

A New *Synuchus* (Coleoptera, Carabidae) from the Kii Peninsula, Central Japan, with a Redescription of *S. ventricosus*

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Abstract *Synuchus* (*Synuchus*) *yamashitai* MORITA, sp. nov. is described from the Kii Peninsula, Central Japan. It is related to *S. (S.) ventricosus* LINDROTH, but differs from the latter mainly in shape of male genital organ. *S. (S.) ventricosus* LINDROTH is redescribed based on newly obtained males.

The main purpose of this paper is to describe a new synuchine carabid species, *Synuchus* (*Synuchus*) *yamashitai* sp. nov., collected from the Kii Peninsula, Central Japan. At this opportunity, I redescribe its close relative, *S. (S.) ventricosus* LINDROTH (1956, p. 531), mainly based on newly obtained male specimens.

The abbreviations used herein are as follows: — L—body length, measured from apical margin of clypeus to apices of elytra; HW—greatest width of head; 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; TL—length of hind tarsus; M—arithmetic mean; H—the holotype of *Synuchus ventricosus*.

Before going further, I wish to express my deep gratitude to Dr. Shun-Ichi UÉNO of the National Museum of Nature and Science, Tsukuba, for critically reading the original manuscript of this paper. My thanks are also due to Messrs. Masao ISHII, Masahiro SAITÔ and Shun-ichi YAMASHITA for supplying me with important material. Further, I am deeply indebted to Dr. Shûhei NOMURA for the loan of the type of *Synuchus ventricosus* LINDROTH under his care.

Hearty thanks are also due to MESSRS. Hiromu KAMEZAWA and Ichiro OHSHIO for their kind help. Without their cooperation, I could not have undertaken this study.

***Synuchus* (*Synuchus*) *yamashitai* MORITA, sp. nov.**

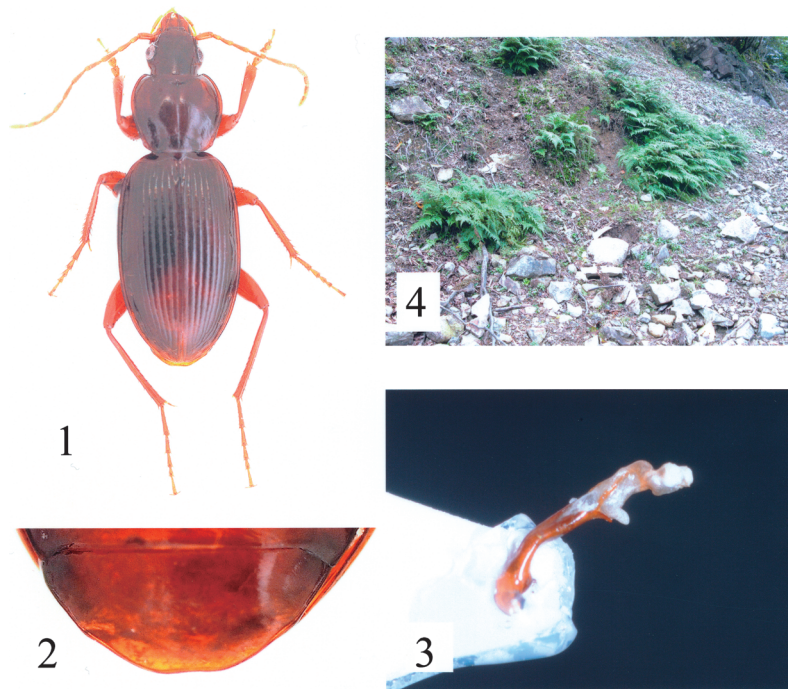
[Japanese name: Kii-tsuya-hirata-gomimushi]

(Figs. 1–16)

Diagnosis. Body rather small and elongate; terminal segments of palpi not dilated; antennal segment 2 with three or four setae on each side; sides of pronotum weakly sinuate just before hind angles; elytral apices not obliquely truncated; apices of striae 2 and 7 anastomosed a little before the elytral apices; claw with several teeth; anal sternite (VI) shallowly emarginate at apex in ♂; aedeagus almost straight with large basal part and strong constriction near basal part in lateral view; right paramere weakly bent at about middle, with narrowly rounded apex; apical styli in ♀ with stout spines.

Description. L: 6.71–8.07 mm. Body rather small and elongate. Body blackish brown to brown; appendages brown.

Head weakly convex; eyes weakly convex; frontal furrows shallow and wide; lateral grooves linear, deep, straight and reaching the post-eye level; anterior supraorbital pore situated between basal 1/2–2/3 of eyes; posterior supraorbital pore situated between post-eye level and neck constriction; mi-

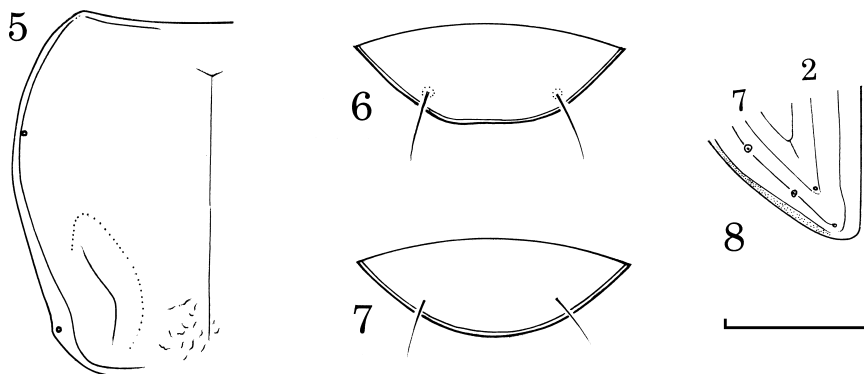


Figs. 1–4. *Synuchus (Synuchus) yamashitai* MORITA, sp. nov. — 1, Male; 2, anal sternite in ♂; 3, extracted male genital organ, showing everted inner sac; 4, habitat (Mt. Gomanodan-zan).

crosscutture sharply impressed, consisting of polygonal meshes; genae weakly convex and $3/7$ – $13/20$ as long as eyes; mentum tooth wide, rather elongate and very shallowly bifid at the tips; apex of labrum weakly arcuate; terminal segment of labial palpus cylindrical and widest at about middle (not dilated); terminal segment of maxillary palpus widest at about middle and truncated at the tip; antennae filiform, rather short and reaching the basal $3/10$ of elytra; antennal segment 2 with three or four setae on each side; relative lengths of antennal segments as follows: — I : II : III : IV : V : VI : XI = 1 : 0.56 : 0.96 : 1.22 : 1.18 : 1.09 : 1.29 in ♂, 1 : 0.54 : 0.89 : 1.05 : 1.09 : 1.08 : 1.18 in ♀.

Pronotum rather narrow, weakly convex and widest at about basal $3/5$ – $13/20$; PW/HW 1.53–1.56 (M 1.55) in ♂, 1.49–1.56 (M 1.54) in ♀; PW/PL 1.18–1.23 (M 1.21) in ♂, 1.17–1.24 (M 1.21) in ♀; PW/PA 1.55–1.61 (M 1.57) in ♂, 1.46–1.55 (M 1.50) in ♀; PW/PB 1.30–1.34 (M 1.32) in ♂, 1.33–1.36 (M 1.41) in ♀; PA/PB 0.81–0.86 (M 0.84) in ♂, 0.88–0.93 (M 0.91) in ♀; sides widely arcuate and usually very weakly sinuate just before hind angles; apical angles weakly to moderately produced, and narrowly and simply rounded at the tips; apex almost straight at middle and moderately emarginate at the sides or moderately so throughout; median line finely impressed and not reaching apex nor base; anterior marginal setae situated at the widest part or a little before that level; anterior transverse impression obliterated; basal foveae rather deep, elongate and almost smooth; hind angles obtuse; base almost straight and strongly bordered at the sides; basal part usually smooth, or irregularly wrinkled at the median part; microsculpture clearly impressed and consisting of transverse meshes.

Elytra narrow, elongate and moderately convex; EW/PW 1.32–1.37 (M 1.35) in ♂, 1.38–1.44 (M 1.41) in ♀; EL/EW 1.64–1.70 (M 1.67) in ♂, 1.57–1.67 (M 1.62) in ♀; sides moderately arcuate throughout, with no preapical emargination; apices weakly produced, usually weakly separated from



Figs. 5–8. *Synuchus (Synuchus) yamashitai* MORITA, sp. nov. — 5, Pronotum; 6, apical half of anal sternite in ♂; 7, same in ♀; 8, apical part of left elytron, mainly showing the pores and striae 2 and 7. Scale: 0.5 mm.

each other, and each with narrowly rounded apex (not obliquely truncated); striae deep and impunctate; scutellar striole long and situated on interval I; basal pore situated on the meeting point of striae 1 and 2; microsculpture rather strongly impressed and consisting of fine transverse meshes; intervals weakly convex and impunctate; marginal series of umbilicate pores 14–15 in number; two dorsal pores very weak, situated on interval III and adjoining stria 2; the first pore situated between basal $3/10$ – $3/7$ in ♂, between $7/20$ and a level a little behind the middle in ♀; the second one between basal $3/5$ and $3/4$ in ♂, $7/10$ – $17/20$ in ♀; subapical pore situated a little before the meeting point of striae 2 and 7 (cf. HABU, 1978, p. 385); elytral epipleuron gradually narrowed apicad; inner plica indistinct.

Ventral surface smooth; sternites I and II usually with short and longitudinal wrinkles; anal sternite (VI) coarsely and strongly impressed with microsculpture of wide to transverse meshes, and shallowly emarginate at apex in ♂, arcuate throughout in ♀.

Legs long and slender; metatrochanter very short, with rounded apex; in ventral view, metafemora each with two setae at the middle and basal $1/3$, respectively, and with one short and stout seta at basal $7/10$; outer sides of basal 2 or 3 segments of meso- and metatarsi very weakly sulcate; segment 4 of metatarsi with a pair of minute setae and rarely several very minute hairs on apical part; claw segments of meso- and metatarsi with several setae on ventral side; claw with several teeth; TL/HW 1.48–1.50 (M 1.49) in ♂, 1.26–1.35 (M 1.30) in ♀.

Genital segment elongate and with wide handle which becomes narrower towards rounded apex.

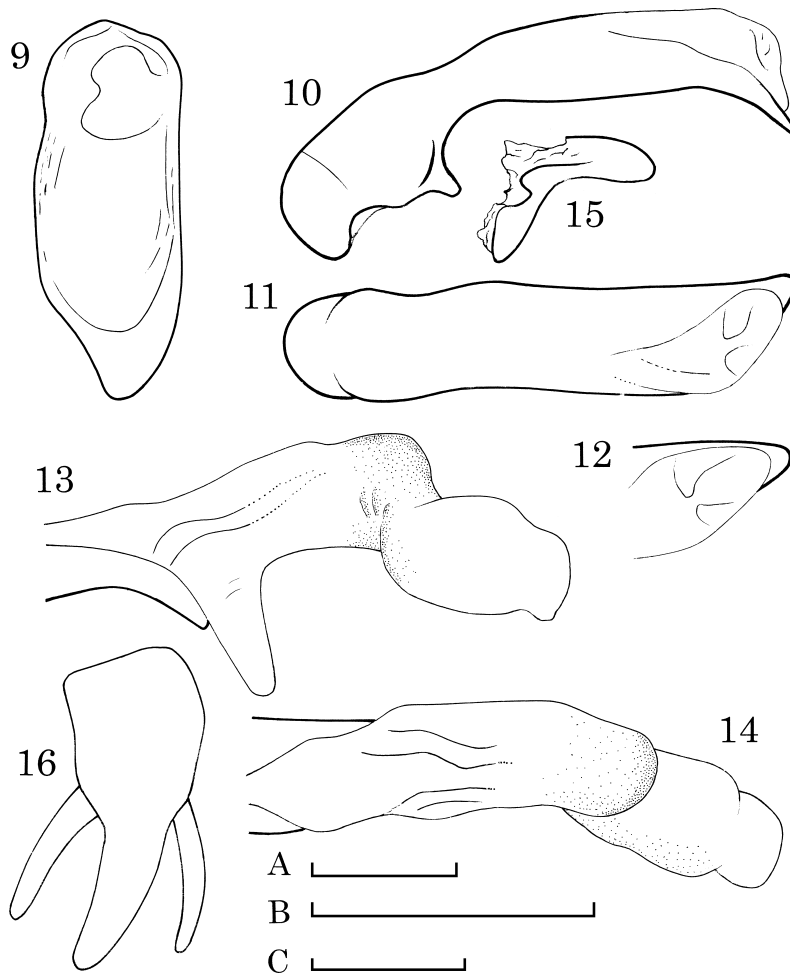
Aedeagus elongate, almost straight, and strongly constricted at basal part in lateral view; basal part very large without sagittal aileron; in lateral view, apical lobe rather short with narrowly rounded apex; viewed dorsally, apical part weakly inclined to the right and with rounded apex; right paramere weakly bent at about middle, with widely rounded apex; left paramere almost same as in Fig. 22.

Inflated inner sac elongate, curved at basal $1/3$, prolonged forwards, and with a large and elongate lobe near aedeagal apex (cf. Fig. 24-L) and two poorly sclerotized strips at the sides; basal parts of two strips exposed at aedeagal dorsal membranous part; area of basal $1/3$ covered with poorly sclerotized scales. Apical styli in ♀ with stout spines.

Type series. Holotype: ♂, Mt. Gomanodan-zan, 29–XI–2012, M. ISHII leg. Paratypes: 1 ♀, Mt. Gomanodan-zan, 1–VII–2012, S. YAMASHITA leg.; 4 ♂♂, 5 ♀♀, same locality, 22–IX–2012, S. YAMASHITA leg.; 3 ♀♀, same locality, 29–XI–2012, S. YAMASHITA & M. ISHII leg.

Locality. Mt. Gomanodan-zan, Totsukawa-mura, Nara Prefecture, Central Japan.

Depository of the holotype. The holotype is deposited in the Department of Zoology, the Na-



Figs. 9–16. *Synuchus (Synuchus) yamashitai* MORITA, sp. nov. — 9, Genital segment; 10, aedeagus, left lateral view; 11, same, dorsal view; 12, apical part of aedeagus, apico-dorsal view; 13, apical part of aedeagus in left lateral view, showing everted inner sac; 14, apical part of aedeagus in dorsal view, showing everted inner sac; 15, right paramere, left lateral view; 16, apical styli in ♀. Scale: A: 1 mm for 9; B: 1 mm for 10–15; C: 0.2 mm for 16.

tional Museum of Nature and Science, Tsukuba.

Specimens dissected and measured. Standard rations of body parts shown in the descriptive part are those of four males and four females. The genitalia of four males were dissected. Besides, the inner sac of one specimen was everted.

Notes. Judging from the male genital organ including structure of inner sac, this new species is very closely allied to *Synuchus (Synuchus) ventricosus* LINDROTH (1956, p. 531) known from Mt. Ohdaigahara-san, Nara Prefecture. It is, however, distinguished from the latter by the following points: 1) aedeagus almost straight and constricted at basal part in lateral view, 2) viewed dorsally, apical part of aedeagus inclined to the right, 3) genital segment with narrower handle, and 4) aedeagal inner sac with more elongate lobe.

***Synuchus (Synuchus) ventricosus* LINDROTH**

[Japanese name: Harabuto-tsuya-hirata-gomimushi]

(Figs. 17–24)

Synuchus ventricosus LINDROTH, 1956, p. 531, figs 19-D, 21-F: type locality: Mt. Ohdaigahra-san.*Synuchus (Synuchus) ventricosus*: HABU, 1978, p. 384, pl. 33, fig. 2, figs. 771, 774, 778, 779. — KASAHARA, 1982, p. 46.

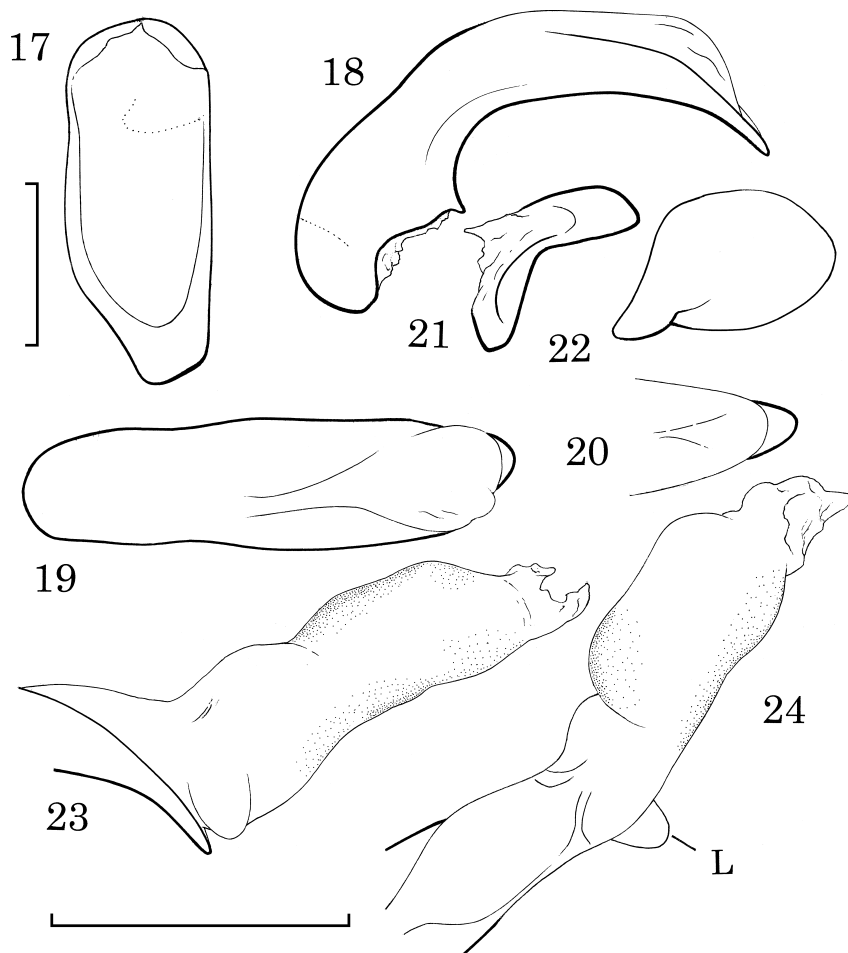
Diagnosis. Body rather small and elongate; terminal segments of palpi not dilated; antennal segment 2 with three or four setae on each side; sides of pronotum weakly sinuate just before hind angles; elytral apices not obliquely truncate; apices of striae 2 and 7 anastomosed a little before the elytral apices; claw with several teeth; anal sternite (VI) narrowly arcuate in ♂; aedeagus elongate and weakly arcuate in lateral view; right paramere weakly bent at about middle, with narrowly rounded apex; left paramere oval; aedeagal inner sac with rather short lobe (Fig. 24-L); everted and inflated inner sac almost straight; apical styli in ♀ with stout spines.

Redescription. L: 7.00–7.28 mm. Body rather small and elongate. Body blackish brown to brown; appendages brown.

Head weakly convex; eyes weakly convex; frontal furrows shallow and wide; lateral grooves linear, deep, straight and reaching the post-eye level; PW/HW 1.54, 1.55 (M 1.55) in ♂, 1.48 in H, 1.50 in ♀; anterior supraorbital pore situated at mid-eye level or a little before the level; posterior supraorbital pore situated a little before the neck constriction or mid-level between post-eye and neck constriction; microsculpture sharply impressed, consisting of polygonal meshes; genae weakly convex and 1/3 as long as eyes; mentum tooth wide, rather deeply bifid at the tips; apex of labrum variable, straight, very weakly emarginate at middle or weakly arcuate; terminal segments of palpi widest at about middle (not dilated); antennae filiform, rather short and reaching the basal 3/10 of elytra; antennal segment 2 with three or four setae on each side; relative lengths of antennal segments as follows: — I : II : III : IV : V : VI : XI = 1 : 0.53 : 0.90 : 1.08 : 1.06 : 1.06 : 1.20 in 2 ♂♂, 1 : 0.56 : 0.96 : 1.06 : 1.13 : 1.03 : 1.19 in H, 1 : 0.53 : 0.79 : 1.06 : 1.03 : 0.94 : 1.11 in 1 ♀.

Pronotum rather narrow, moderately convex and widest at about basal 13/20; sides moderately arcuate in front, weakly so behind and very weakly sinuate just before hind angles; reflexed lateral sides very narrow throughout or slightly becoming wider from basal 3/8 to hind angles; PW/PL 1.21, 1.21 (M 1.21) in ♂, 1.16 in H, 1.23 in ♀; PW/PA 1.53, 1.54 (M 1.54) in ♂, 1.50 in H, 1.48 in ♀; PW/PB 1.37, 1.36 (M 1.37) in ♂, 1.31 in H, 1.35 in ♀; PA/PB 0.89, 0.88 (M 0.89) in ♂, 0.87 in H, 0.92 in ♀; apical angles weakly to moderately produced, and narrowly and simply rounded at the tips; apex weakly emarginate; median line finely impressed and not reaching apex nor base or close to base; anterior marginal setae situated a little before the widest part; anterior transverse impression very weakly impressed near median line; posterior transverse impression vanished in 2 ♂♂, rather deep in ♂; basal foveae elongate and impunctate, and variable in depth, rather shallow in 2 ♂♂, rather deep in 1 ♂; hind angles obtuse; base almost straight and strongly bordered at the sides; basal part usually smooth, or irregularly wrinkled at the median part in 1 ♂; microsculpture clearly impressed and consisting of transverse meshes.

Elytra narrow, elongate and moderately convex; sides moderately arcuate throughout, with no preapical emargination; apices weakly produced, weakly separated from each other, and with narrowly rounded apex in 2 ♂♂, or rather obtuse in 1 ♂ (not obliquely truncated); EW/PW 1.33, 1.32 (M 1.33) in ♂, 1.45 in H, 1.41 in ♀; EL/EW 1.69, 1.63 (M 1.66) in ♂, 1.56 in H, 1.59 in ♀; TL/HW 1.41, 1.41 (M 1.41) in ♂, 1.19 in H, 1.25 in ♀; striae deep and impunctate; scutellar striole rather short and situated on interval I; basal pore situated at interval I and adjoining stria 1; microsculpture rather



Figs. 17–24. *Synuchus (Synuchus) ventricosus* LINDROTH. — 17, Genital segment; 18, aedeagus, left lateral view; 19, same, dorsal view; 20, apical part of aedeagus, apico-dorsal view; 21, right paramere, left lateral view; 22, left paramere, left lateral view; 23, apical part of aedeagus in left lateral view, showing everted inner sac; 24, apical part of aedeagus in dorsal view, showing everted inner sac; L, lobe. Scale: 1 mm.

strongly impressed and composed of fine transverse meshes; intervals weakly convex and impunctate; marginal series of umbilicate pores 15 in number; two dorsal pores very weak, situated on interval III and adjoining stria 2; the first pore situated at basal 7/20 of elytra; the second one at about 7/10; sub-apical pore situated a little before the meeting point of striae 2 and 7 (cf. HABU, 1978, p. 385); elytral epipleuron gradually narrowed apicad; inner plica distinct.

Ventral surface smooth; sternites I and II usually with short and longitudinal wrinkles; anal sternite (VI) coarsely and strongly impressed with microsculpture composed of transverse meshes, and shallowly emarginate at apex in ♂.

Legs long and slender; metatrochanter short, with rounded apex; in ventral view, metafemora each with two setae at basal 3/5 and 1/4, respectively, and each with one short and stout seta at basal 4/5; basal 2 or 3 segments of meso- and metatarsi very weakly bisulcate though inner sulci are rudimentary; segment 4 of metatarsi with a pair of minute setae at apical part; claw segments of meso-

and metatarsi with two pair of long setae on ventro-lateral side; claw with several teeth.

Genital segment elongate and with very wide handle.

Aedeagus elongate and moderately arcuate; basal part large, without sagittal aileron; in lateral view, apical lobe rather short with narrowly rounded apex; viewed dorsally, apex moderately rounded. Right paramere weakly bent at about middle, with narrowly rounded apex; left paramere oval.

Inflated inner sac elongate, and with a large lobe near aedeagal apex (Fig. 24-L) and two poorly sclerotized strips at the sides; basal parts of two strips exposed at aedeagal dorsal membraneous part; middle to subapical part covered with poorly sclerotized scales.

Specimens examined. 1 ♀, “Mt. Ohdaigahara Kimmeisui (NARA)” / “21–VII–1953 H. Ishida leg.” / “Holotypus *Synuchus ventricosus* Lth”; 1 ♀, same locality, 26–VIII–1973, S. MORITA leg.; 1 ♂, same locality, 7–VII–1985, M. SAITÔ leg.; 2 ♂♂, same locality, 18–IX–2002.

Locality. Mt. Ohdaigahara-san, Nara Prefecture, Central Japan.

Depository of the holotype. The holotype is deposited in the Department of Zoology, the National Museum of Nature and Science, Tsukuba.

Specimens dissected and measured. Standard ratios of body parts shown in the descriptive part are those of two males and two females. The genitalia of three males were dissected. Besides, the inner sac of one specimen was everted.

Notes. This species was originally described based on only a single female collected by the late Hiroshi ISHIDA, one of the Japanese carabid specialists. After that, HABU (1978) redescribed it based on several females, including the holotype.

This and the former species may form a single group within the genus *Synuchus* because of the external feature and structure of the aedeagal inner sac. Besides, judging from the shape of body parts, *S. patroboides* LINDROTH (1956, p.531) and *S. tanzawanus* (HABU) (1955, p.180) must be placed in this group.

要 約

森田誠司：紀伊半島産ツヤヒラタゴミムシ属 *Synuchus* (コウチュウ目オサムシ科) の1新種。—— 奈良県護摩壇山から採集されたツヤヒラタゴミムシを新種と認め、キイツヤヒラタゴミムシ *Synuchus* (*Synuchus*) *yamashitai* MORITA sp. nov. と命名記載した。この種は、同じ奈良県の大台ヶ原山から知られているハラプトツヤヒラタゴミムシ *S. (S.) ventricosus* LINDROTH に近い種であるが、陰茎の外部形態のみならずその内袋の形態、とくに基部開口部付近に存在する大きな袋状構造物の形態に明瞭な差異が認められる。この機会に *S. (S.) ventricosus* の雄の再記載を行った。

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