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Occurrence of the Genus *Shiva* (Coleoptera, Nanophyidae) in Taiwan, with Description of a New Species

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Abstract A new species of the genus *Shiva* in the family Nanophyidae is described from Taiwan as the first and easternmost species of the genus other than India under the name *Shiva taiwanus* sp. nov. This new species is characterized by their maculation and coloration as well as the asymmetrical pedon of aedeagus at apex among the congeners. It may be confused with *Nanophyes formosensis* KÔNO by their superficial resemblance and coexistence on the flower buds of *Lagerstroemia subcostata* of the family Lythraceae.

A number of adult nanophyid weevils were collected on the flower buds of a crape myrtle, *Lagerstroemia subcostata* in Taiwan. They are easily recognized to be a mixture of several species by their different coloration from fulvous to fuscous, sizes and outlines. Among them, the fulvous coloured species were initially identified with a single species, *Nanophyes formosensis* KÔNO, 1930 (Figs. 5, 6) by their coloration and maculation. Later, it became clear that the mixtures of the two species belonging to different genera. The other species represents a new species belonging to the genus *Shiva* PAJNI et BHATEJA, 1982. The genus *Shiva* is defined by the following characters: antennae with funicle 6-segmented, club formed of three loose segments, eyes approximated, separated linearly, 8th elytral interval shortly crenulate distad of humeral callus, which is well developed, and intermesocoxal distance subequal to intermetacoxal one. Occurrence of the genus in Taiwan is interesting as the first record other than India and the easternmost one in the range.

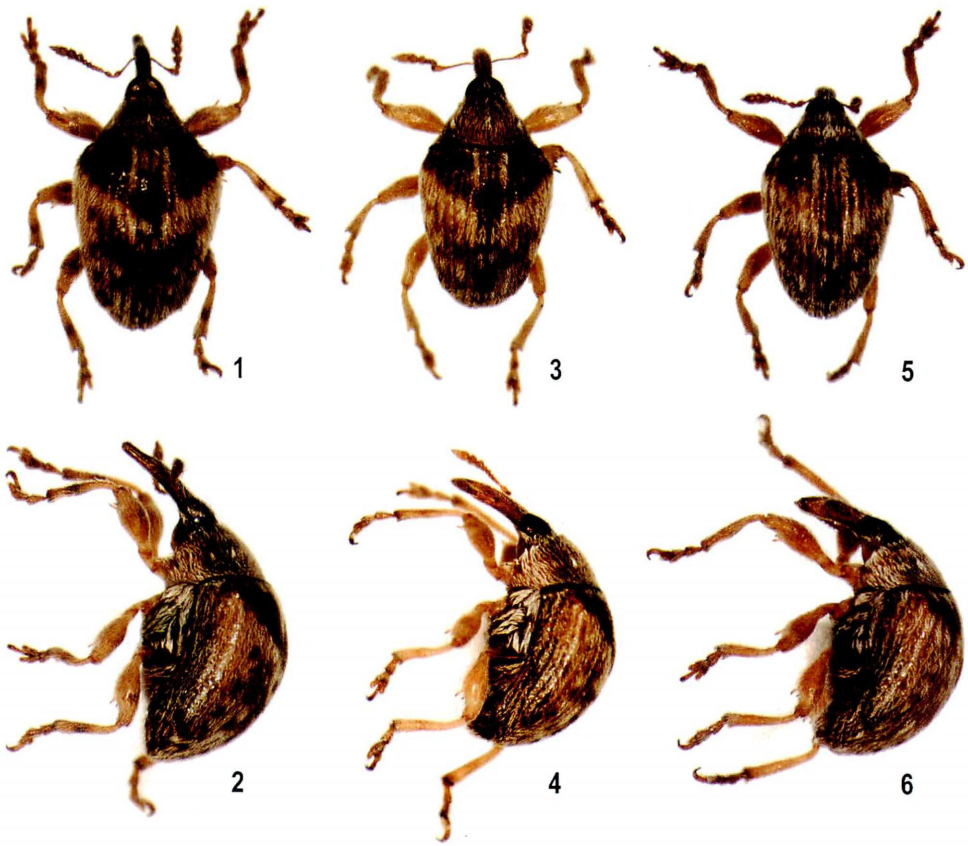
All the specimens examined are deposited at the Laboratory of Entomology, Tokyo University of Agriculture unless otherwise mentioned.

Shiva taiwanus sp. nov.

(Figs. 1–4, 7–17)

M a l e. Length: 2.0–2.3 mm; pronotal width: 1.0–1.2 mm; elytral width: 1.2–1.4 mm.

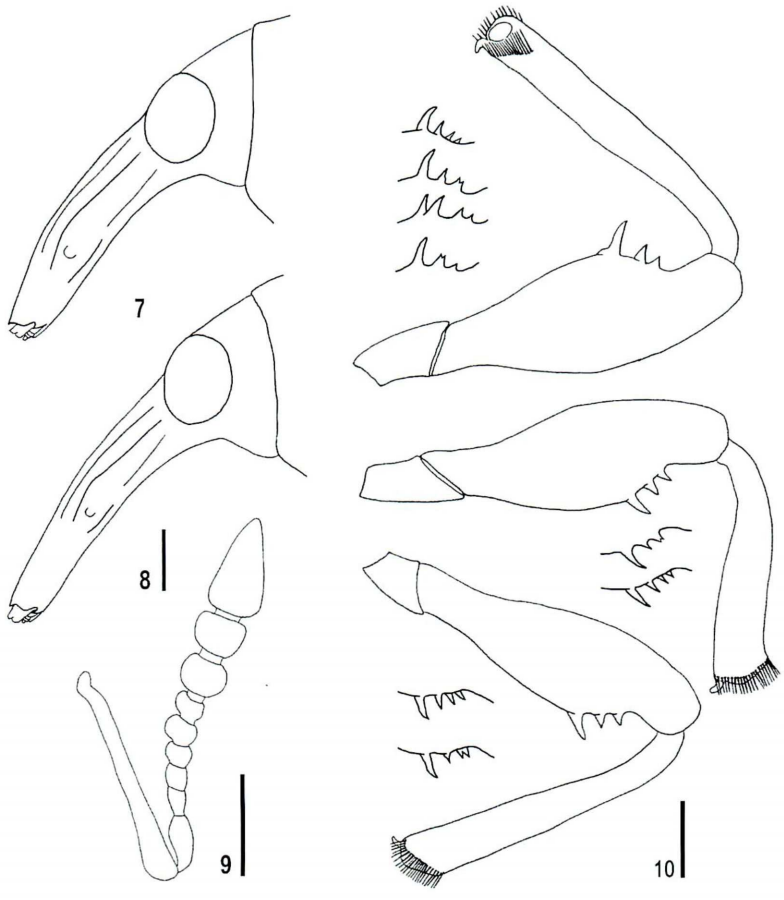
Derm yellowish to reddish brown; head, rostrum at least behind antennal insertion, sides of pronotum, and basal keels of pronotum and elytra more or less fuscous; elytra



Figs. 1–6. Habitus photographs of *Shiva taiwanus* sp. nov. and *Nanophyes formosensis* KÔNO (1–4, *Shiva taiwanus*; 5, 6, *N. formosensis*). —— 1, Female, dorsal view; 2, ditto, lateral view; 3, male (holotype), dorsal view; 4, ditto, lateral view; 5, male, dorsal view; 6, ditto, lateral view.

often fuscous along suture and lateral margin, with dark brown to fuscous basal triangular band and irregularly small patches behind middle; venter with meso- and metathoraces more or less darkened, ventrite sometimes darkened partly; legs pale brown except fuscous apices of tibiae, tarsi and denticles of femora, tibiae and femora each often with dark fascia. Vestiture of white to yellowish white elongate scales slightly condensed on base of 2nd elytral interval and sides of pro- to metathoraces and procoxae; elytra with fuscous hairs in dark areas. Specialized erect setae present on pronotum, odd intervals of elytra, femora and tibiae.

Head: — Forehead between eyes narrow, with row of scales on each side along inner margin of eye. Rostrum nearly as long as pronotum. Antennae (Fig. 9) inserted a little beyond middle of rostrum; scape nearly as long as funicle plus 1st segment of club; funicle with 1st segment twice as long as wide, 2nd 3/5 times as long as 1st, 3rd to

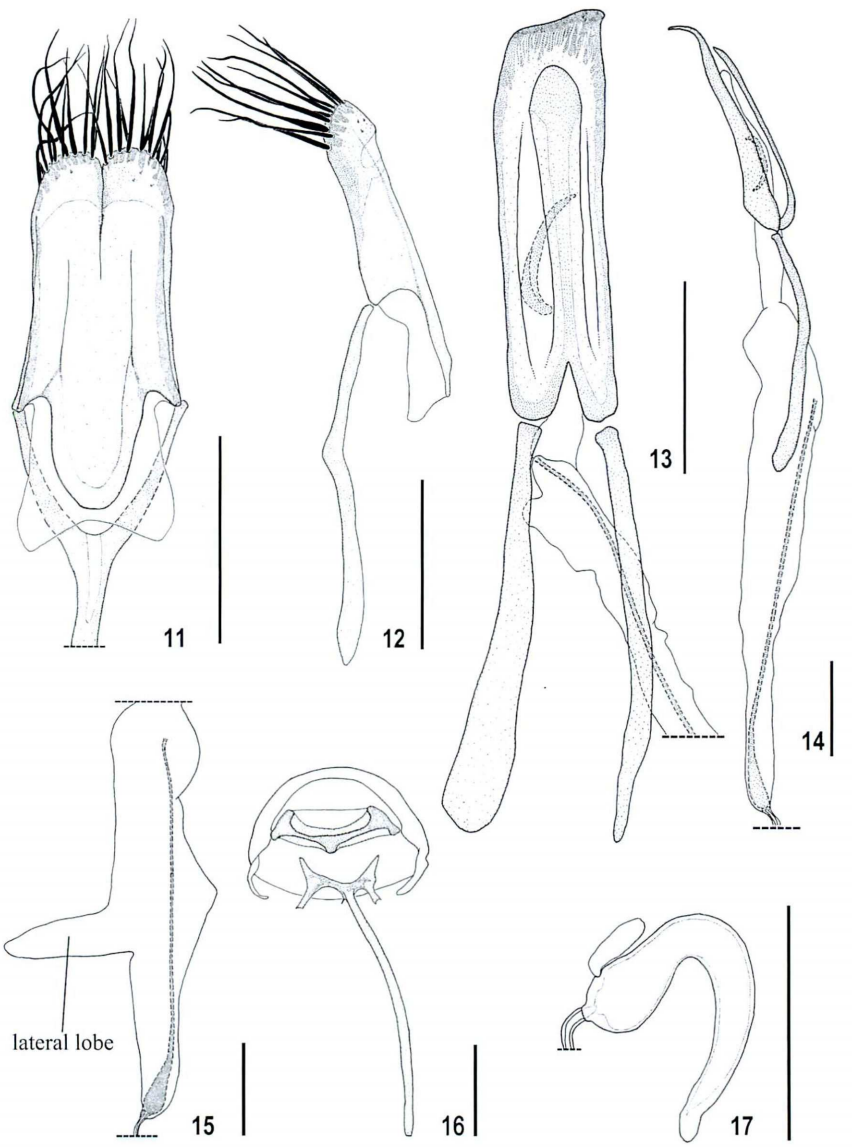


Figs. 7–10. *Shiva taiwanus* sp. nov. —— 7, Head, male; 8, ditto, female; 9, antenna; 10, legs (trochanters, femora and tibiae) and variation of femoral denticles, male. Scale=0.2 mm.

6th subequal in length, a little shorter than 2nd, 5th slightly asymmetrical; club nearly as long as funicle, 3rd segment slightly longer than 1st and 2nd segments combined.

Thorax: — Prothorax 0.5–0.6 times as long as wide. Elytra 1.1–1.2 times as long as wide. Legs (Fig. 10) with femora each with long proximal and two, sometimes three smaller distal denticles; all tibiae mucronate, although mucro difficult to see on hind tibia.

Male terminalia: — Tegmen as in Figures 11, 12; tegminal plate nearly as long as apodeme plus ring; parameloid lobes short, separated by median notch, each lobe with single marginal row of 10–13 long setae. Aedeagus (Figs. 13 & 14) with pedon asymmetrical, curved rightwards distally and downturned at tip; tectum approximately half width of pedon. Apodemes and aedeagal body subequal in length. Internal sac with curved sclerite; flagellum very long, nearly twice as long as aedeagal body; lateral lobe



Figs. 11–17. *Shiva taiwanus* sp. nov. —— 11, Tegmen, dorsal view; 12, ditto, lateral view; 13, aedeagus, dorsal view; 14, ditto, lateral view; 15, internal sac, distended, dorsal view; 16, tergite 8, sternite 8 and spiculum gastrale; 17, spermatheca. Scale=0.2 mm.

(Fig. 15) found when distended. Spiculum gastrale (Fig. 16) with a pair of lobes anteriorly on the plate and apodeme asymmetrically curved.

F e m a l e. Length: 2.2–2.5 mm; pronotal width: 1.1–1.3 mm; elytral width: 1.4–1.5 mm.

Similar to male except rostrum slender and thinner before antennal insertion, which is just beyond middle of rostrum, and tibiae not mucronate. Spermatheca (Fig. 17) simply C-sharped.

Etymology. This species was named after the locality.

Type series. Holotype, ♂, Fenshuiling, Manchou Hsiang, Pingtung Hsien, Taiwan, 29–V–2006, J. KANTOH leg. Paratypes: 1 ♂, Koshun (paratype of *Nanophyes formosensis*, NSMT-I-C–26437; National Museum of Nature and Science, Tokyo). 5 ♂♂, same data as the holotype. 4 ♂♂, 3 ♀♀, same locality as the holotype, 30–V–2006, J. KANTOH leg.; 1 ♂, 1 ♀, 30–V–2006, T. TSURU leg.; 8 ♂♂, 5 ♀♀, 31–V–2006, J. KANTOH leg. 2♀♀, Kenting Park, Taiwan, 24～26–V–1975, S. IMASAKA leg.; 1 ♂, 27–III–1976, M. ITO leg. 1 ♂, Chihpen-wenchuan, Peinan Hsiang, Taitung Hsien, Taiwan, 1–VI–2006, J. KANTOH leg.; 5 ♂♂, 2 ♀♀, 4–VI–2006, J. KANTOH leg.; 3 ♂♂, 1 ♀, 5–VI–2006, J. KANTOH leg., 1 ♀, 27～29–III–1995, H. KOJIMA leg. 1 ♂, Nanshanchi, Taiwan, 13–IV–1975, S. IMASAKA leg.; 1 ♂, 30～31–V–1975, S. IMASAKA leg.; 1 ♂, 13–VI–1976, M. ITO leg.; 1 ♀, 5–V–1979, K. EMOTO leg. 1 ♂, 1 ♀, Wulai, Taipei Hsien, Taiwan, 14–IV–1995, H. KOJIMA leg. 1 ♀, Liouguei Hsiang, Kaohsiung Hsien, Taiwan, 3–VIII–1976, K. MATSUDA leg.

Distribution. Taiwan (Taipei, Nantou, Kaohsiung Taitung, and Pingtung Hsiens).

Biological note. Weevils were captured on the flower buds of *Lagerstroemia subcostata* (Lythraceae) with several other nanophyid species.

Discussion

Six *Shiva* species have been known only from India to date. Occurrence of the genus in Taiwan becomes the most easterly record in the range. With regard to the interspecific classification of the genus, ALONSO-ZARAZAGA (1990) tentatively divided it into three species groups based on the male genital structure. The present new species seemingly belongs to the *variabilis* group in having the tegmen notched apically and the long flagellum. However, this species is unique in having the asymmetrical apex of the pedon of the aedeagus and very long flagellum nearly twice as long as the aedeagal body. The maculation and coloration also differ from those of the other species of the *variabilis* group.

This species is also easily confused with *Nanophyes formosensis* sometimes coexisting on the same plant. Examination of the type series of *N. formosensis* revealed to be a mixture of two species and the paratype kept in the National Museum of Nature and Science, Tokyo is identified with *Shiva taiwanus*. In parenthesis, the species treated and figured by MORIMOTO (1964) as *N. formosensis* and ALONSO-ZARAZAGA (1989) as the type species of the genus *Psix*, which was renamed *Zherikhinia* (ALONSO-ZARAZAGA & LYAL, 1999) is based on misidentification (KANTOH, in prep.).

Though no biological information has ever been known for the genus, *Lagerstroemia* species will become a good place to look for the biology of this species as well as the other species possibly occurring in the intervening area of the range.

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要　　約

関東準之助・小島弘昭: *Shiva* 属チビゾウムシの台湾からの発見と1新種の記載（コウチュウ目チビゾウムシ科）. —— チビゾウムシ科の *Shiva* 属は，これまでにインドから6種が知られていたが，今回，台湾から1新種を見出し，*Shiva taiwanus* sp. nov. と命名し記載した．本属の寄主植物は未知であったが，本新種はミソハギ科のシマサルスベリ *Lagerstroemia subcostata* から複数種のチビゾウムシ，特にオオチビゾウムシ *Nanophyes formosensis* と混じって採集された．また，興味深いことに本種とオオチビゾウムシは，所属が異なるにもかかわらず色彩，模様などが非常によく似て混同しやすいが，触角中間節の数が異なることから容易に区別可能である．

References

ALONSO-ZARAZAGA, M. A., 1989. Revision of the supraspecific taxa in the Palaearctic Apionidae SCHOENHERR, 1823. 1. Introduction and subfamily Nanophyinae SEIDLITZ, 1891 (Coleoptera, Curculionoidea). *Fragm. ent., Roma*, **21**: 205–262.

———— 1990. Three new taxa of Oriental Nanophyini (Coleoptera, Apionidae). *Beitr. Ent., Berlin*, **40**: 19–29.

———— & C. H. C. LYAL, 1999. A world catalogue of families and genera of Curculionoidea (Insecta: Coleoptera) (excepting Scolytidae and Platypodidae). 315 pp. Entomopraxis, S. C. P., Barcelona.

KÔNO, H., 1930. Langrüssler aus dem Japanischen Reich (Col.). *Ins. Matsum., Sapporo*, **4**: 145–162.

MORIMOTO, K., 1964. Key and illustrations for identification of the curculionid-beetles of Japan and the Ryukyus. *Kontyû, Tokyo*, **32**: 81–90.

PAJNI, H. R. & B. R. BHATEJA, 1982. Indian Apionidae (Coleoptera: Curculionoidea) I. Taxonomic studies on subfamily Nanophyinae. *Orient. Ins., Delhi*, **16**: 431–490.