

# A new species of the genus *Epaphiopsis* (Insecta, Coleoptera, Carabidae, Trechinae) from Mie Prefecture, Honshu, Japan

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三重県から発見されたケムネチビゴミムシ属（甲虫目，オサムシ科，チビゴミムシ亜科）の1新種

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(Abstract)

A new trechine carabid species of the genus *Epaphiopsis* is described from Mie Prefecture, Japan: *Epaphiopsis* (*Epaphiopsis*) *narukawai* Morita, sp. nov.

## Introduction

The genus *Epaphiopsis* S.Uéno (1953, p.32) is represented by more than 70 species in the Palearctic region. The genus is divided into five subgenera: *Allepaphiama* S.Uéno et Pawlowski, 1983, *Formosiellus* S.Uéno, 1989, *Epaphiama* Jeannel, 1962, *Epaphiopsis* S.Uéno, 1953, and *Pseudepaphius* S.Uéno, 1962. The members of the last three subgenera occur in Japan. Almost all the known Japanese species were described by S.Uéno (1953, 1962), but the taxonomic knowledge of the genus is still not enough, and there are still some others awaiting descriptions.

Recently, one undetermined species of the genus was recorded from Mt. Gozaisho-dake in the book “Insects of the Suzuka Mountains”. My impression was that the species is new, so at my request, specimens were provided to me for study from the collector. The purpose of this short paper

is to show the result of my study.

## Materials and Methods

The specimens used for this study were sifted out from a heap of dead leaves mingled with soil, which had been accumulated in a ditch at the side of the road. The holotype and several paratypes are deposited in the Toyohashi Museum of Natural History and remaining paratypes in the private collection of the author.

External morphology was examined using on Wild M8 stereomicroscope. Male genitalia were dissected after the specimens were relaxed in water for about six hours, and then a prepared slide was made with them in lactic acid. The illustrations of the genitalia were drawn with a drawing tube attached to a Nikon optiphot XF microscope.

The abbreviations used herein are as follows: L—body length, measured from apical margin of clypeus to apices of

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elytra; HW—width of head, measured between eyes; PW—greatest width of pronotum; PL—length of pronotum, measured along the mid-line; PA—width of pronotal apex; PB—width of pronotal base; EW—greatest width of elytra; EL—greatest length of elytra; M—arithmetic mean; H—holotype; TMNH—Toyohashi Museum of Natural History, Toyohashi.

## Terms

Terms used in this paper are largely of general use and follow the literatures (S. Uéno, 1962 and S. Morita, 1999).

### List of the species of the subgenus *Epaphiopsis*

*Epaphiopsis (Epaphiopsis) fujii* (Suenson, 1957): Mt. Fujisan, Shizuoka and Yamanashi Prefectures.

*E. (E.) fukukii* S. Uéno, 1953: Shimoizumi, Shizuoka Prefecture.

*E. (E.) watanabei* S. Uéno, 1962: Izu Peninsula, Shizuoka Prefecture.

*E. (E.) machiko* S. Uéno, 1962: Hakone, Kanagawa Prefecture.

*E. (E.) matsudai* S. Uéno, 1962: Neo-mura, Gifu Prefecture.

*E. (E.) okadai okadai* S. Uéno, 1962: Kii Peninsula, Nara and Mie Prefectures.

*E. (E.) okadai tennis* S. Uéno, 1962: Kii Peninsula, Wakayama Prefecture.

*E. (E.) elongata* S. Uéno, 1962: Kii Peninsula, Wakayama Prefecture.

## Taxonomy

*Epaphiopsis (Epaphiopsis) narukawai* Morita, sp. nov.

[Japanese name: Suzuka-kemune-chibigomimushi]

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(Figs. 1-2)

*Epaphiopsis* sp.: Narukawa *et al.*, 2016. p.93.

**Type series.** Holotype: ♂, (TMNH-I-29659), 16. VII. 2016, N. Narukawa leg.

Paratypes: 2 ♂♂, 2 ♀♀, 26. VII. 2015, N. Narukawa leg.; 3 ♂♂, 1 ♀, 22. VIII. 2015, N. Narukawa leg.; 7



Fig. 1. *Epaphiopsis (Epaphiopsis) narukawai* Morita, sp. nov.

♂♂, 2 ♀♀, 16. VII. 2016, N. Narukawa leg.; 1 ♂, 5 ♀♀, 27. VIII. 2016, S. Morita & N. Narukawa leg.; 4 ♂♂, 8 ♀♀, 18. VII. 2018, S. Morita leg.

**Type locality.** Mt. Gozaisho-dake, alt. 1,000 m, Komonochō, Mie-gun, Mie Prefecture, Honshu, Japan.

**Description.** L: 3.43–4.29 mm.

Body reddish brown with iridescent luster; antennae reddish brown; palpi yellowish brown; mandibles, labrum light brown; legs slightly lighter than dorsum.

Head weakly convex; eyes rather flat and small; temple strongly convex with a few short hairs; mentum tooth weakly porrect, wide, and usually widely rounded at apex, rarely rather truncated; microsculpture composed of large polygonal meshes on frons and vertex, but of small isodiametric ones on neck.

Pronotum moderately convex; apical margin almost straight; apical angles weakly produced and rounded at apices; sides strongly arcuate and deeply sinuate just before hind angles; anterior transverse impression with a row of coarse punctures; basal fovea very deep and almost smooth; median part near base coarsely and sparsely punctate; hind

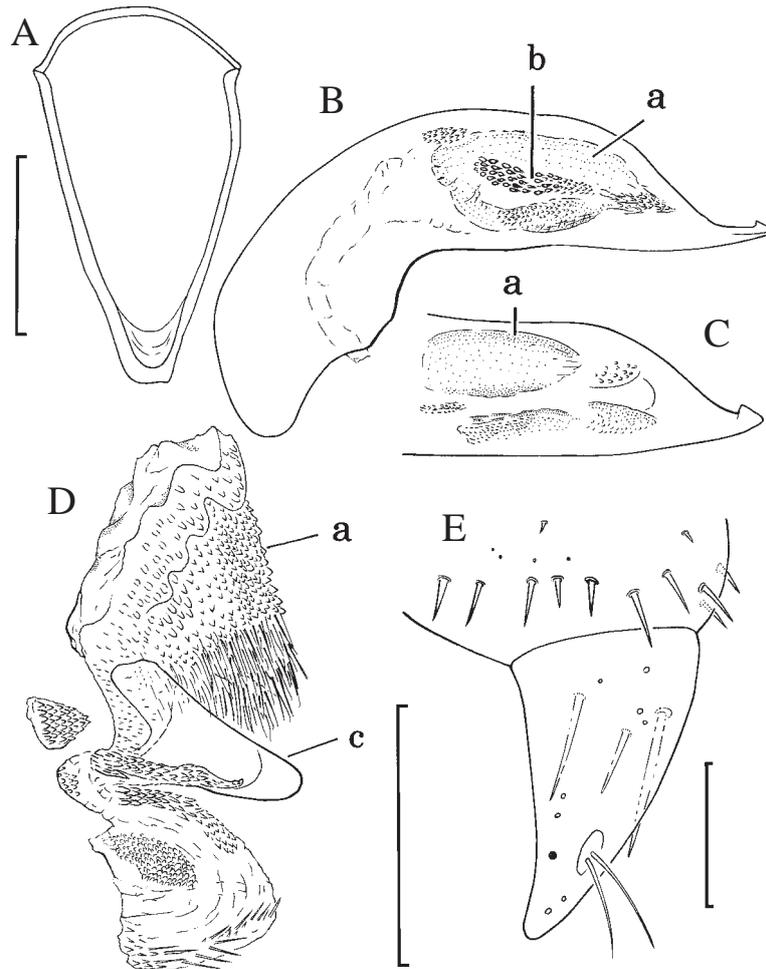


Fig. 2. Genital segment and genitalia of *Epaphiopsis (Epaphiopsis) narukawai* Morita, sp. nov. — A, Genital segment, ventral view; B, aedeagus, left lateral view; C, same, dorsal view; D, extracted and extended inner sac; E, style of female, ventral view. — a, Field “a”; b, one of mats of spines; c, copulatory piece. Scale: 0.50 mm for A–D; 0.05 mm for E.

angles sharp; microsculpture partially visible, composed of fine transverse lines.

Elytra convex; scutellar striole absent; stria 1 shallow at basal part, then becoming shallower towards apex; striae 2 and 3 very shallow and disappearing at about basal 3/4; stria 4 rudimentary; striae 1–4 usually rather coarsely punctate at basal parts, but disappearing at about basal 1/3; stria 5 rudimentary or absent and usually with two pores on each side; striae 6 and 7 absent; stria 8 more or less deep at the apical part, but disappearing anteriorly; apical striole rather short, deep, and straight; microsculpture effaced.

Genital segment triangular and with wide and short handle (Morita, 1999).

Aedeagus robust without sagittal aileron; apical lobe wide, slightly turned up, forming a small hook on the dorsal side.

Structure of inner sac complicated; field “a” (see Figs. 2B-a and 2C-a) very large, rolled, and covered with scales, spines, and long hairs (see Fig. 2D-a); several mats of scales and spines present, with the boundaries between each mat being indistinct, as each mat transitions gradually (through a lessening of scales and spines) into a more membranous region between mats; another isolated field small, composed of very heavily sclerotized spines, and situated near the basal part of field “a”; copulatory piece large, spatulate, situated near the right aedeagal wall, and

enveloped by filed "a" (see Figs. 2B-a, 2C-a, and 2D-a). Styles each furnished with four apical setae.

Style of female genitalia with three long ensiform setae on dorsal side and two nematiform setae on ventral side near apex.

### Variation of body form

The standard ratios of the body parts shown below are those of the holotype (♂), five males, and five females, respectively.

PW/HW 1.49 in H, 1.41–1.50 (M 1.46) in ♂, 1.42–1.49 (M 1.45) in ♀; PW/PL 1.33 in H, 1.18–1.30 (M 1.24) in ♂, 1.24–1.27 (M 1.26) in ♀; PW/PA 1.49 in H, 1.51–1.53 (M 1.52) in ♂, 1.45–1.50 (M 1.48) in ♀; PW/PB 1.45 in H, 1.38–1.44 (M 1.42) in ♂, 1.42–1.49 (M 1.47) in ♀; PA/PB 0.98 in H, 0.91–0.95 (M 0.94) in ♂, 0.98–1.00 (M 0.99) in ♀; EW/PW 1.42 in H, 1.37–1.46 (M 1.44) in ♂, 1.40–1.46 (M 1.43) in ♀; EL/EW 1.48 in H, 1.36–1.53 (M 1.44) in ♂, 1.33–1.43 (M 1.39) in ♀.

Relative lengths of antennal segments as follows: I : II : III = 1.00 : 0.63 : 0.87 in H, = 1.00 : 0.73–0.82 : 0.88–0.93 in ♂, = 1 : 0.61–0.73 : 0.79–0.92 in ♀.

### Variation of elytral dorsal pores

The number of elytral dorsal pores affords one of the more important specific characters. In this species, however, it shows rather wide variation as follows: usually stria 3 with four pores and stria 5 with two pores, on one side, respectively; in one male and one female, stria 3 with three pores on one side; in four males and 9 females, stria 5 with one pore on one side; in one male, stria 5 with three pores on one side.

### Recognition

Of the six species and one subspecies listed above, this new species is most closely allied to *Epaphiopsis* (*Epaphiopsis*) *watanabei* S. Uéno (1962, p.47) by both external and genitalic features. It is, however, easily distinguished from *E. (E.) watanabei* mainly by the following points: eyes rather flat and small; temple strongly convex; mentum tooth weakly porrect, wide, and usually widely rounded at apex, rarely rather truncated; sides of

pronotum strongly arcuate and deeply sinuate just before hind angles which are sharp; elytral striae 2 and 3 present; aedeagus robust; in dorsal view, apical lobe wide; inner sac of aedeagus with one copulatory piece.

*E. (E.) watanabei*, in contrast, has eyes more convex; temple less convex; sides of pronotum not sinuate just before hind angles which project outwards as a minute tooth; elytral stria 2 obsolete; stria 3 rudimentary; aedeagus elongate; in dorsal view, apical lobe very narrow; inner sac of aedeagus without copulatory piece.

### Etymology

The specific name is dedicated to Mr. Nobuyuki Narukara, one of the collectors of the type series.

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### References

- Morita, S., 1999. On *Agonum* (*Agonum*) *jankowskii* Lafer (Coleoptera, Carabidae). *Elytra*, 27: 599–603.
- Narukawa, N., Yokozeki, H., Tanaka, K., Ozaki, M., Kannou, K. and Inagaki, M., 2016. Coleoptera of the Suzuka Mountains. Narukawa, N. (ed.), *Insects of the Suzuka Mountains*, Miekonchûdanwakai, Suzuka City, 81–218. (In Japanese.)
- Uéno, S., 1953. Studies on the Japanese Trechinae (I) (Coleoptera, Carabidae). *The Entomological Review of Japan*, 6: 30–34.
- Uéno, S., 1962. Primitive Trechids of the subgenus *Epaphiopsis*. *Memoirs of the college of Science, University of Kyoto, Series B*, 29 (1): 41–74.

## (要 旨)

森田誠司：三重県から発見されたケムネチビゴミムシ属（甲虫目，オサムシ科，チビゴミムシ亜科）の1新種

*Epaphiopsis* ケムネチビゴミムシ属は，体長4～5 mm 程度の後翅の退化したオサムシ科甲虫の一群である．この属は5亜属に分類されるが，そのうちの狭義の *Epaphiopsis* は主に関東地方から紀伊半島までのおおよそ太平洋岸にそってその分布域をもち，6種1亜種が知られている．

この報告では，三重県御在所岳から採集された種を新種とみとめ，第一発見者，生川展行氏の御名前から *E. (E.) narukawai* Morita, sp. nov., スズカケムネチビゴミムシと命名し記載した．