip of mandibles to the apices of elytra 12.3 to 13.7 mm; width at humeri 3.3 to 3.6 mm.

Male genitalia (Fig. 2). Tegmen with lateral lobes straightly narrowed towards rounded apices, 4 times as long as basal width, sparsely provided with fine setae at the apices, apical third of dorsum and apical two-thirds of ventral surfaces; roof triangular, separated from the base of lateral lobe in dorsal view; ringed part straightly narrowed toward rounded base. Median lobe 5.0 times as long as wide, lightly narrowed apicad, with dorsal plate distinctly shorter than ventral plate in dorsal view, gently curved ventrad and thickened around middle in lateral view; median struts 0.3 times as long as total length of median lobe; crescent-like sclerites in endophallus large, hooked shape; extreme base of endophallus provided with peculiar appendage as illustrated.

Type series. Holotype: , Urai, Taipei County, 1. VI. 1997, Wei-Tsao TSAI leg. Paratype: 1 , Chien shih, Litungshan, alt. 1,500 m, Hsinchu Hsien, Taiwan, 14. VI. 1994 (at light trap), Liang-Chuen LEE leg.

Type depositories. The holotype is preserved in the collection of National Taiwan University, Taipei, Taiwan. A paratype is deposited in the private collection of the first author.

Distribution. Taiwan.

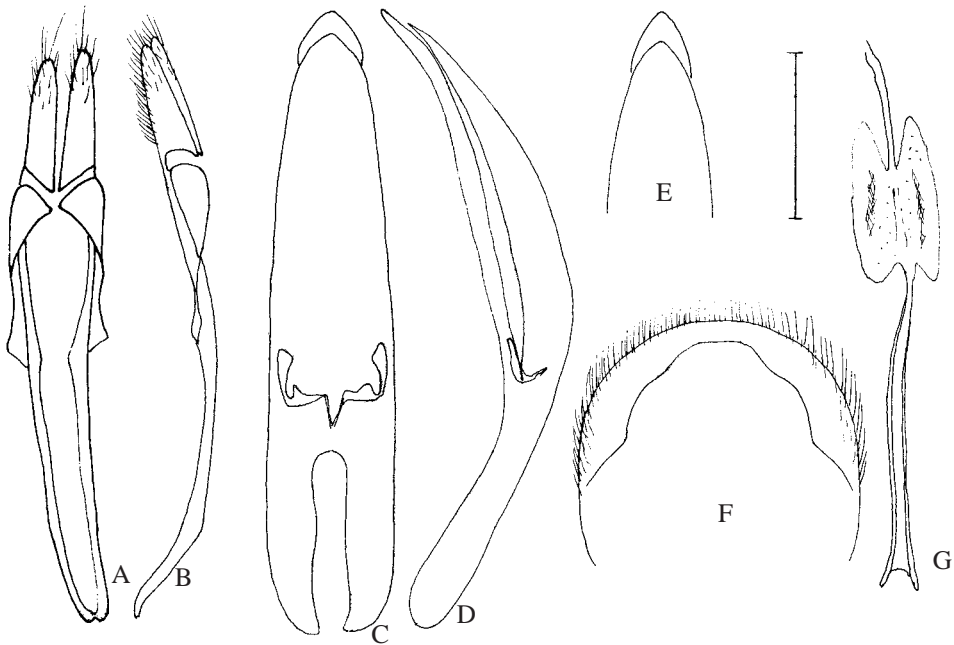


Fig. 2. Male genitalia of *Caraphia taiwana* sp. nov. — A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Notes. This new species is closest to *C. lepturoides* (MATSUSHITA, 1933), but it is easily distinguishable from the latter by distinctly longer antenna, and also the structure of male genitalia.

It is also similar to *C. thailandica* HAYASHI et VILLIERS, or *C. borneana* VIVES in coloration, but it differs from them in having larger body, longer antennae, coarsely arranged foveolate punctures on elytra, etc.

Discussion

As mentioned in the introduction, the taxonomic status of the genus *Caraphia* has been changed several times, but recent authors invariably placed it in the subfamily Lepturinae. The most important reason is that the hind wing venation shows typical structure of Lepturinae (HAYASHI, 1950; HAYASHI and VILLIERS, 1985). On the other hand, the stridulatory file of mesosternum is not divided as GAHAN (1906) already pointed out in his description of the genus *Caraphia*. Divided file of mesosternum is an important morphological characteristic in the subfamily Lepturinae and Spondylidinae and an undivided file is unusual in the Lepturinae.

Other features of the genus *Caraphia* discriminating it from other lepturine tribes are: body provided with scale-like hairs; fourth to the last antennal segment not cylindrical but like a square pole with distinct four carinae; male genitalia (Figs. 2–5) with base of lateral lobe obliquely slit and separated from triangular roof which is probably corresponding to basal piece in dorsal view.

N. OHBAYASHI (1982) transferred this genus to Lepturini for the reason of the paucity of relationship in external characteristics with Xylosteini except for coarsely faceted eyes, and also based on Petr ŠVÁCHA's personal information on larval structures, which fully agree with the definition of the Lepturini except for the presence of urogomphi. According to recent personal communication of the second author with P. ŠVÁCHA, however, the result of his DNA analysis on the higher categories of Cerambycidae is rather complicated. He informed me as follows: " *Caraphia* is indeed a problem and of variable position in analyses. The only sequence we have is the Japanese species (*Caraphia leptuloides*), and this was one of the greatest headaches in Lepturinae (but in any case the genus DOES fall into that subfamily—the occasional jumps outside Lepturinae were obviously artifacts and largely disappeared as the number of available species increased). But within Lepturinae, the 16S sequence gives no clue where to place *Caraphia*. In any case it never occurred within (and usually even near) Lepturini, so my 'larval' guess that it might be a basal member of Lepturini was probably wrong. "

As the result, the genus *Caraphia* should be placed neither in Lepturini nor in Xylosteini, and it is suggested to be a new tribe if it belongs to the subfamily Lepturinae. Further studies are needed to make the nomenclatural decision on the tribal affiliation.

Acknowledgements

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A Check List of the Species of the Genus *Caraphia*

Genus *Caraphia* GAHAN, 1906

- Caraphia* GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 75 (type species: *Caraphia cribrata* GAHAN, 1906). — AURIVILLIUS, 1912, JUNK's Coleopt. Cat., 52: 177. — BOPPE, 1921, Gen. Ins., 178: 18, 51. — GRESSITT & RONDON, 1970, Pacif. Ins. Mon., 24: 26, 30. — HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19-20): 23. — N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 5. — JIANG & CHEN, 2001, Fn. sin., Insecta 21: 35, 235.
- Neosalpinia* MATSUSITA, 1933, J. Fac. Agric. Hokkaido imp. Univ., 34: 303 (type species: *Neosalpinia leptuloides* MATSUSITA, 1933). — MITONO, 1938, Nippon no Kôchû, (2): 50. — HAYASHI, 1950, Ent. Rev. Japan, 5: 60.
- Caraphia* (*Neosalpinia*): OHBAYASHI, 1963, Fragm. coleopt., (2): 8.

1. *Caraphia cribrata* GAHAN, 1906

- Caraphia cribrata* GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 75, fig. 29 (type locality: Karen Mts., Burma). — AURIVILLIUS, 1912, Junk's Coleopt. Cat., 52: 177. — BOPPE, 1921, Gen. Ins., 178: 52. —

HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 25.
Caraphia (Caraphia) cribrata: OHBAYASHI, 1963, Fragm. coleopt., (2): 8.

Distribution: Burma (=Myanmar).

2. *Caraphia minor* GAHAN, 1906

Caraphia minor GAHAN, 1906, Fn. Brit. Ind. Coleopt. 1: 76 (type locality: Karen Mts., Burma). —
 AURIVILLIUS, 1912: 177. — BOPPE, 1921, Gen. Ins., 178: 52. — HAYASHI & VILLIERS, 1985, Bull.
 Osaka Jonan Women's Jr. Coll., (19–20): 25.

Distribution: Burma (=Myanmar).

3. *Caraphia laticeps* (PIC, 1922)

Microrhabdium laticeps PIC, 1922, Mém. exot. Ent., 37: 10 (type locality: Yunnan-Fu, China).
Encyclops laticeps: GRESSITT, 1951, Longicornia, 2: 52.
Neosalpinia laticeps: VILLIERS & CHÛJÔ, 1970, Mem. Fac. Educ. Kagawa Univ., II, (192): 53.
Caraphia laticeps: HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 25.
Caraphia reductipennis PIC, in litt.: HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll.,
 (19–20): 24, pl. 3, fig. 7. (Yunnan, China)

Distribution: China [Yunnan].

4a. *Caraphia lepturoides lepturoides* (MATSUSHITA, 1933)

(Fig. 3)

Neosalpinia lepturoides MATSUSHITA, 1933, J. Fac. Agric. Hokkaido imp. Univ., 34: 301 (type locality:
 Okinawa). — MATSUSHITA, 1938, Ins. matsum., 12: 101. — MITONO, 1938, Nippon no Kôchû, 2: 49;
 — HAYASHI, 1950, Ent. Rev. Japan, 5: 62; 1960; *ibid.*, 11: 22; 1961, *ibid.*, 13: 37. — SAMUELSON &
 GRESSITT, 1965, Pacific Ins., 7: 55.
Caraphia (Neosalpinia) lepturoides: OHBAYASHI, 1963, Fragm. coleopt., (2): 7.
Caraphia lepturoides: GRESSITT & RONDON, 1970, Pacif. Ins. Mon., 24: 32. — MAKIHARA, 1982, Spec.
 Iss. Mem. Retir. Emer. Prof. M. CHÛJÔ, 128, fig. 3, 5 A–C. — HAYASHI & VILLIERS, 1985, Bull.
 Osaka Jonan Women's Jr. Coll., (19–20): 26, text-fig. 1; pl. 3, fig. 6.
Caraphia lepturoides lepturoides: N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 6, figs. 14–16.

Distribution: Japan [Honshu, Shikoku, Kyushu, Is. Yakushima, Is. Amami-ôshima, Is. Okinawa].

4b. *Caraphia lepturoides babai* MAKIHARA, 1982

Caraphia babai MAKIHARA, 1982, Spec. Iss. Mem. Retir. Emer. Prof. M. CHÛJÔ, 127, figs. 3, 5-D (type
 locality: Ishigaki Is., Ryukyu). — KUSAMA & TAKAKUWA, 1984, Longic. Beetl. Japan Col., 545, pl.
 96, fig. 669. — HAYASHI & VILLIERS, 1985, Bull. Osaka Jonan Women's Jr. Coll., (19–20): 26.
Caraphia lepturoides babai: N. OHBAYASHI, 1992, Acta coleopt. japon., (2): 5–6, figs. 11–13; 1992: 445.

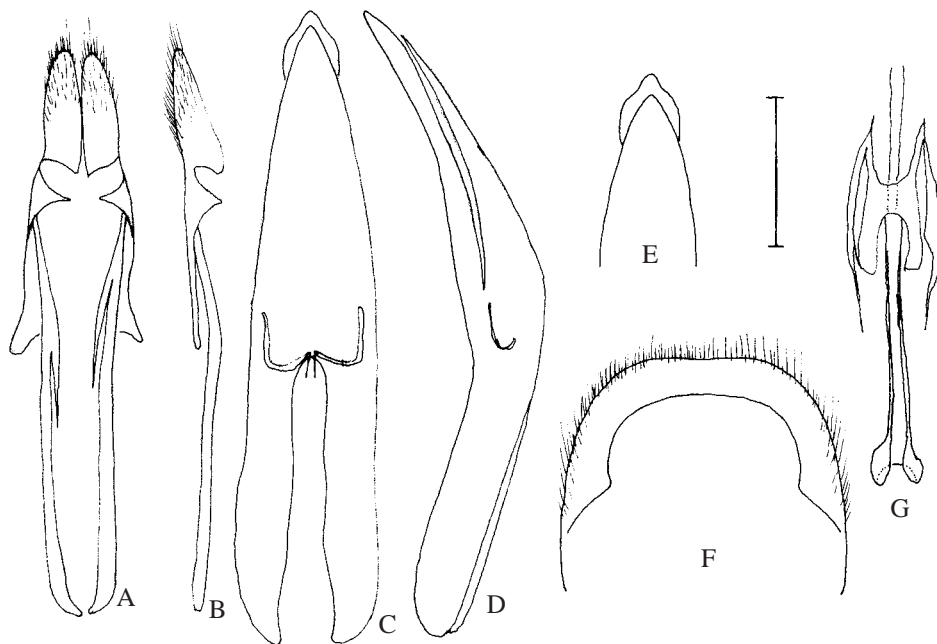


Fig. 3. Male genitalia of *Caraphia lepturoides* (MATSUSHITA, 1933) [Ashizuri, Kôchi Pref., Japan, 5. VI. 1982, K. SHIMIZU leg.] — A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Distribution: Japan [Ishigaki Is., Ryukyu].

5. *Caraphia laosica* GRESSITT et RONDON, 1970

Caraphia laosica GRESSITT et RONDON, 1970, *Pacif. Ins. Mon.*, 24: 30, fig. 7D (type locality: Khongxedon, Wapikhamthong, Laos). —JIANG & CHEN, 2001, *Fn. sin., Insecta* 21: 35, 235.

Distribution: Laos, China [Hainan Is.]

6. *Caraphia granulifera* HOLZSCHUH, 1984

Caraphia granulifera HOLZSCHUH, 1984: 141, fig. 1 (type locality: Central Nepal). —HAYASHI & VILLIERS, 1985, *Bull. Osaka Jonan Women's Jr. Coll.*, (19–20): 26.

Distribution: Nepal.

7. *Caraphia thailandica* HAYASHI et VILLIERS, 1987

Caraphia thailandica HAYASHI et VILLIERS, 1987, *Bull. Osaka Jonan Women's Jr. Coll.*, (22): 2. (Type locality: Doi Pui, Chiang Mai, North Thailand.)

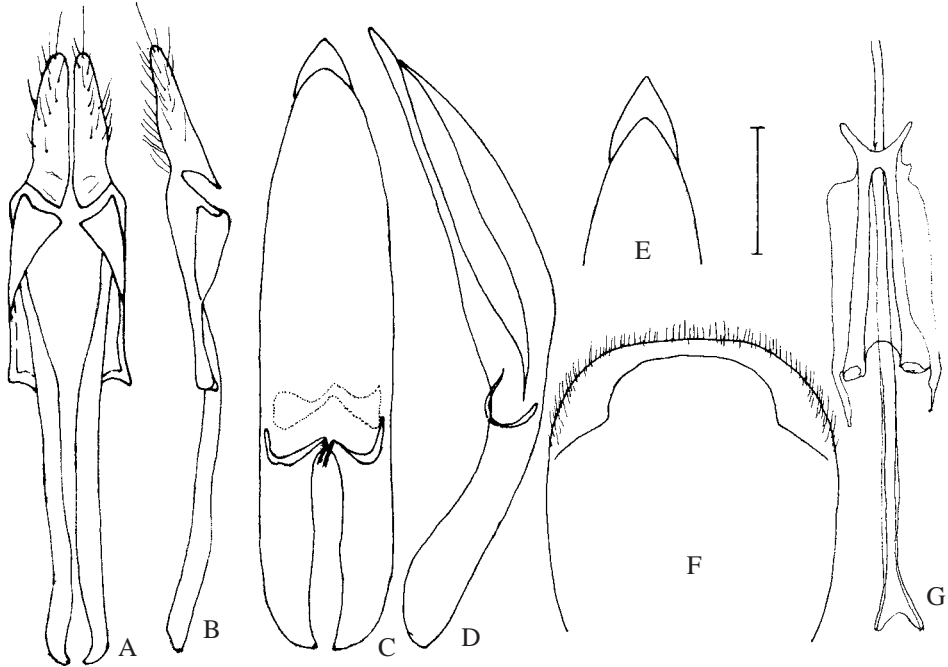


Fig. 4. Male genitalia of *Caraphia ebenina* HOLZSCHUH, 1989 [Tam Dao, North Vietnam, VI–VII, 1992, Native collector] — A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view; G, basalmost structure of endophallus. Scale: 0.5 mm.

Distribution: North Thailand.

8. *Caraphia ebenina* HOLZSCHUH, 1989

(Fig. 4)

Caraphia ebenina HOLZSCHUH, 1989, Ent. Basil., 13: 361, figs. 1, 10 (type locality: Tam Dao, North Vietnam)

Distribution: North Vietnam.

9. *Caraphia depressa* HOLZSCHUH, 2003

Caraphia depressa HOLZSCHUH, 2003, Ent. Basil., 25: 147, fig. 1. (type locality: Tanah Rata, Cameron Highlands, Pahang, Malaysia)

Distribution: Malay Peninsula.

10. *Caraphia borneana* VIVES, 2005

(Fig. 5)

Caraphia borneana VIVES, 2005, Lambillionea, (105): 305. (type locality: Mt. Trus Madi, Sabah, Malaysia)

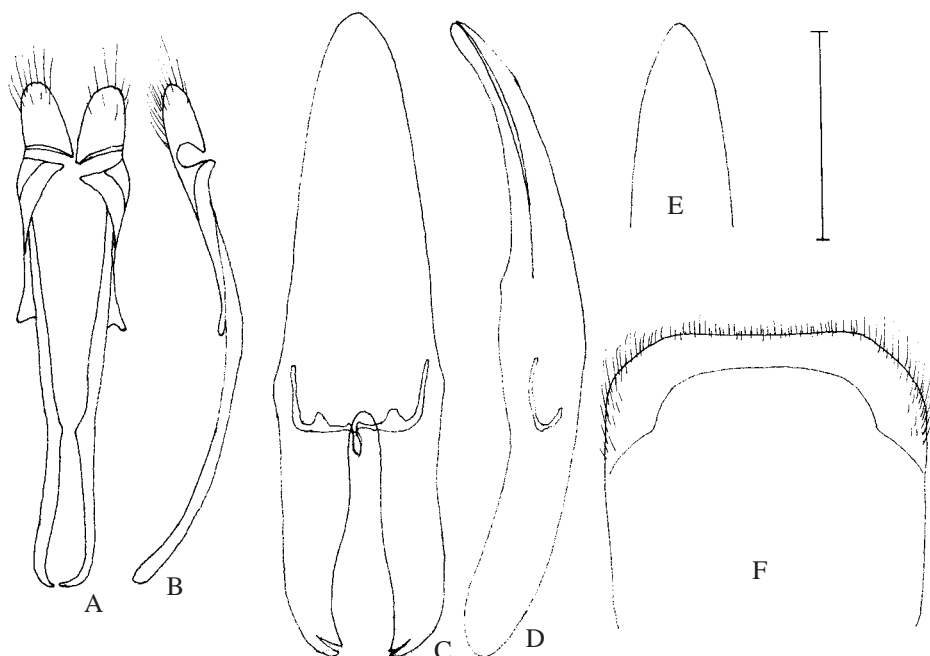


Fig. 5. Male genitalia of *Caraphia borneana* VIVES, 2005 [16 miles NW of Keningau, 22. IV. 1984, S. NAGAI leg.] — A, Tegmen, dorsal view; B, ditto, lateral view; C, median lobe, dorsal view; D, ditto, lateral view; E, ditto, antero-dorsal view; F, 8th abdominal tergite, ventral view. Scale: 0.5 mm.

Distribution: Borneo.

11. *Caraphia taiwana* CHOU et N. OHBAYASHI, sp. nov.

Caraphia taiwana CHOU et N. OHBAYASHI, 2008, (type locality: Urai, Taipei County, Taiwan)

Distribution: Taiwan.

要 約

周文一・大林延夫：台湾産ケプトハナカミキリ属の1新種と、その属の所属に関する考察。——台湾の烏来と新竹から得られた各1頭の雄の標本に基づいて、*Caraphia taiwana* sp. nov. を記載した。本種は日本のケプトハナカミキリに近縁であるが、その長い触角によって容易に区別出来る。また、既知種のチェックリストに加え、一部の種について雄交尾器を図示した。さらに、過去のケプトハナカミキリ属の所属の変遷を概観し、その分類学的位置について考察した。

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