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Study of Asian Strongyliini (Coleoptera, Tenebrionidae)

I. Six New *Strongylium* Species from Thailand, Laos and Taiwan, together with a New Replacement Name

Kimio MASUMOTO

Institute of Human Living Sciences, Otsuma Women's University,
12 Sanbancho, Chiyoda-ku, Tokyo, 102 Japan

Abstract This is the first part of a study of the Asian Strongyliini (Coleoptera, Tenebrionidae). Six new species from Thailand, Laos and Taiwan, *Strongylium kerleyi* sp. nov., S. *girardianum* sp. nov., *S. yukae* sp. nov., *S. jae* sp. nov., *S. andoi* sp. nov., and *S. yasuhikoi* sp. nov., are described. Besides, the name *miwai* is newly proposed for *S. insolitus* MIWA, 1939, which is preoccupied by *S. insolitum* GEBIEN, 1913.

The members of the tribe Strongyliini are characterized by the body elongate and subcylindrical, mostly winged, the antennae mostly slender, the head not inserted into the prothrax as far as the eyes, which are usually very large, the inter-procoxal space gently raised though the prosternal process is depressed and obtuse, the mesosternum only weakly depressed in front, the legs long with the tarsi ventrally pubescent, and so on. More than 2,200 species of 60 genera have hitherto been known from the world. The largest group of the tribe is the genus *Strongylium* KIRBY, 1818, which comprises almost 300 described species from Asia, more than 200 from Oceania including the Papua-Australian Region, more than 300 from Africa and about 400 from the Americas.

In my collection of tenebrionid beetles, there are many unknown species, which have not been studied for a long time. Meanwhile, on the occasion of visiting the Muséum National d'Histoire Naturelle, Dr. Claude GIRARD kindly proposed me for examination of a great number of strongyliine materials in the collection of the Muséum. Thus, I have started in studying the Asian Strongyliini.

This paper is the first part of my study of the Asian Strongyliini and contains the descriptions of six new species from Thailand, Laos and Taiwan, together with a proposition of replacement of a rejected homonym.

I wish to express my cordial appreciation to Dr. Claude GIRARD, Muséum National d'Histoire Naturelle, Paris, for his invaluable consideration in the course of the present study. Deep indebtedness should be expressed to Mr. Malcolm KERLEY, the Natural History Museum, London, and also to Dr. Ottó MERKL, Természettudományi Múzeum, Budapest, for their kind help. I thank Dr. Yasuhiko

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Depositories of the holotypes of the new species to be described are given in the text.

Strongylium kerleyi sp. nov.

(Fig. 1)

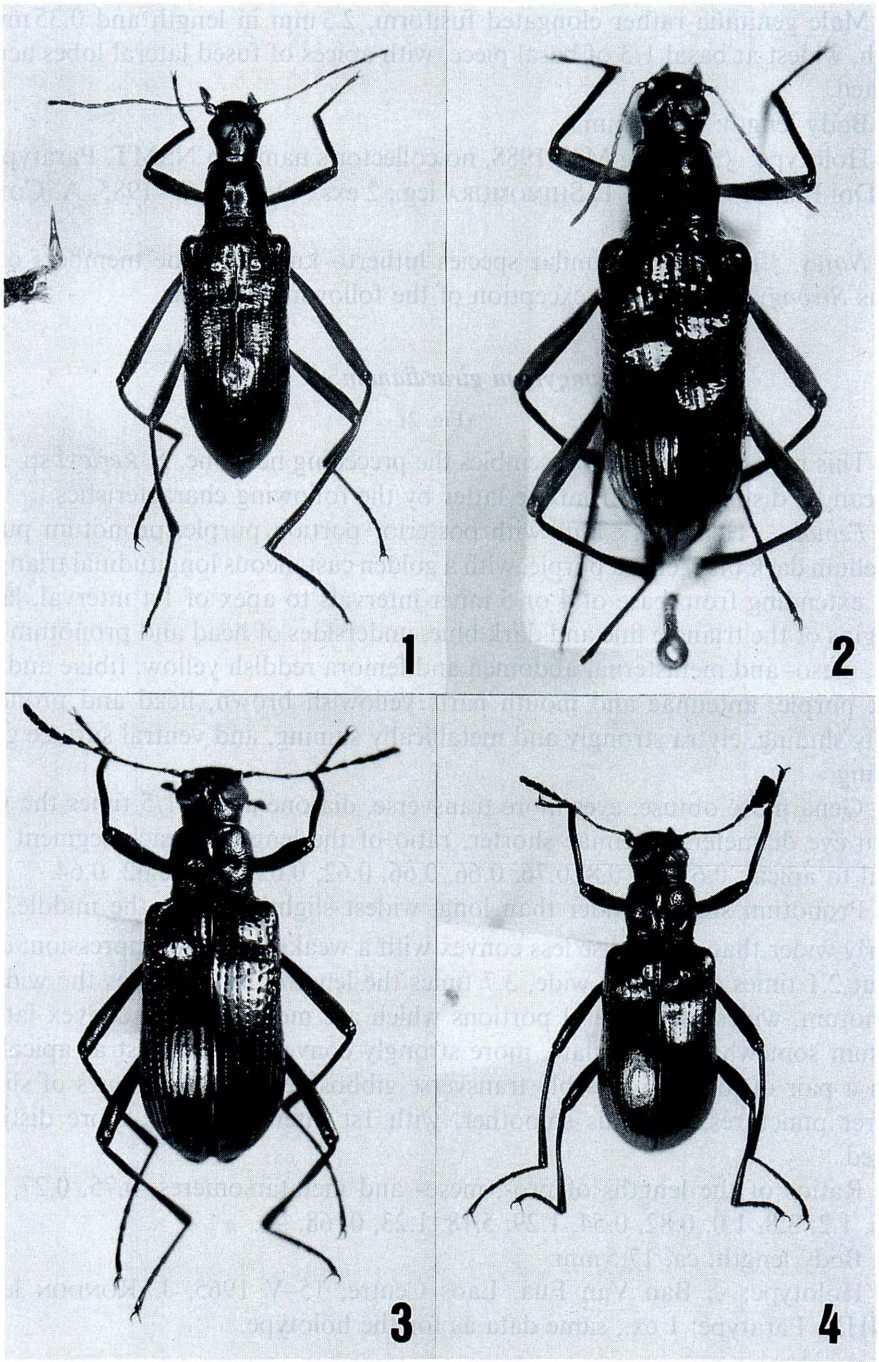
Head, pronotum and scutellum dark violet, clypeus feebly greenish, elytra dark blue with a large elongate-triangular, purplish portion which extends from base of 4 inner intervals to apex of 1st, margins of the triangle with a golden tinge, meso- and metasterna, abdomen and femora reddish yellow, antennae and mouth parts yellowish brown, tibiae and tarsi almost dark blue; dorsal surface metallically shining, ventral surface somewhat vitreously shining. Body elongate, rather strongly convex above.

Head subdecagonal, finely and rather closely punctate; clypeus semicircular, gently bent downwards and truncate in front; gena subrectangular and raised; frons somewhat thinly T-shaped, impressed in postero-medial portion; eyes very large, roundly produced laterad and widely inlaid into head, interocular space narrow and about 1/12 times the width of an eye diameter in male. Antennae filiform, reaching basal 1/4 of elytra, ratio of the length of each segment from basal to apical: 0.55, 0.2, 0.8, 0.9, 0.64, 0.63, 0.62, 0.6, 0.6, 0.59, 0.65.

Pronotum quadrate, slightly wider than long, finely punctate, the punctures sparser than those on head; apex rather thickly bordered and feebly produced forwards; base thickly bordered and sinuous on each side; sides gently produced laterad; front angles narrowly rounded, hind angles gently angulate; disc moderately convex, with a longitudinal median impression. Scutellum sublinguiform, irregularly aciculate or sparsely punctate.

Elytra 2.4 times as long as wide, 4 times the length and 1.6 times the width of pronotum, widest at base; dorsum distinctly undulate, highest at apical 2/5, with a pair of gibbosities at basal 1/8 lying on 1st to 4th intervals, two transverse depressions at basal 2/9 and basal 2/5, and also with a transverse ridge at basal 3/10; disc with rows of punctures, which are small and rounded in the inner portion and become larger and elongate in the outer portion; intervals slightly elevated, sparsely scattered with microscopic punctures, finely and somewhat transversely aciculate, area before the middle of 5th to 9th intervals rather coarsely and transversely wrinkled; humeri rather distinctly swollen.

Legs slender; ratios of the lengths of pro-, meso- and metatarsomeres: 0.75, 0.25, 0.23, 0.22, 1.2; 3.1, 0.87, 0.7, 0.57, 1.25; 3.8, 0.87, 0.66, 1.29.



Figs. 1–4. Habitus of *Strongylium* spp. —— 1. *S. kerleyi* sp. nov., holotype, ♂. —— 2. *S. girardianum* sp. nov., holotype, ♀. —— 3. *S. yukae* sp. nov., holotype, ♂. —— 4. *S. jae* sp. nov., holotype, ♂.

Male genitalia rather elongated fusiform, 2.3 mm in length and 0.35 mm in width, widest at basal 1/3 of basal piece, with apices of fused lateral lobes acutely pointed.

Body length: 13–16 mm.

Holotype: ♂, Chiang Mai, 1988, no collector's name, in NSMT. Paratypes: 1 ex., Doi Pui, 11–V–1982, T. SHIMOMURA leg.; 2 exs., Doi Pui, V–1985, A. COTTON leg.

Notes. There is no similar species hitherto known in the members of the genus *Strongylium* with the exception of the following new one.

Strongylium girardianum sp. nov.

(Fig. 2)

This new species closely resembles the preceding new one, *S. kerleyi* sp. nov., but can be distinguished from the latter by the following characteristics.

Female. Head dark blue with posterior portion purple, pronotum purple, scutellum dark blue, elytra purple, with a golden castaneous longitudinal triangular area extending from base of 4 or 5 inner intervals to apex of 1st interval, lateral margins of the triangle fine and dark blue, undersides of head and pronotum dark blue, meso- and metasterna, abdomen and femora reddish yellow, tibiae and tarsi dark purple, antennae and mouth parts yellowish brown, head and pronotum feebly shining, elytra strongly and metallically shining, and ventral surface gently shining.

Gena more obtuse; eyes more transverse, diatone about 1/5 times the width of an eye diameter; antennae shorter, ratio of the length of each segment from basal to apical: 0.6, 0.2, 0.8, 0.76, 0.66, 0.66, 0.62, 0.62, 0.62, 0.62, 0.64.

Pronotum slightly wider than long, widest slightly before the middle, base clearly wider than apex; disc less convex with a weaker median impression; elytra about 2.1 times as long as wide, 3.7 times the length and 1.7 times the width of pronotum, widest at humeral portions which are more strongly convex laterad; dorsum somewhat bi-undulate, more strongly convex and highest at apical 1/4, with a pair of lower and feebly transverse gibbosities; disc with rows of slightly clearer punctures; intervals smoother, with 1st interval a little more distinctly ridged.

Ratios of the lengths of pro-, meso- and metatarsomeres: 0.75, 0.27, 0.29, 0.26, 1.2; 3.8, 1.0, 0.82, 0.54, 1.29; 5.18, 1.23, 0. 68, —.

Body length: ca. 17.5 mm.

Holotype: ♀, Ban Van Eua, Laos Centre, 15–V–1965, J. RONDON leg. in MNHN. Paratype: 1 ex., same data as for the holotype.

Strongylium yukae sp. nov.

(Fig. 3)

Head greenish blue, pronotum purple with marginal portions blue, scutellum blue, major portions of elytra castaneous with blue lateral portions (7th to 9th intervals), ventral surface and legs blue; dorsal surface almost glabrous and rather strongly metallically shining. Body rather elongate and strongly convex above.

Head finely and closely punctate; clypeus transverse and short, bent downwards in front, depressed in posterior portion; gena subrectangular and distinctly raised; frons somewhat T-shaped, impressed at the middle of posterior portion; eyes very large and somewhat comma-shaped in dorsal view, convex laterad and widely inlaid into head, diatone about 1/10 times the width of an eye diameter in male, 1/7 times in female. Antennae medium-sized for a species of this genus, 7 apical segments flattened and clavate, ratio of the length of each segment from basal to apical: 0.55, 0.2, 0.8, 0.65, 0.55, 0.45, 0.45, 0.4, 0.4, 0.35, 0.35.

Pronotum quadrate and slightly wider than long, finely and irregularly punctate; apex nearly straight, widely triangularly depressed; base almost straight, ridged along margin; sides feebly arcuate laterad; front angles rounded, hind angles slightly projected postero-laterad; disc convex, longitudinally impressed in the middle, with an impression at posterior 1/3 on each side. Scutellum subcordate, sparsely scattered with minute punctures.

Elytra 1.9 times as long as wide, 3.6 times the length and 1.7 times the width of pronotum, subparallel-sided though widest at apical 1/3; dorsum strongly convex and highest at basal 3/8, with a pair of gibbosities at basal 1/8 lying on 2nd to 5th intervals, and also with a transverse depression at basal 2/9 just behind the gibbosities; disc punctato-striate, the striae fine and often disappearing, the punctures somewhat elongate and becoming coarser in lateral portion; intervals feebly convex and scattered with microscopical punctures; sides steeply declined to lateral margins, which enclose the hind body; humeri swollen; apices roundly expanded posteriad.

Male anal segment semicircularly concave and haired in posterior 2/3, truncate at apex, female anal segment not modified. Legs elongate; male protibia distinctly curved, with apical 2/5 weakly twisted and slightly gouged, female protibia simple in shape; male metatibia with basal half flattened and twisted, female metatibia simple in shape; ratios of the lengths of pro-, meso- and metatarsomeres: 0.35, 0.23, 0.22, 0.2, 1.2; 2.25, 0.9, 0.8, 0.6, 1.4; 2.3, 0.75, 0.55, 1.42.

Male genitalia rather slender, 2.7 mm in length and 0.3 mm in width, fused lateral lobes subfusiform with pointed apices.

Body length: 13–15 mm.

Holotype: ♂, Doi Pui, Chiang Mai Pref., NW Thailand, 2–V–1985, K. MASUMOTO leg., in NSMT. Paratypes: 4 exs., same data as for the holotype; 8 exs., Chiang Mai, 1988, no collector's name; 2 exs., Mt. Doi Pui, V–1985, A.

COTTON leg.; 2 exs., Doi Suthep, Chiang Mai Pref., 3–VI–1986, H. HIRASAWA leg.; 1 ex., Doi Suthep, 31–V–1985, M. TAO leg.; 1 ex., Doi Pui, 9–V–1982, T. SHIMOMURA leg.; 1 ex., Phuping Palace, Chiang Mai Pref., 3–V–1984, T. ENDO leg.; 1 ex., Wiang Papao, Chiang Rai Pref., 2–VI–1993, no collector's name; 1 ex., Wiang Papao, 8–VI–1993, 1 ex., Chiang Mai env., V–1995, 1 ex., Mae Taeng, Chiang Mai Pref., 12–VI–1991, Minetti-FERREORO leg. (coll. BEČVÁŘ).

Notes. This new species resembles *Strongylium baudoni* ARDOIN, 1973, originally described from Laos, but can be distinguished from the latter by the smaller and narrower body, the elytra with castaneous-coloured portions more widespread (from 1st to 6th or 7th intervals in the present species, instead of 1st to 5th intervals in *S. baudoni*), and the elytral apices more distinctly expanded posteriad in male.

Strongylium jae sp. nov.

(Fig. 4)

This new species resembles *Strongylium schenklingi* GEBIEN, 1913, originally described from southern Taiwan, but can be distinguished from the latter by the following characteristics:

Body shorter and more compact. Head, legs and major portions of ventral surface dark blue though some parts of the latter are greenish, pronotum and scutellum dark violet, major portions of elytra purple with a coppery tinge under certain light, base, humeral portions and gibbosities of elytra golden green, basal portions of 7th to 9th intervals, and also apical portions of 1st to 9th dark greenish blue. Dorsal surface strongly and metallically shining.

Head slightly narrower; gena with outer margin more distinctly angulate and strongly raised; diatone about 1/5 times the width of an eye diameter in male, 1/4 times in female. Antennae shorter, with 7 apical segments more strongly flattened and distinctly clavate, ratio of the length of each segment from basal to apical: 0.6, 0.2, 0.83, 0.65, 0.43, 0.4, 0.4, 0.39, 0.33, 0.32, 0.35.

Pronotum subquadrate, about 1.2 times as wide as long, more closely and strongly punctate; apex very widely triangularly depressed in middle, with apical margin very slightly produced forwards; base straightly ridged; sides gently produced laterad; front angles rounded, hind angles feebly projected in dorsal view; disc a little more strongly convex, with a longitudinal medial impression and also with a deeper, oblique impression at basal 1/4 on each side. Scutellum triangular and slightly convex, sparsely scattered with minute punctures.

Elytra 1.8 times as long as wide, 3.8 times the length and 1.6 times the width of pronotum, almost subparallel-sided though widest at apical 1/3; dorsum with a pair of more distinct gibbosities at basal 1/10 lying from 2nd to 5th intervals, and a deeper transverse depression at basal 1/4; disc with rows of very slightly elongate punctures, which are a little smaller than in *S. schenklingi*; intervals very

slightly elevated and more distinctly scattered with minute punctures; sides steeply declined to lateral margins, which are invisible from above; humeri more distinctly swollen; apices very slightly expanded posteriad.

Male anal segment truncate at apex, subelliptically and more narrowly concave in the middle of apical portion; male protibia gently bent downwards in apical 2/5, feebly produced downwards in apical 1/5; male metatibia gently twisted at the middle; ratios of the lengths of pro-, meso- and metatarsomeres: 0.45, 0.21, 0.23, 0.22, 1.2; 2.7, 1.0, 0.74, 0.48, 1.53; 2.54, 0.72, 0.6, 1.48.

Male genitalia somewhat elongated fusiform, 2.4 mm in length and 0.38 mm in width, weakly constricted between basal piece and fused lateral lobes, whose apices are pointed.

Body length: 11–14 mm.

Holotype: ♂, Doi Pui, Chiang Mai Pref., 9–V–1982, T. SHIMOMURA leg., in NSMT. Paratypes: 3 exs., Doi Pui, V–1986, A. COTTON leg.; Doi Pui, 1 ex., 9–V, 1 ex., 15–V, 1 ex., 17–V–1982, T. SHIMOMURA leg.; Doi Suthep, 1 ex., 8–V, 1 ex., 16–V–1985, M. TAO leg.; 1 ex., Doi Pui, 26–VI–1984, no collector's name; 1 ex., Doi Pui, 20–VI–1984 (coll. BEČVÁŘ).

Strongylium yasuhikoi sp. nov.

(Figs. 5, 7)

This new species also resembles *Strongylium schenklingi* GEBIEN, 1913, but can be distinguished from the latter by the following characteristics:

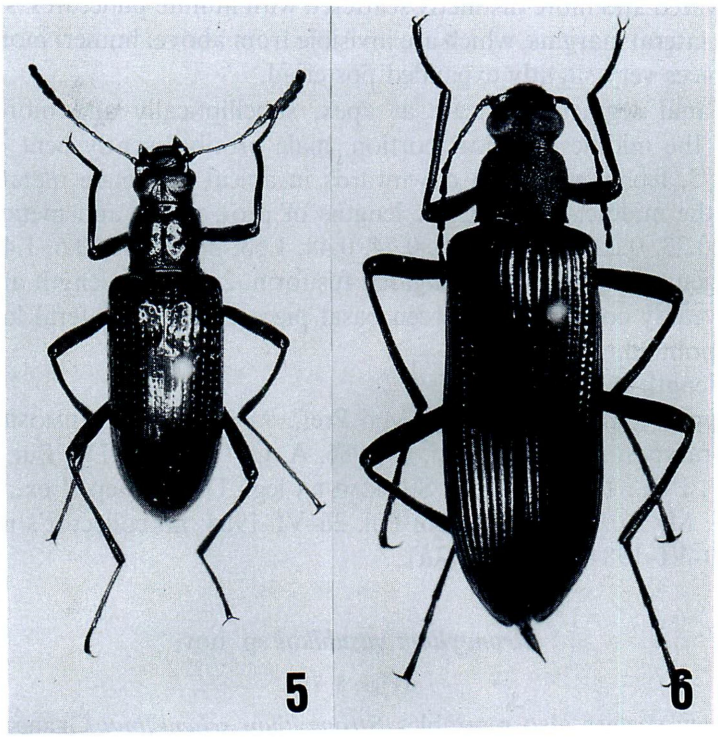
Body slightly slenderer, with elytra mostly purplish except for brassy posterior portion. Eyes more rounded and convex; apical segments of antennae a little more widely dilated to each apex, ratio of the length of each segment from basal to apical: 0.6, 0.2, 1.0, 0.65, 0.6, 0.6, 0.6, 0.6, 0.45, 0.45, 0.5.

Pronotum slightly narrower and 1.1 times as wide as long (1.3 times in *S. schenklingi*); elytra a little longer, 2.2 times as long as wide (about twice in the latter), with anterior swellings and humeral portions more distinct; legs slightly thinner, with ratios of the lengths of pro-, meso- and metatarsomeres: 0.3, 0.22, 0.22, 0.23, 1.2; 1.8, 0.78, 0.65, 0.45, 1.4; 1.8, 0.68, 0.53, 1.4.

Intercoxal space of prosternum narrower; male anal sternite narrower and longer, with narrower apical concavity (see Fig. 7: *S. yasuhikoi* sp. nov., and Fig. 8: *S. schenklingi* GEBIEN); male genitalia larger, with fused lateral lobes longitudinally impressed in medial portion.

Body length: 14.5–15.5 mm.

Holotype: ♂, Mt. Kuantoushan, Nantou Hsien, Central Taiwan, 13–VI–1993, LUO Chinchi leg., in NSMT. Paratypes: 1 ex., same data as for the holotype; 1 ex., Lienhwachi, Nantou Hsien, 29–VI–1972, Y. KIYOYAMA leg.; 1 ex., Shizitou, Nantou Hsien, 23–V–1992, LUO Chinchi leg.



Figs. 5–6. Habitus of *Strongylium* spp. —— 5. *S. yasuhikoi* sp. nov., holotype, ♂. —— 6. *S. andoi* sp. nov., holotype, ♂.

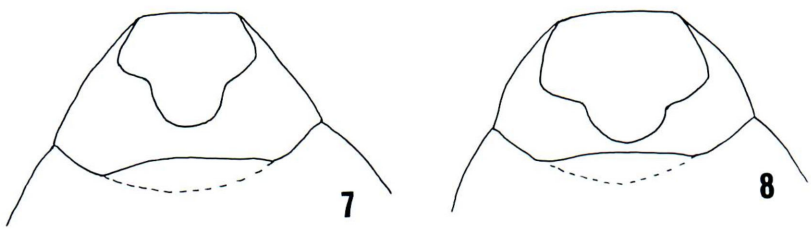
Strongylium andoi sp. nov.

(Fig. 6)

Brownish black, with mouth parts, claws, etc., lighter in colour, head, pronotum, scutellum and legs almost mat, elytra feebly and brassily shining. Elongate and subparallel-sided.

Head subdecagonal, gently convex, closely punctate; clypeus semicircular, with apex subtruncate and bent downwards; gena obtusely produced and raised laterad; frons somewhat T-shaped, slightly impressed medially; eyes very large, distinctly convex laterad and widely inlaid into head, diatone about 0.2 times the width of an eye diameter. Antennae rather filiform, reaching basal 1/7 of elytra, ratio of the length of each segment from basal to apical: 0.65, 0.23, 1.1, 0.72, 0.7, 0.68, 0.62, 0.57, 0.58, 0.52, 0.58.

Pronotum subquadrate, 1.2 times as wide as long, at apex narrower than at base; apex nearly straight and slightly rimmed; base weakly and widely bisinuous, thickly rimmed, the rim minutely punctate; sides gently rounded and feebly sinuous before base; front angles rounded, hind angles rather acute in dorsal view; disc



Figs. 7–8. Male anal sternites. —— 7. *S. yasuhikoi* sp. nov. —— 8. *S. schenklingi* GEBIEN.

feebly convex and closely punctate, the punctures often fused with one another. Scutellum triangular, finely punctate.

Elytra 2.5 times as long as wide, 5.4 times the length and 1.7 times the width of pronotum, slightly widened in posterior portion and widest at apical 1/3; disc rather strongly punctato-striate, the punctures in inner striae small and dense, and those in outer becoming larger, sparser, and often slightly elongate; intervals rather strongly convex, minutely punctate and finely and transversely aciculate; humeri feebly convex; epipleura complete.

Anal sternite gently depressed apicad; legs slender, without any peculiarities; ratios of the lengths of pro-, meso- and metatarsomeres: 0.5, 0.22, 0.22, 0.26, 1.28; 1.8, 0.68, 0.67, 0.47, 1.28; 2.26, 0.73, 0.57, 1.3.

Male genitalia elongated fusiform, about 4 mm in length, with apical portion of fused lateral lobes gently prolonged.

Body length: 19.5–23.5 mm.

Holotype: ♂, Mt. Kuantoushan, Nantou Hsien, Central Taiwan, 17–VI–1993, LUO Chinchi leg., in NSMT. Paratypes: 1 ex., same data as for the holotype, 3 exs., 15–VI–1993, same locality and collector as for the holotype; 3 exs., Chutung, 3–VI–1991, LUO Chinchi leg.

Notes. This new species somewhat resembles *Strongylium carbonarium* GEBIEN, 1913, widely distributed in Taiwan, but can be distinguished from the latter by the smaller body with feebly metallically shining elytra, the pronotal base more widened, the elytra more strongly punctato-striate, the punctures in outer portions becoming obviously sparser and coarser, the intervals more strongly convex, the antennae shorter, and the larger male genitalia.

Replacement of a Preoccupied Name

Strongylium miwai nom. nov.

Strongylium insolitus MIWA, 1939, Zool. Mag., Tokyo, **51**: 413 [nec GEBIEN, 1913].

Notes. MIWA (1939) described *Strongylium insolitus* from Formosa, but the specific name is preoccupied by *S. insolitum* GEBIEN, 1913, originally described from the Philippines. A new replacement name is therefore proposed herewith.

要　約

益本仁雄：アジア産ナガキマワリ族の研究．I．タイ，ラオスおよび台湾産ナガキマワリ属の6新種，並びに被先取名の置換について．—— アジア産ナガキマワリ族の研究の第1回としてナガキマワリ属を取り上げ，北部タイから3新種，*Strongylium kerleyi* sp. nov., *S. yukae* sp. nov., *S. jae* sp. nov.，中央ラオスから1新種，*S. girardianum* sp. nov. を，さらに，中部台湾から2新種，*S. yasuhikoi* sp. nov., *S. andoi* sp. nov. を記載した．MIWA (1939) は，台湾から *Strongylium insolitus* を記載したが，この名はGEBIEN (1913) によって，すでにフィリピン産の種に与えられているので，置換名として *S. miwai* nom. nov. を提唱した．

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