

Descriptions of Two New Species of the Genus *Ischalia* (Coleoptera, Ischaliidae) from the Island of Shikoku, Japan

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Abstract Two new species of the genus *Ischalia* PASCOE, 1860 (Coleoptera, Ischaliidae) are described from the Island of Shikoku, Japan, under the names of *Ischalia (Ischalia) toshikoeae* M. SAITÔ and *I. (I.) kitanoi* M. SAITÔ. Both the species belong to the nominotypical subgenus *Ischalia*. Remarkable hind wing polymorphism is reported for *I. (I.) patagiata* LEWIS for the first time.

The following four species belonging to the nominotypical subgenus *Ischalia* of the genus *Ischalia* (Coleoptera, Ischaliidae) have been hitherto recorded from the Japanese Islands: *Ischalia (Ischalia) patagiata* LEWIS, 1879, *I. (I.) luteolineata* PIC, 1912, *I. (I.) takane* M. SAITÔ, 1994, and *I. (I.) arakii* M. SAITÔ, 2003. Recently, I have had an opportunity to examine some specimens collected from the Island of Shikoku, Japan, and found out two undescribed new species. Here I will describe them under the names of *Ischalia (Ischalia) toshikoeae* sp. nov. and *I. (I.) kitanoi* sp. nov. These new species are classified into the subgenus *Ischalia*, followed his taxonomic treatment by YOUNG (2011).

In the course of the present study, I discovered that *I. (I.) patagiata* occasionally exhibits polymorphism in the hind wing with varying extents of reduction. I will additionally give some comments on the hind wing reduction in the species and the present two new species.

Before going into further details, I express my deep appreciation to Dr. Kunio SUZUKI (Toyama) for his critical reading of the original manuscript and various suggestions. I also thank Dr. Hiroyuki YOSHITOMI (Ehime Univ.) for his kind help in getting literature and valuable suggestions. Hearty thanks are also due to Messrs. Shun'ya KITANO (Ehime Univ.) and Kouzo MIZUNO (Kyoto) for their kind help in offering valuable materials.

Ischalia (Ischalia) patagiata LEWIS, 1879

[Japanese name: Nami-herihane-mushi]

(Figs. 3, 4, 7, 11, 13, 15, 17, 19, 20, 21)

Ischalia patagiata LEWIS, 1879, 463 (type localities: Hiogo and Nagasaki); 1887, 168. — NAKANE, 1960, 60; 1963, 239, pl. 120, fig. 1 [part]. — SASAJI, 1985, 355, pl. 60, fig. 1 [part]. — NIKITSKY, 1992, 497, fig. 239-1 [part]. — SAITÔ, 1994, 335–343, figs. 1, 4, 7, 10; 2003, 58 (In key). — YOUNG, 2011, 53–58.

Male and female. Dorsum rather closely covered with pale yellowish brown pubescence, elytral pubescence same colour as ground colour; antennae black, thickly and closely pubescent. Surface of head and pronotum glossy.

Antennae length 2.9 mm. Relative length of each of 1st to 11th antennal segments to 3rd segment (no conspicuous difference in both sexes): 1.0 : 0.4 : 1.0 : 0.9 : 0.9 : 0.8 : 0.6 : 0.5 : 0.5 : 0.6 : 0.9; relative width of each of 1st to 11th antennal segments to own width of each segment (no conspicuous difference in both sexes): 1.7 : 0.9 : 2.1 : 1.9 : 1.9 : 1.9 : 1.3 : 1.2 : 1.1 : 1.4 : 2.1.

Upper surface of sutural costae of elytra smooth, without hairs (Fig. 7).

Hind wings occasionally exhibiting polymorphism in extent of reduction, continuously varying from macropterous (Figs. 3, 19) to brachypterous (Figs. 4, 21). Relative length of hind wing to elytron 1.4 times in macropterous morph and 0.8 times in strongly brachypterous one.

Specimens examined. 1 ♂, Umenoki-daira, Minami-asakawa-machi, Tokyo Pref., 23-VII-1994, A. IZUMI leg.; 1 ♀, Men'noki-tôge, Inabu, Aichi Pref., 16-VII-1985, N. KANIE leg.; 1 ♂, Fukuro-tonda, Shirahama, Wakayama Pref., 27-VII-1991, S. TANAKA leg.; 1 ♀, Futamata-gawa, Koyama, Kagoshima Pref., 3-V-1991, K. HAGA leg.

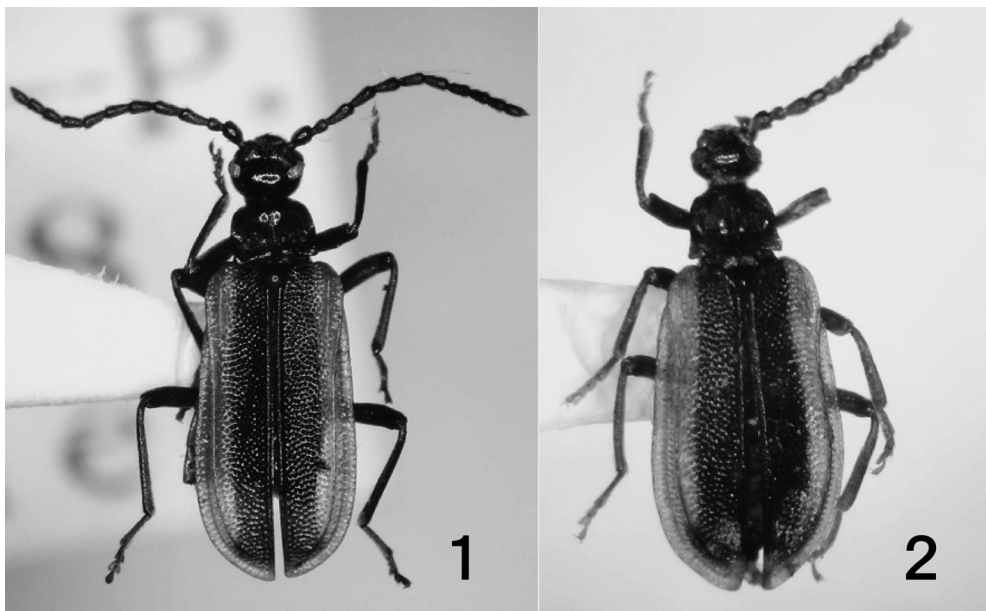
Ischalia (Ischalia) toshikoae M. SAITÔ, sp. nov.

[Japanese name: Tsurugi-herihane-mushi]

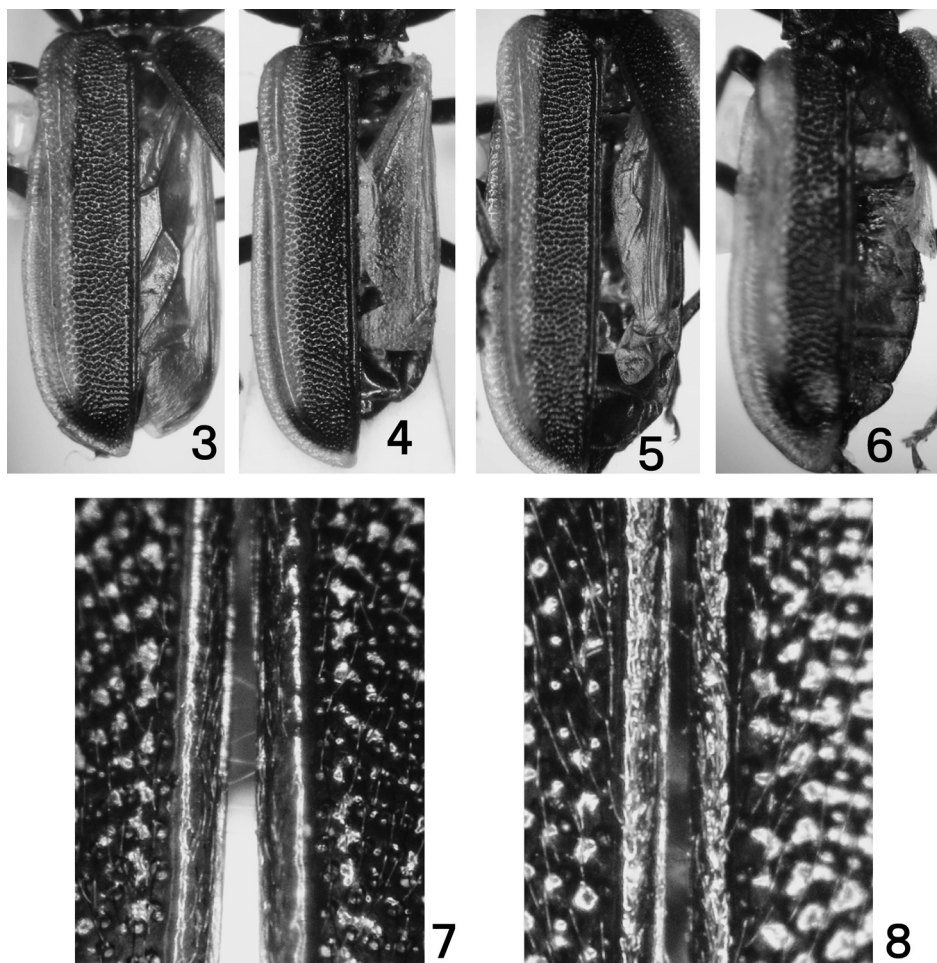
(Figs. 1, 5, 8, 14, 18, 22)

Description. Male and female. Body elongate, flat, somewhat shining; dorsum rather closely covered with pale yellowish brown pubescence; antennae black, thickly and closely pubescent; elytral pubescence bearing the same colour as ground colour. Body entirely brownish black in ground colour, with mouth parts and tarsi somewhat paler; lateral parts of elytra broadly yellowish brown, forming two distinct stripes reaching suture, whose width is less than half of the width of each elytron on either side; the yellow stripe indented by blackish ground colour just before apex though the indentation does not extend onto reflexed margin. Surface of head and pronotum glossy.

Head suboval, sparsely and rather coarsely punctate on the surface, transversely and weakly concave between eyes, and roundly swollen from between eyes to vertex which simply rounded



Figs. 1-2. Habitus. — 1, *Ischalia (Ischalia) toshikoae* M. SAITÔ, sp. nov.; 2, *I. (I.) kitanoi* M. SAITÔ, sp. nov.



Figs. 3–8. *Ischalia* spp. from the Island of Shikoku, Japan. — 5, 8, *I. (Ischalia) toshikoeae* M. SAITÔ, sp. nov.; 6, *I. (I.) kitanoi* M. SAITÔ, sp. nov.; 3, 4, 7, *I. (I.) patagiata* LEWIS. — 3–6, Hind wings folded under right elytra (3, macropterous; 4, brachypterous; 5, sternopterous; 6, micropterous); 7, 8, upper surface of sutural costae on elytra.

down to neck constriction; clypeus separated from frons by a transverse groove; eyes kidney-shaped and moderately protruded; terminal segment of maxillary palpus triangular, thick, outer margin the longest, anterior margin slightly longer than the inner one; antennal sockets carinate; antennae shorter than half of body length, terminal segment obliquely truncated outward; antenna length 2.9 mm; relative length of each of 1st to 11th antennal segments to 3rd segment (no conspicuous difference in both sexes): 0.9 : 0.7 : 1.0 : 1.0 : 0.9 : 0.9 : 0.8 : 0.8 : 0.8 : 0.7 : 0.9; relative width of each of 1st to 11th antennal segments to own width of each segment (no conspicuous difference in both sexes): 1.6 : 1.5 : 2.3 : 2.5 : 2.2 : 2.3 : 2.1 : 2.0 : 2.2 : 1.7 : 2.5.

Pronotum subcampanulate, widest at the middle; lateral margins strongly arcuate in anterior part and with very obtuse front angles, sinuate towards hind angles which very obtusely protruded; sides narrowly bordered, basal margin weakly bisinuate; disc gibbous in front with a clear median longitudinal furrow, transversely concave behind the gibbosity and with a very

strong longitudinal median carina which protrudes backwards; surface distinctly and deeply foveolate at the sides of median carina and inside lateral borders in basal half, the two foveae being connected by a transverse depression on each side; punctures on the surface as on head. Scutellum triangular, rounded at the tip and becoming convex towards the tip, surface rather coarsely punctate.

Elytra flat, subparallel-sided, with shoulders distinct though rounded; sides slightly divergent from behind shoulders, moderately and widely arcuate in apical one-thirds, and rounded at apex; surface coarsely and very densely punctate; suture clearly raised to form a costa, upper surface of sutural costae coarsely punctate and rugose with hairs (Fig. 8); each elytron with a long sharp costa extending from base to near apex along lateral border, which is strongly arcuate over humeral part and does not reach suture, and also with a sharp short humeral costa inside the long one, which is more highly raised than the outer. Lateral edges of elytra forming costae; epipleuron wide. Hind wings considerably brachyterous, almost stenopterous (Figs. 5, 22); their relative length 1.1 times as long as elytra.

Mesepisterna approaching each other in front.

Male genitalia: paramere slender, 5.4 times as long as maximum width, dark reddish brown in colour, becoming narrow in anterior half with the apex shallowly and narrowly emarginate; sides with hairs in anterior half (Fig. 18).

Body length 5.0 mm; shoulder breadth 1.6 mm.

Type series. Holotype: ♂, Mt. Tsurugi-san, Koyadaira, Tokushima Pref., 20-VI-1998, M. SAITÔ leg. Paratype: 1 ♀, same data as holotype. The holotype is preserved in the collection of the Department of Zoology, National Museum of Nature and Science, Tokyo.

Notes. The present new species is very similar to *I. (I.) patagiata* LEWIS but is easily discriminated from the latter by the following characteristics: 1) thinner base of the rear end tip of pronotal longitudinal median carina (Fig. 14); 2) upper surface of sutural costae of elytra coarsely punctate and rugose with hairs (Fig. 8); 3) paramere becoming narrow in anterior half with the apex shallowly and narrowly emarginate (Fig. 18).

The materials of this new species are collected from bamboo bushes at ca. 1,680 m in alt.

The specific name is dedicated to my beloved mother.

Ischalia (Ischalia) kitanoi M. SAITÔ, sp. nov.

[Japanese name: Ishizuchi-herihane-mushi]

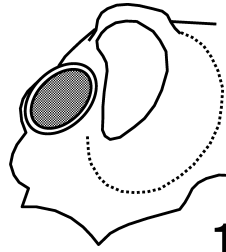
(Figs. 2, 6, 9, 10, 12, 16, 23)

Description. Female. Body elongate, flat, somewhat shining; surface rather closely covered with pale yellowish brown pubescence; antennae black with apical two segments and apical halves of 9th segments brownish yellow (Fig. 9) in ground colour, thickly and closely pubescent; elytral pubescence bearing the same colour as ground colour. Body entirely brownish black in ground colour, with mouth parts and legs paler, trochanters, rear median area of metathorax and median area of sternum much paler; lateral parts of elytra largely yellowish

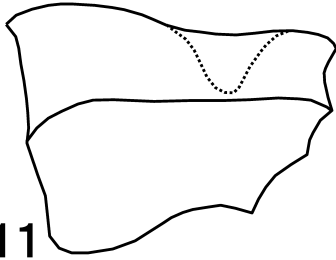
Figs. 9–18. *Ischalia* spp. from Japan. — 9, 10, 12, 16, *I. (I.) kitanoi* M. SAITÔ, sp. nov.; 11, 13, 15, 17, *I. (I.) patagiata* LEWIS; 14, 18, *I. (I.) toshikoeae* M. SAITÔ, sp. nov. — 9, Left antenna in outline and color pattern; 10, head in lateral view; 11, 12, pronotum in lateral view; 13, 14, the rear end tip of pronotal longitudinal median carina; 15, 16, elytra in lateral view; 17, 18, outline of paramere in dorsal view (apical tip, part), Scale: 0.1 mm.



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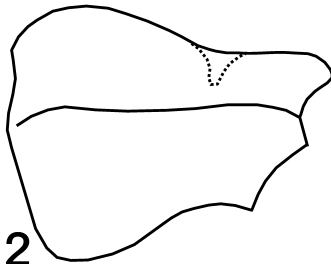
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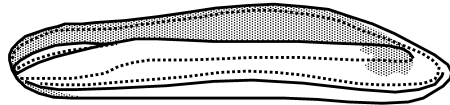
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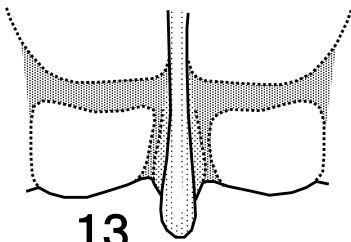
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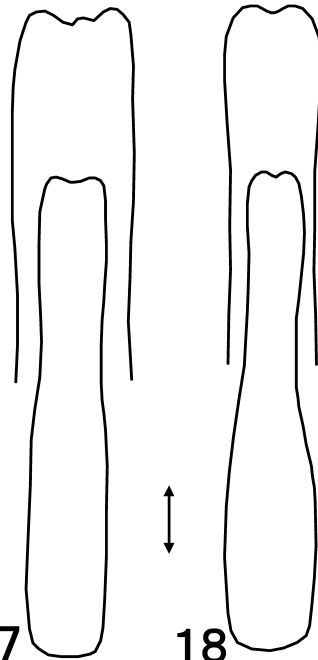
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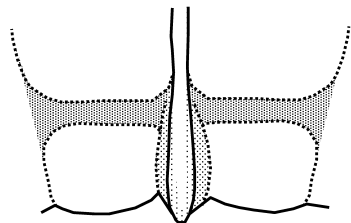


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brown, forming two distinct stripes reaching suture, whose width is less than half of the width of each elytron on either side; the yellow stripe indented by blackish ground colour just before apex, the indentation does not extend onto reflexed margin, and the edges of costae and lateral edges brown. Surface of head and pronotum matt.

Head suboval, sparsely and rather coarsely punctate on the surface, transversely weakly concave between eyes, and roundly swollen from between eyes to vertex; vertex simply rounded down to neck constriction, with a pair of short carinae on it inside of eyes (Fig. 10); clypeus separated from frons by a transverse groove; eyes kidney-shaped and moderately protruded; terminal segment of maxillary palpus triangular, thick, outer margin as long as anterior margin; antennal sockets carinate; antennae shorter than half of body length, terminal segment obliquely truncated outward; antenna length 2.0 mm; relative length of each of 1st to 11th antennal segments to 3rd segment: 1.0 : 0.7 : 1.0 : 0.9 : 0.9 : 0.8 : 0.8 : 0.7 : 0.7 : 0.7 : 0.9; relative width of each of 1st to 11th antennal segments to own width of each segment: 1.4 : 1.4 : 1.9 : 1.7 : 1.6 : 1.3 : 1.2 : 1.1 : 1.1 : 1.4 : 1.9 (Fig. 9).

Pronotum campanulate, widest at the middle; lateral margins strongly arcuate in anterior part and with very obtuse apical angles, sinuate towards hind angles which are very obtusely protruded and obtusely rounded at the tip; sides narrowly bordered, basal margin weakly bisinuate; disc gibbous in front, transversely concave behind the gibbosity and with a very strong longitudinal median carina which is protruded backwards; surface distinctly foveolate at the sides of median carina and inside lateral borders in basal half, the two foveae being connected by a transverse U-shaped depression which is smooth without hairs on each side; punctures on the surface as on head. Scutellum triangular, rounded at the tip and becoming convex towards the tip, surface rather coarsely punctate.

Elytra flat, rather convex on central area of disc (Fig. 16), subparallel-sided, with shoulders distinct though rounded; sides slightly divergent from behind shoulders, moderately and widely arcuate in apical third, and narrowly rounded at apex; surface coarsely and very densely punctate; suture clearly raised to form a costa, upper surface of sutural costae narrowly smooth without hairs; each elytron with a long sharp costa extending from base to near apex along lateral border, which is strongly arcuate over humeral part and does not reach suture, and also with a sharp short humeral costa inside the long one, which is more highly raised than the outer. Lateral edges of elytra forming costae; epipleuron wide. Hind wings strongly reduced, micropterous (Figs. 6, 23).

Mesepisterna approaching each other in front.

Body length 4.6 mm; shoulder breadth 1.5 mm.

Type series. Holotype: ♀, Pass Shirasa, Agawa, Kôchi Pref., 20-VI-2006, T. KITANO leg.

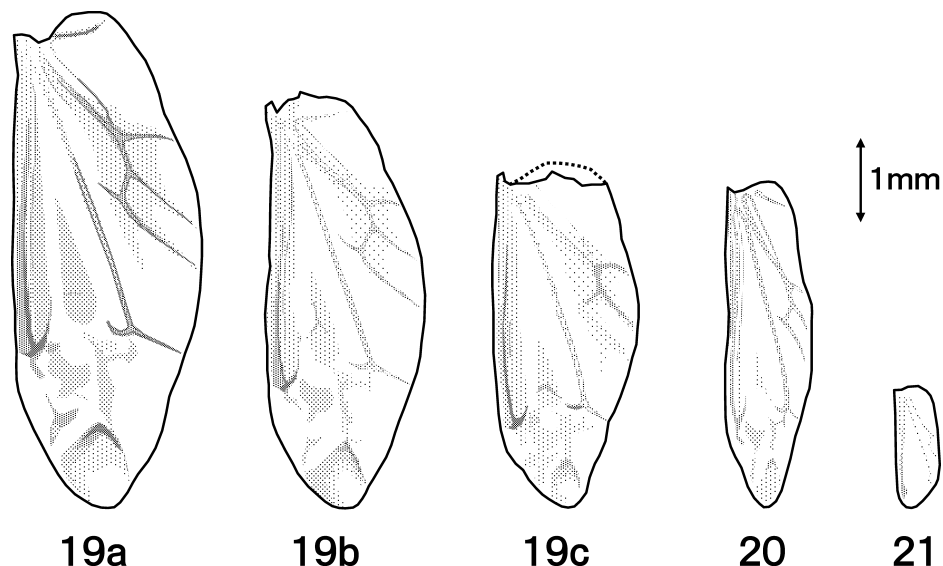
The holotype is preserved in the collection of the Osaka Museum of Natural History, Osaka.

Notes. The present new species is distinctly discriminated from other known Japanese *Ischalia* species by the following characteristics: 1) antennae with apical two segments and apical halves of 9th segments brownish yellow (Fig. 9); 2) shorter antennae with shorter segment of each of 11 ones less than twice as own width (Fig. 9); 3) pronotal disc strongly convex (Fig. 12); 4) a pair of transverse U-shaped depressions which are connected with the two foveae on pronotal disc is smooth and without hairs; 5) elytral costae strongly upheave (Fig. 16).

The specific name is dedicated to Mr. Shun'ya KITANO who collected the type specimen.

Short Notes on Hind Wing Reduction in *Ischalia* Species

Hind wing reduction in the genus *Ischalia* has been reported for *I. (Ischalia) takane* M.



Figs. 19–21. Right hind wings of *Ischalia* spp. — 19a–c, *I. (I.) patagiata* LEWIS (a, macropterous morph; b, slightly brachypterous morph; c, brachypterous morph); 20, *I. (I.) toshikoeae* M. SAITÔ, sp. nov., stenoptery form; 21, *I. (I.) kitanoi* M. SAITÔ, sp. nov., microptery form.

SAITÔ, 1994 from high mountain areas in central Honshu, Japan, and *I. (I.) uenoi* M. SATÔ, 1990 from high mountain areas in Taiwan. I discovered that *I. (I.) patagiata* LEWIS, 1879 from Honshu and Kyushu showed remarkable polymorphism in the hind wing, continuously varying from macropterous (Figs. 3, 19) to brachypterous (Figs. 4, 21) with intermediates (Fig. 20). Hind wing reduction was also observed in the two new species described in this paper; i.e., *I. (I.) toshikoeae* sp. nov. (strongly brachypterous, almost stenoptery; Fig. 22) and *I. (I.) kitanoi* sp. nov. (microptery; Fig. 23).

要 約

斎藤昌弘：四国産ヘリハネムシ属 *Ischalia* (鞘翅目ヘリハネムシ科) 2新種の記載。—— 従来、ヘリハネムシ属の日本産種は、4種類が知られていた。四国産の標本を調べた結果、2未記載新種を見出したので、ツルギヘリハネムシ *Ischalia (Ischalia) toshikoeae* M. SAITÔ およびイシツチヘリハネムシ *I. (I.) kitanoi* M. SAITÔ として記載した。また、ナミヘリハネムシ (改称) *I. (I.) patagiata* LEWIS, 1879 では、従来知られていなかった後翅の縮小による多型の存在を報告した。本報告で記載した2新種についても、後翅を調べたところ、両種とも縮小傾向が著しく、ツルギヘリハネムシは細翅 stenoptery, イシツチヘリハネムシは微翅 microptery で、両種とも飛翔機能は明らかに失われている。

References

- LEWIS, G., 1879. On certain new species of Coleoptera from Japan. *Ann. Mag. nat. Hist.*, 4(5): 459–467.
 ———— 1887. On the Pyrochroidae of Japan. *Ibid.*, 20(5): 165–175.
 NAKANE, T., 1960. On the Pyrochroidae of Japan. *Ent. Rev. Japan, Osaka*, 11: 59–66. (In Japanese.)
 ———— 1963. Pyrochroidae. In NAKANE, T., K. OHBAYASHI, T. NOMURA & Y. KUROSAWA (eds.), *Iconographia Insectorum Japonicorum Colore naturali edita*, 2: 239–240, pl. 120. Hokuryûkan, Tokyo. (In Japanese.)

- NIKITSKIY, N. B., 1992. Ischaliidae. In LERA, P. A. (ed.), *Opredelitel' Nasekomykh Dal'nego Vostoka SSSR v Shesti Tomakh*, **3**(2): 497–498. (In Russian.)
- 2008. Anthicidae. In LÖBL, I., & A. SMETANA (eds.), *Catalogue of Palaearctic Coleoptera*, **5**: 449–450. Apollo Books, Stenstrup.
- SAITÔ, M., 1994. A revisional study of the Japanese species of the family Ischaliidae (Coleoptera, Heteromera). *Elytra, Tokyo*, **22**: 335–343.
- 2003. A new species of the genus *Ischalia* (Coleoptera, Anthicidae, Ischaliinae) from Hokkaido, Japan. *Ibid.*, **31**: 55–60.
- SASAJI, H., 1985. Pyrochroidae. In KUROSAWA, Y., S. HISAMATSU & H. SASAJI (eds.), *The Coleoptera of Japan in Color*, **3**: 355–357, pl. 61. Hoikusha, Osaka. (In Japanese.)
- SATÔ, M., 1990. The genus *Ischalia* (Coleoptera, Pyrochroidae) from Taiwan. *Elytra, Tokyo*, **18**: 101–104.
- YOUNG, D. K., 2011. A new Asian subgenus and species of *Ischalia* (Coleoptera: Ischaliidae) with an assessment of subgeneric concepts, revised world checklist, and keys to the subgenera and “blue elytra” species. *Zootaxa, Auckland*, (2811): 53–58.

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