

A survey of the saicine assassin bugs of Taiwan (Hemiptera: Heteroptera: Reduviidae)

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Abstract. The assassin bug subfamily Saicinae (Hemiptera: Heteroptera: Reduviidae) of Taiwan is surveyed. Seven species belonging to the genera *Gallobelgicus* Distant, 1906 and *Polytoxus* Spinola, 1850 are recognized. Lectotype is designated for *Saica fuscovittata* Stål, 1860 (currently *Polytoxus*), a species of doubtful identity until now. The following new synonymies are proposed: *Polytoxus fuscovittatus* (Stål, 1860) = *P. selangorensis* Miller, 1940, syn. nov., = *P. ruficeps* Hsiao, 1965, syn. nov. *Polytoxus rufinervis ardens* Ishikawa & Yano, 2002, stat. nov., is downgraded to a subspecies of *P. rufinervis* Hsiao, 1965. The saicine genera and species occurring in Taiwan are keyed and diagnosed. Distributional data are provided for species occurring in Taiwan and several South and South-East Asian countries (Myanmar, Malaysia, Vietnam, Philippines, India).

Keywords. Hemiptera, Heteroptera, Reduviidae, Saicinae, taxonomy, Taiwan

Introduction

The Saicinae are a relatively small subfamily within the Reduviidae (Hemiptera: Heteroptera), comprising 24 genera and more than 140 species worldwide. Approximately 50 species have been described from the Oriental Region so far; however, several of them are of doubtful identity because of inadequate original descriptions. Only two papers dealing with the fauna of Taiwan have been published so far: ISHIKAWA & YANO (1999) described a new species of *Polytoxus* Spinola, 1850 and RÉDEI & TSAI (2009) a new species of *Gallobelgicus* Distant, 1906.

Based on specimens deposited in various, mostly Taiwanese, institutions, the Taiwanese saicine assassin bugs are surveyed in this paper. Two genera are recognized: *Gallobelgicus*

3. Body with conspicuous long and dense, erect to semierect pubescence. 4
 – Body with short (Figs. 1 and 2) or insignificant pubescence. 5
4. Pronotum distinctly carinate laterally, with 1+1 dark longitudinal stripes. Basal cell of fore wing connected with two longitudinal veins proximally.
 *P. annulipes* Miyamoto & Lee, 1966
 – Pronotum not carinate laterally and without dark longitudinal stripes. Basal cell of fore wing connected with one longitudinal vein proximally. *P. eumorphus* Miller, 1941
5. Head and pronotum with short but distinct pubescence. Pronotum with wide median longitudinal dark stripe occupying both anterior and posterior lobes (Figs. 1, 2).
 *P. fuscovittatus* (Stål, 1860)
 – Head and pronotum only with short and fine, mostly imperceptible pubescence. Pronotum with different colour pattern, anterior lobe never with wide dark median longitudinal stripe. *P. minimus* China, 1940
6. General body colour testaceous; femora uniformly testaceous; fore wings with extensive dark brown areas and spots. *P. esakii* Ishikawa & Yano, 1999
 – General body colour red; femora greatly brown except light base; fore wings without dark brown spots, costal margin red. *P. rufinervis* Hsiao, 1965

Gallobelgicus Distant, 1906

Gallobelgicus Distant, 1906: 370. Type species by original designation: *Gallobelgicus typicus* Distant, 1906.

References. DISTANT (1911): 216 (redescription); BERGROTH (1913): 233 (redescription, subfamily placement); VILLIERS (1943b): 322 (catalogue); MILLER (1957): 247 (redescription, key to species); MALDONADO CAPRILES (1990): 472 (catalogue); ISHIKAWA (2003): 45 (diagnosis); RÉDEI & TSAI (2009): 78 (species groups, key to selected species).

Diagnosis. This genus is characterized by a combination of the following characters: clypeus armed with an anteriorly directed spine; head, first visible labial segment and coxa, trochanter, femur and tibia of fore leg armed with large spiniferous processes; humeral angle of pronotum with long spine-like process; tarsal segment I subequal in length to the lengths of segments II and III combined.

Distribution and diversity. The genus contains six species occurring in the Oriental Region; one species occurs in Taiwan.

Gallobelgicus heissi Rédei & Tsai, 2009

Gallobelgicus heissi Rédei & Tsai, 2009: 78. HOLOTYPE (♂): Taiwan: Fenchihu; HNHM!

Type material examined. HOLOTYPE (♂): 'TAIWAN, 1400 m. / Fenchihu, 25.v.1977 / J. u. S. Klapperich lgt.' (HNHM). Paratypes listed by RÉDEI & TSAI (2009) were examined as well.

Diagnosis. Diagnosed within *Gallobelgicus* by the following combination of characters: micropterous; ventral series of fore femur with approximately 30 small spines between spiniferous processes; spiniferous processes of fore femur shorter than diameter of femur; fore tibia with three spiniferous processes. It is readily recognized using the characters given in the original description and figures (RÉDEI & TSAI 2009).

Distribution. Taiwan!

Polytoxus Spinola, 1850

Acanthothorax Costa, 1842: 11. Type species by monotypy: *Acanthothorax siculus* Costa, 1842. Junior homonym of *Acanthothorax* Gaede, 1832 (Coleoptera). Synonymized by REUTER (1890b): 250.

Polytoxus Spinola, 1850: 47. Type species by subsequent monotypy (MULSANT & REY 1873: 28): *Acanthothorax sanguineus* Costa, 1842.

Leptomera Montrouzier, 1865: 238. Type species by monotypy: *Leptomera jurdani* Montrouzier, 1864. Synonymized by LETHIERRY & SEVERIN (1896): 78 (tentatively); SCHOUTEDEN (1907): 117.

Costiella Reuter, 1890a: 241. Type species by monotypy: *Acanthothorax siculus* Costa, 1842. Synonymized by REUTER (1891): 27.

References. DOHRN (1859): 47 (*Acanthothorax*, catalogue); PUTON (1869): 35 (*Acanthothorax*, catalogue, Europe); MULSANT & REY (1873): 27 (*Acanthothorax*, redescription, fauna of France); STAL (1874): 91 (*Acanthothorax*, in key, synopsis); PUTON (1875): 52 (*Acanthothorax*, catalogue, Europe); PUTON (1880): 169 (*Acanthothorax*, fauna of France); PUTON (1886): 37 (*Acanthothorax*, catalogue, Europe); LETHIERRY & SEVERIN (1896): 78 (catalogue); PUTON (1899): 46 (catalogue, Europe); DISTANT (1903): 217; DISTANT (1910): 182 (redescription, fauna of India, Ceylon and Burma); OSHANIN (1908): 512 (catalogue, Palaearctic); OSHANIN (1912): 49 (catalogue, Palaearctic); VILLIERS (1942): 106 (diagnosis, revision of the fauna of Africa); VILLIERS (1943b): 320 (catalogue); HOFFMANN (1944): 2 (catalogue, China); VILLIERS (1948): 422 (revision of the fauna of Sub-Saharan Africa); DISPONS & STICHEL (1959): 107 (fauna of the West Palaearctic, key); VILLIERS (1957): 310 (fauna of Madagascar, key); STICHEL (1960): 367 (catalogue, Palaearctic); WYGODZINSKY & USINGER (1960): 267 (fauna of the Pacific Region, key); HSIAO (1965): 112 (fauna of China, key); VILLIERS (1969): 1187 (redescription, revision of the fauna of Africa); RIBES (1974): 14 (fauna of the Mediterranean, key); VILLIERS (1979): 14 (redescription, revision of the fauna of Madagascar); HSIAO & REN (1981): 403 (redescription, revision of the fauna of China); MALDONADO CAPRILES (1990): 474 (catalogue); CASSIS & GROSS (1995): 356 (catalogue, Australia); PUTSHKOV & PUTSHKOV (1996): 205 (catalogue, Palaearctic); YANO & ISHIKAWA (2001): 19 (feeding behaviour); ISHIKAWA & YANO (2002): 342 (revision of the fauna of Japan); ISHIKAWA & OKAJIMA (2003): 133 (fauna of Vietnam, key).

Diagnosis. Diagnosed within the Saicinae by the following combination of characters: clypeus unarmed; head ventrolaterally, labium dorsolaterally and femur and tibia of fore leg ventrally at most with stiff setae or tufts of setae, never with distinct spiniferous processes; anterior lobe of pronotum unarmed, posterior lobe with 1+1 spine-like humeral processes; meso- and metanota each with a single erect spine-like process; fore wing with basal cell.

Diversity and distribution. The genus currently contains nearly 80 species occurring in the Afrotropical, Oriental and Australian Regions and in the adjoining areas of the Palaearctic Region (southern Europe, Middle East, East Asia). Specimens representing six species were examined from Taiwan.

Polytoxus annulipes Miyamoto & Lee, 1966

Polytoxus annulipes Miyamoto & Lee, 1966: 356. HOLOTYPE (♂): Korea: Cheju [= Jeju] Island, Sinlye (KUEC).

References. MALDONADO CAPRILES (1990): 474 (catalogue); LEE & KWON (1991): 20 (listed); LEE et al. (1993): 17 (listed); PUTSHKOV & PUTSHKOV (1996): 205 (catalogue, distribution); ISHIKAWA (1999): 21 (pterygopolymorphism, records, habitat); KWON et al. (2001): 218 (catalogue, Korea); ISHIKAWA & YANO (2002): 343 (diagnosis, male genitalia, variability, figures, records, distribution), 357, 358 (in key); NAKATANI & ISHII (2003): 93 (listed, habitat).

Material examined. TAIWAN: ILAN COUNTY: Fushan Botanical Garden, 24°45.377'N 121°35.678'E, 640 m, 15.ix.2007, sifted from leaf litter, leg. D. Rédei & J. F. Tsai (1 micropterous ♂, HNHM). TAIPEI COUNTY: Shihding, 10.iv.2001, sweeping, leg. H. T. Shih (1 micropterous ♂, TARI). TAITUNG COUNTY: Lanyu, Chingching grassland, iv.2003, leg. M. M. Yang (1 ♂, NCHU; 1 ♂, HNHM). VIETNAM: Cuc Phuong National Park, 20°15.586'N 105°42.320'E, 147 m, 20.iv.–1.v.2005, leg. A. Kun (1 ♀, HNHM).

Diagnosis. The species can be recognized by the small size (6–7 mm), conspicuous long and dense, semierect to erect pubescence of the body and laterally distinctly carinate pronotum with 1+1 dark longitudinal stripes. It is readily identified by its original description and the accompanying figures (MIYAMOTO & LEE 1966) and the redescription and figures by ISHIKAWA & YANO (2002).

Variability. This species is pterygopolymorphic; both macropterous and micropterous specimens occur in Taiwan.

Distribution. Korea: Jeju Is.; Japan: Honshū, Shikoku, Yakushima Is., the Ryūkyūs; Taiwan! (new record); Vietnam! (new record).

Polytoxus esakii Ishikawa & Yano, 1999

Polytoxus pallens Esaki, 1931: 212. Nomen nudum.

Polytoxus esakii Ishikawa & Yano, 1999: 341. HOLOTYPE (♂): [Taiwan:] Lanyu: ‘Shao-Tiengchi’ [= Hsiao-Tien-Chi] (ELEU).

Material examined. TAIWAN: TAITUNG COUNTY: ‘Taihanroku’ [= Taipan], vii.1908, leg. H. Sauter (1 ♀, HNHM); Lanyu, near Hongtou, taro field, 29.ix.2004, leg. J. Y. Liu (1 ♀, NCHU); Lanyu, Langdao, 4.x.2004, leg. J. Y. Liu (1 ♂, NCHU); Lanyu, Yeyou, Hsiao-Tien-Chi, 15.xi.2006, leg. J. F. Tsai (1 ♂ 1 ♀, NCHU); Lanyu, Yehyin, Yonghsing Farm, N22°01’684” E121°34’671”, 46 m, grassland, sweep-netting, 23.ix.2007, leg. D. Rédei & J. F. Tsai (1 ♂, HNHM); ‘Orchid island’, 5.–7.vii.1988, sweeping net, leg. K. W. Huang (1 ♀, NMNS, ENT 2909-1811). **PINGTUNG COUNTY:** Hengchun, Kenting National Park, N21°57’44.3”E 120°48’45.3”, canopy net, 18.viii.2008, leg. J. F. Tsai & D. Rédei (1 ♀, NCHU); same locality, N part of the park, N21°57’59.6”E 120°48’55.8”, canopy net, 19.viii.2008, leg. J. F. Tsai & D. Rédei (1 ♀, HNHM); same locality, 4.–5.ii.1991, light trap, leg. Y. H. Chen (1 ♂, NMNS, ENT 750-6).

Diagnosis. This species is characterized by its relatively large size (11–13 mm), characteristically spotted fore wings and the presence of tufts of stiff setae on the head ventrolaterally and on the fore femur ventrally. It is readily recognized using the characters given in the original description and figures (ISHIKAWA & YANO 1999).

Distribution. Taiwan!

Polytoxus eumorphus Miller, 1941

Polytoxus eumorphus Miller, 1941: 780. HOLOTYPE (♂): Malaysia: Selangor, Kuala Lumpur (BMNH).

References. MALDONADO CAPRILES (1990): 475 (catalogue); ISHIKAWA & YANO (2002): 344 (diagnosis, male genitalia, variability, figures, records, distribution), 357, 358 (in key); ISHIKAWA & OKAJIMA (2003): 133 (diagnosis, record, distribution, photo), 139 (in key); ISHIKAWA & YANO (2006): 12 (record, distribution).

Material examined. TAIWAN: KAOSIUNG COUNTY: ‘Takao’ [= Kaohsiung], 1907, leg. Sauter (2 ♀♀, HNHM). **PINGTUNG COUNTY:** Hen[g]chun, Kenting [National Park], 22.v.1989, sweeping, leg. K. W. Huang (1 ♂, NMNS, ENT 444-50). **FUJIAN COUNTY:** Kinmen, forest branch, 4.–5.viii.1998, at UV light, leg. W. T. Yang (1 ♀, NMNS, ENT 2935-197).

Diagnosis. This species can be recognized by its small size (5–6 mm), conspicuous long and dense, semierect to erect pubescence of the body and the presence of only one longitudinal vein in the proximal part of the basal cell of the fore wing. It is readily identified using the characters given in the redescription and figures provided by ISHIKAWA & YANO (2002).

Distribution. Japan: the Ryūkyūs; Taiwan! (new record); Vietnam; Malaysia: Selangor.

Polytoxus fuscovittatus (Stål, 1860)

(Figs. 1–32)

Saica fuscovittata Stål, 1860: 262. SYNTYPE(S) (♂?, ♀!): 'Insulae Philippinenses' [= Philippines], 'Manilla' [= Manila]; NHRS!

Polytoxus selangorensis Miller, 1940: 426. HOLOTYPE (♂): Malaysia: Selangor, Kuala Lumpur (BMNH); **syn. nov.**

Polytoxus ruficeps Hsiao, 1965: 114. HOLOTYPE (♂): China: Yunnan, Mang (IZAS); **syn. nov.**

References. STÅL (1871): 701 (listed); WALKER (1873): 127 (listed); STÅL (1874): 91 (diagnosis); LETHIERRY & SEVERIN (1896): 78 (catalogue); DISTANT (1903): 219 (redescription, distribution); CHINA (1940): 207 (figure of fore wing); VILLIERS (1943b): 321 (catalogue, distribution, records); HSIAO & REN (1981): 405 (*ruficeps*, redescription, figures, photo, distribution); REN (1986): 404 (*ruficeps*, redescription, figures, distribution); LI et al. (1990): 12 (*ruficeps*, redescription, prey, distribution, habitus); MALDONADO CAPRILES (1990): 475, 477 (*fuscovittatus*, *ruficeps*, *selangorensis*, catalogue); HE (1991): 86 (*fuscovittatus*, *ruficeps*, prey, distribution); BARRION & LITSINGER (1994): 112 (*fuscovittatus* and *selangorensis*, in key, figures); HASSAN & IBRAHIM (1996): 55 (*selangorensis*, biology); HASSAN & RASHID (1997): 45 (*selangorensis*, habitat); PUTSHKOV & PUTSHKOV (1996): 206 (*ruficeps*, catalogue, distribution); HUA (2000): 210 (*fuscovittatus*, *ruficeps*, listed, distribution); ISHIKAWA & YANO (2002): 345 (*selangorensis*, diagnosis, male genitalia, variability, figures, records, distribution, habitat, prey), 357, 358 (in key); ISHIKAWA & OKAJIMA (2003): 134 (*selangorensis*, diagnosis, records, distribution, photo), 139 (in key); LIN (2003): 124 (*fuscovittatus* and *ruficeps*, prey, distribution); BAMBARADENIYA et al. (2004): 1737 (listed); REN (2004): 149 (record, distribution, figures); SRIVASTAVA et al. (2004): 161 (listed); OSAFUNE et al. (2005): 7 (distribution, habitat, prey, reproduction, development, immatures); ISHIKAWA & YANO (2006): 13 (as *selangorensis*, records, distribution); BAMBARADENIYA & EDIRISINGHE (2008): 45 (listed).

Type material examined. LECTOTYPE (♀): 'Manilla' [printed], 'Kinb.' [printed], 'fusco-vittata \ Stål' [handwritten] (NHRS). Pinned, right hind leg except coxa missing; here designated.

Other material examined. TAIWAN: NANTOU COUNTY: Lienhuachi, 28.ix.1993, leg. C. W. Tsai (2 ♂♂, NTU).

INDIA: ASSAM: Baragolai, 16.iii.1953, leg. Neuhaus (1 ♂, MHNG). MYANMAR: Bago State, Toungoo, 23.x.2003,

leg. F. Buzzetti (1 ♂, NHMW). VIETNAM: Cuc Phuong, Ninh Binh, No. 295, 6.–18.v.1966, 'on lamp', leg. Gy.

Topál (1 ♀, HNHM); 'Tonkin', Hoa Binh, leg. A. de Cooman, coll. R. Oberthür, 1919 (1 ♂ 2 ♀♀, MNHN); Thu

Duc, 20.xii.1974, 'sur riz' [= on rice], leg. A. Delobel (1 ♂, MNHN); 'Saigon' [= Ho Chi Minh City], coll. E. de

Bergevin (3 ♀♀, MNHN). PHILIPPINES: 'Ins. Philipp.', leg. Semper (1 ♀, NHRS); Luzon, Los Baños, No. 1,

12.xi.1993, leg. H. Schillhammer (1 ♂, NHMW); same locality, No. 2, 13.–18.xi.1992, at light, leg. H. Zettel (1 ♂

[Figs. 14–22], 1 ♀, NHMW); Luzon, Zambales Prov., Poonbato env., 28.ii.2000, leg. O. Safránek (1 ♂, MMBC >

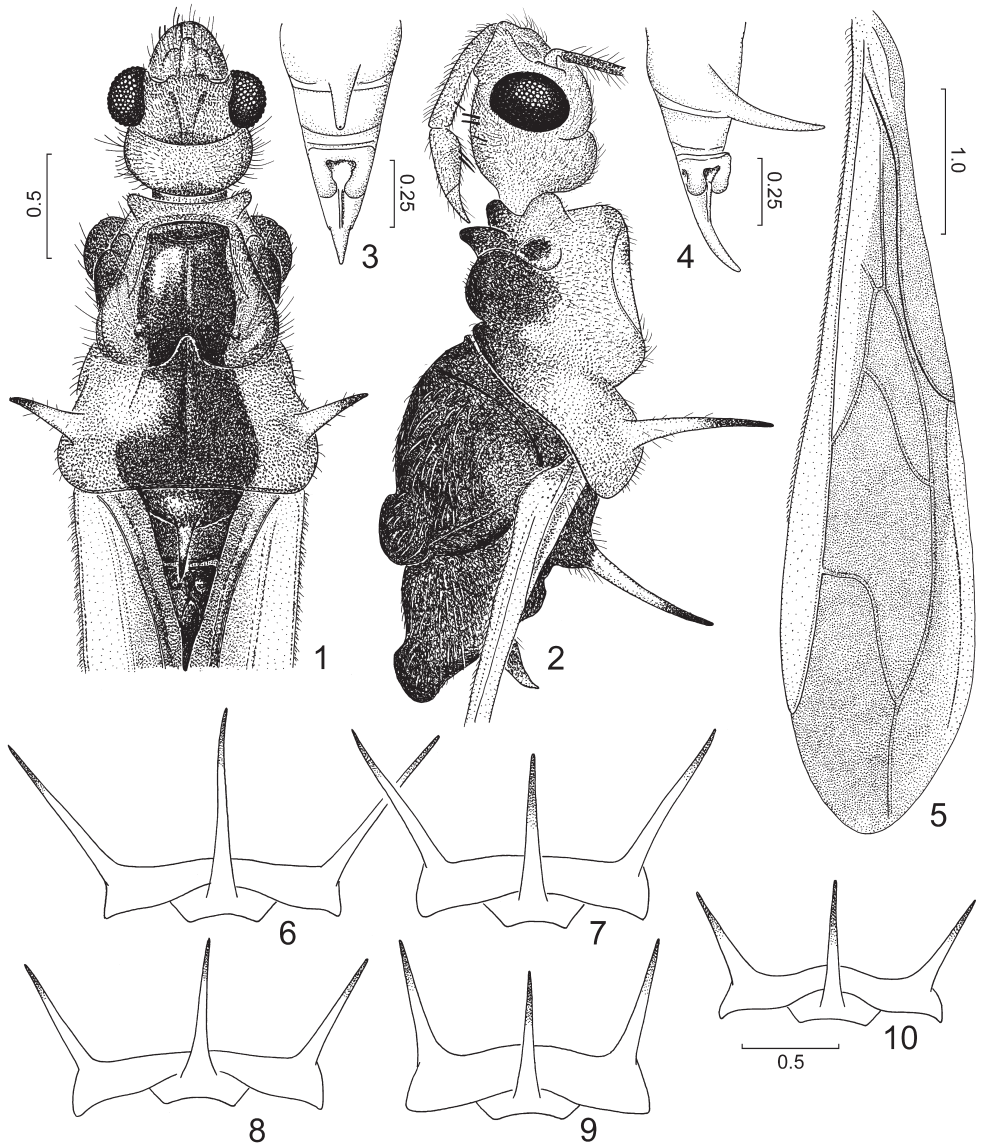
HNHM); Luzon, Ifugao Prov., Banaue env., 20.ii.2000, leg. O. Safránek (1 ♀, MMBC); Negros, Mambucal, Mt.

Canlaon [= Mt. Kanlaon], 12.ii.1994, leg. F. Seyfert & M. Graindl (2 ♂♂, NHMW). MALAYSIA: SARAWAK: Mulu

National Park, Benarat Inn, No. 14, 3.–5.iii.1993, at light, leg. H. Zettel (1 ♀, NHMW).

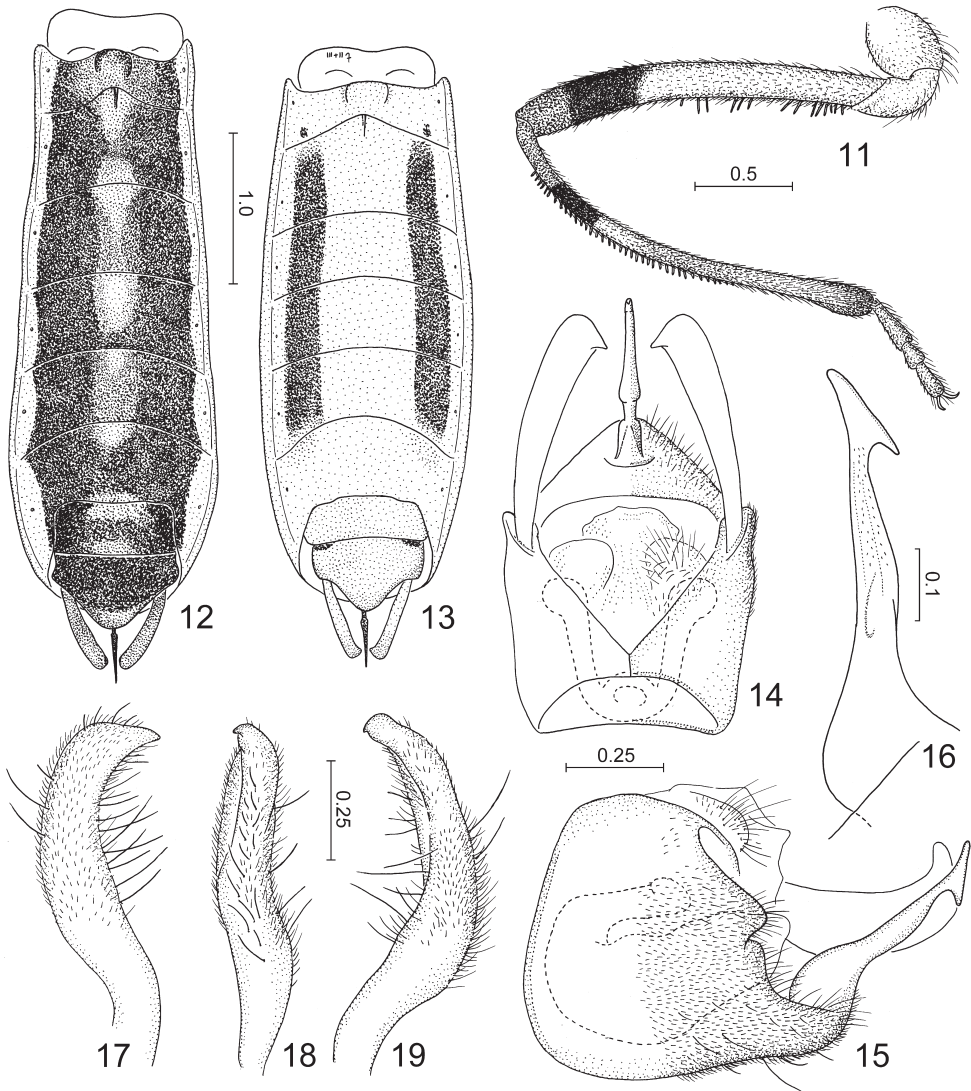
Diagnosis. Relatively small species (body length 6–8.5 mm) with dark brown median longitudinal stripe on pronotum (Fig. 1) and smoky brown longitudinal stripe on fore wing (Fig. 5). Metanotum carinate along meson (Figs. 3 and 4). The species is best diagnosed by the male genitalia: pygophore (Figs. 14 and 15) with an elongate posterior process of a characteristic shape (Fig. 16) and endosoma of phallus with five sclerotized processes (Figs. 20–32). The species was redescribed and figured under the name *P. selangorensis* by ISHIKAWA & YANO (2002).

Variability. *Colour.* Head red, sometimes with large black spot between eyes, or with black median spot on posterior lobe posteriorly (Fig. 1), or both lobes greatly dark brown, or head generally dark brown except lateral yellowish suffusion to hind lobe; labium stramineous, or apparent first and second segments dark brown, apparent third segment brown; anterior lobe of pronotum yellowish to reddish, with wide dark brown median longitudinal stripe (Fig. 1),



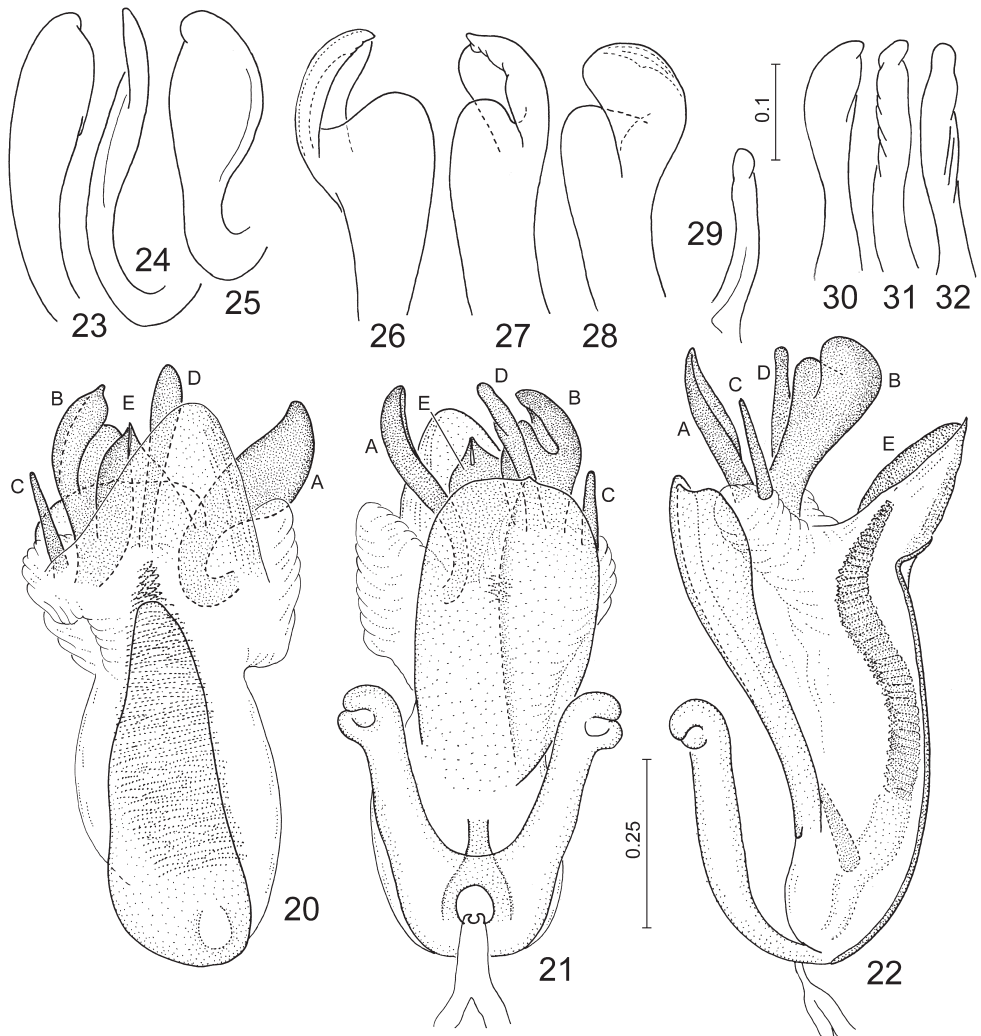
Figs. 1–10. *Polytoxus fuscovittatus* (Stål, 1860). 1 – head and thorax, dorsal view; 2 – same, lateral view; 3 – exposed parts of meso- and metanota, dorsal view; 4 – same, dorsolateral view; 5 – left fore wing; 6–10 – variability of the lengths of humeral and mesoscutellar processes, posterior views (6 – Myanmar, male; 7 – Philippines: Luzon, female; 8 – Malaysia: Sarawak, female; 9 – Philippines: Negros, male; 10 – Philippines: Luzon, male). Scales in mm.

dorsal elevated part sometimes greatly dark brown; posterior lobe of pronotum yellowish to reddish, with wide median longitudinal stripe dark brown; humeral spines whitish to stramineous, apically more or less extensively black; ventral part of proepisternum, prothoracic supracoxal lobes and ventral part of proepimeron dark brown, rest of thoracic pleuron yellowish to red; coxae and trochanters stramineous to brown; femora stramineous with apical



Figs. 11–19. *Polytoxus fuscovittatus* (Stål, 1860), male. 11 – left fore leg, posterior (= outer) surface; 12–13 – abdomen, ventral view; 14 – pygophore, dorsal view; 15 – same, lateral view; 16 – superoposterior process of pygophore, lateral view; 17–19 – left paramere, three different aspects. Figs. 11, 13–19 – specimen from Philippines: Luzon; Fig. 12 – specimen from Taiwan. Scales in mm.

red annulus, or with apical red and subapical brown annuli (Fig. 11), or with wide apical dark brown annulus, or greatly brown throughout; tibiae stramineous, with more or less distinct brown annulus apically, with subbasal brown annulus, or with basal red and subbasal brown annuli (Fig. 11), or with wide dark brown basal annulus, or greatly brown; tarsus yellowish brown to dark brown; fore wing (Fig. 5) stramineous, sometimes with extreme base red, marginal vein and pterostigma stramineous to orange, wide longitudinal stripe smoky brown.



Figs. 20–32. *Polytoxus fuscovittatus* (Stål, 1860), male, Philippines: Luzon. 20 – phallus, ventral view, articulatory apparatus omitted; 21 – phallus, dorsal view; 22 – same, lateral view; 23–32 – endosomal processes in different aspects (23–25 – process ‘A’; 26–28 – process ‘B’; 29 – process ‘C’; 30–32 – process ‘D’). Scales in mm.

Abdomen yellowish with 1+1 dark brown sublateral longitudinal stripes occupying sternites III–VI (Fig. 13), or greatly dark brown with lateral margins yellowish (Fig. 12).

Structure. Length and direction of the mesonotal and humeral spines are variable as illustrated in Figs. 6–10.

Distribution. Pakistan; India!; Sri Lanka; Japan: Honshū, Shikoku, Kyūshū, Tanegashima Is., Yakushima Is., the Ryūkyūs; China: Fujian, Guangxi, Hainan, Hubei, Yunnan; Taiwan! (new record); Myanmar!; Vietnam!; Philippines!; Malaysia!: Selangor, Sarawak!

Taxonomy. The identity of *Polytoxus fuscovittatus* has remained doubtful for a long time. Only VILLIERS (1943a: 195, Figs. 9, 10, 20) figured the male genitalia of this species; however, he did not mention any data of the specimen(s) examined by him. Based on his figures as well as several specimens deposited in the MNHN examined by one of us (DR), it is clear that the drawings represent *P. vagans* Miller, 1940, so far recorded from Malacca and Japan.

Two historical female specimens deposited in the NHRS, one of them from the type locality ('Manilla' [= Manila], Luzon, the Philippines), were examined by one of us (DR). In the original description it is indicated that the description of *S. fuscovittata* (currently *Polytoxus*) was based on male(s). This suggests that the specimen in question is not a type. However, the type of *S. fuscovittata* was collected during the 1851–1853 expedition of the Frigate *Eugenie* around the world commanded by Rear-Admiral C. A. Virgin. The zoological research work aboard the *Eugenie* was the responsibility of J. G. H. Kinberg (1820–1908), Swedish surgeon and zoologist. According to the second label of the examined female from Manila, the respective specimen was collected by Kinberg. Because of the above circumstances we consider the specimen as a syntype and we suppose that the sex was erroneously given in the original description. We designate this specimen as a lectotype.

We could examine recently collected specimens (2 ♂♂ 1 ♀) of a *Polytoxus* species from Luzon as well as other conspecific specimens from Negros, deposited in NHMW. The specimens perfectly fit with the original description of *P. fuscovittatus* and the specimens deposited in NHRS, therefore we consider them conspecific with the lectotype. We provide figures of *P. fuscovittatus* based on these specimens (Figs. 1–5, 11, 13–22).

Additional specimens from continental South-East Asia (Myanmar and Vietnam), Borneo and Taiwan were examined. The genitalia including phalli of the examined males were identical with the Philippine specimens. Consequently, we recognize *P. fuscovittatus* as a widely distributed species. According to the redescription and figures by ISHIKAWA & YANO (2002), the Japanese specimens identified as *Polytoxus selangorensis* Miller, 1940 by the above authors also belong to *P. fuscovittatus*.

The strong variability of the coloration in *P. fuscovittatus* was stressed by ISHIKAWA & YANO (2002). ISHIKAWA & OKAJIMA (2003: 135, Fig. 3) photographed an extremely dark specimen from Vietnam. BARRION & LITSINGER (1994) provided diagnostic characters for *P. selangorensis* and *P. fuscovittatus*. Examination of the genitalia of several differently coloured specimens showed that these differences are not of species value. The length and direction of the humeral spines is also highly variable (Figs. 6–10) and cannot serve as a diagnostic character as used by HSIAO (1965) to distinguish *P. ruficeps* from *P. fuscovittatus*.

The original descriptions of *P. selangorensis* and *P. ruficeps*, including the illustrations of the most characteristic pygophore, perfectly fit specimens of *P. fuscovittatus* collected at the

type locality. Consequently, we place the above two species in synonymy with *P. fuscovittatus*. We note that *P. fuscovittatus* has been reported from China by REN (2004). Since her record (REN 2004: 149, Figs. 3a–c) contained reproductions of figures provided with an earlier redescription of *P. ruficeps* by HSIAO & REN (1981: 406, Figs. 1204–1206), it can be inferred that she considered previous records of *P. ruficeps* as referring to *P. fuscovittatus*.

Polytoxus minimus China, 1940

Polytoxus minimus China, 1940: 206. HOLOTYPE (♀): China: 'Fukien' [= Fujian], 'Foochow' [= Fuzhou] (BMNH). *Polytoxus wygodzinskiyi* Ren, 2004: 149. Unavailable name.

References. HOFFMANN (1944): 2 (catalogue); HSIAO & REN (1981): 406 (redescription, distribution, figure); MALDONADO CAPRILES (1990): 476 (catalogue); LIN (2003): 124 (distribution); PUTSHKOV & PUTSHKOV (1996): 206 (catalogue, distribution); HUA (2000): 210 (distribution); ISHIKAWA & YANO (2002): 352 (diagnosis, male genitalia, figures, records, distribution), 358 (in key).

Material examined. TAIWAN: FUJIAN COUNTY: Kinmen, Gugang, 19.vii.1995, leg. W. I. Chou (1 ♀, NTU).

Diagnosis. This species is characterized by its small size (5.5–6.5 mm), dark colour, the proepisternum being produced into a short and acute process, and the relatively short basal cell of the fore wing as illustrated by CHINA (1940: 207, Fig. 1b). It is readily identified by the characters given in the redescription and figures by ISHIKAWA & YANO (2002).

Distribution. Japan: the Ryūkyūs (Ishigaki Is., Iriomote Is., Yonaguni Is.); China: Guangxi, Fujian; Taiwan: Kinmen! (new record).

Taxonomy. REN (2004) provided a brief description and illustrations of *Polytoxus wygodzinskiyi*. Although she used the Chinese equivalent of the words 'new species', she clearly indicated that she is going to properly describe the species in a forthcoming paper. Because she did not designate any types, it is not an available name according to Article 16.4 of the International Code of Zoological Nomenclature (ICZN 1999). We are not aware of any subsequent, nomenclaturally valid publication of this name. According to the brief description and the accompanying illustrations, this species from south-eastern China does not differ from *P. minimus*.

Polytoxus rufinervis Hsiao, 1965

Diagnosis. *Polytoxus rufinervis* can be diagnosed by the following combination of characters: body relatively large (9–12 mm), bright red in colour, posterior lobe of pronotum with large dark brown spot reaching posterior margin; head and pronotum rather elongate; mesonotum carinate along meson; male genitalia as in Figs. 33–52.

Taxonomy. *Polytoxus rufinervis* was described after a single female from Yunnan, China; the male has remained unknown so far. ISHIKAWA & OKAJIMA (2003) reported it from the Sa Pa District in northern Vietnam, based on two females. We could examine a series consisting of males and females from the Sa Pa District and agree with the identification of ISHIKAWA & OKAJIMA (2003).

We also examined several specimens of *P. ardens* Ishikawa & Yano, 2002 (described from Japan) from Taiwan, and our identification was confirmed by T. Ishikawa (pers. comm.). Although the specimens from Vietnam and Taiwan are different in colour, males from both

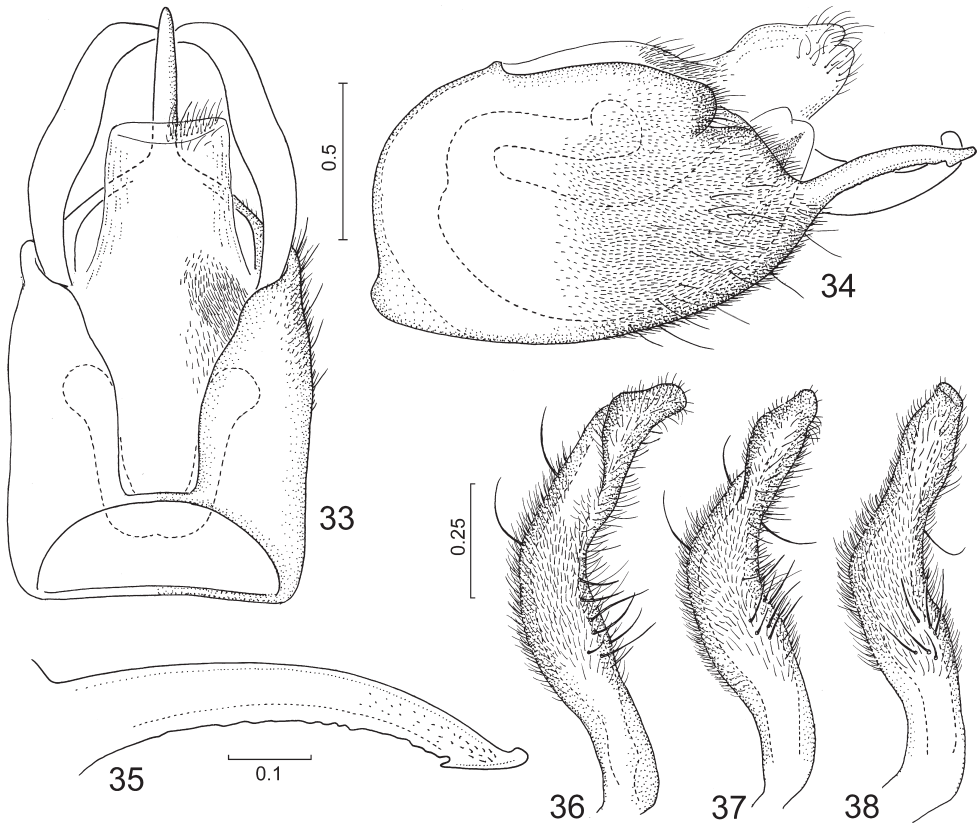
localities have identical genitalia, and consequently there is no doubt about their conspecificity.

Nevertheless, specimens from Taiwan and Japan have a distinct longitudinal stripe in the middle of the fore wing. This stripe is obsolete or missing in specimens from Vietnam (examined by us) or China (HSIAO 1965, HSIAO & REN 1981). This striking and consistent difference in coloration is most probably a result of their geographical isolation; therefore we treat *P. ardens* as a geographical subspecies of *P. rufinervis*.

***Polytoxus rufinervis rufinervis* Hsiao, 1965**

Polytoxus rufinervis Hsiao, 1965: 114. HOLOTYPE (♂): China: Yunnan, Jinping, Hetou (IZAS).

References. HSIAO & REN (1981): 405 (redescription, photo, figures, distribution); MALDONADO CAPRILES (1990): 477 (catalogue); PUTSHKOV & PUTSHKOV (1996): 206 (catalogue, distribution); ISHIKAWA & OKAJIMA (2003): 134 (diagnosis, record); HUA (2000): 210 (distribution); LIN (2003): 124 (distribution).

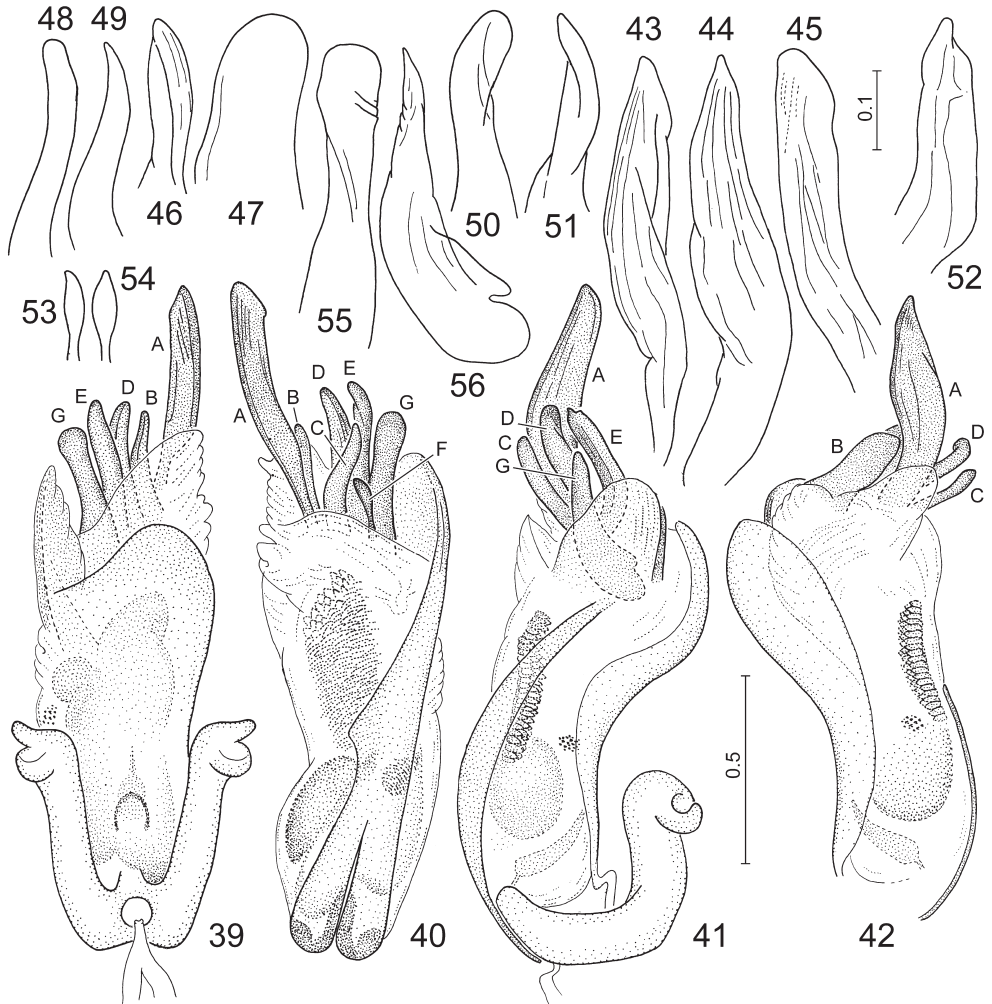


Figs. 33–38. *Polytoxus rufinervis ardens* Ishikawa & Yano, 2002, male, Taiwan. 33 – pygophore, dorsal view; 34 – same, lateral view; 35 – superoposterior process of pygophore, lateral view; 36–38 – left paramere, three different aspects. Scales in mm.

Material examined. VIETNAM: LAO CAI PROVINCE: Sa Pa District, Cat-Cat, FVBC [= Frontier Vietnam Base Camp], 1250 m, 8.iv.–2.vi.1998, leg. Frontier, Vietnam (4 ♂♂ 3 ♀♀, HNHM; 1 ♂, HNHM > TUA).

Diagnosis. It differs from *P. rufinervis ardens* by the absence of a distinct brown longitudinal stripe in the middle of the fore wing.

Distribution. China: Yunnan; Vietnam!



Figs. 39–56. *Polytoxus rufinervis ardens* Ishikawa & Yano, 2002, male, Taiwan. 39 – phallus, dorsal view; 40 – same, ventral view, articular apparatus omitted; 41 – same, lateral view, from right; 42 – same, from left, articular apparatus omitted; 43–56 – endosomal processes in different aspects (43–45 – process ‘A’; 46–47 – process ‘B’; 48–49 – process ‘C’; 50–51 – process ‘D’; 52 – process ‘E’; 53–54 – process ‘F’; 55–56 – process ‘G’). Scales in mm.

***Polytoxus rufinervis ardens* Ishikawa & Yano, 2002, stat. nov.**

(Figs. 33–42)

Polytoxus ardens Ishikawa & Yano, 2002: 349. HOLOTYPE (♂): Japan: the Ryūkyūs, Okinawa Is., Yona (NSMT).**References.** ISHIKAWA & YANO (2006): 12 (record, distribution).**Material examined. TAIWAN: TAIPEI COUNTY:** Wulai, 3.vi.1997, leg. C. I. Hsiao (1 ♀, NTU, det. as *Polytoxus insularis* sp. n. by W. Cai, 1997); same locality, 17.x.1997, leg. J. L. Tong (1 ♂ [Figs. 33–56], NTU); Xindian Guanghsin, leg. Y. S. Wu (1 ♀, NTU). **ILAN COUNTY:** Fushan Botanical Garden, meadow, N24°45.361' E121°35.761', 636 m, at light, 16.ix.2007, leg. D. Rédei & J. F. Tsai (1 ♀, HNHM); Fushan, 4.vi.1997, leg. Y. W. Hua (1 ♀, NTU); same locality, 15.x.1997, leg. W. I. Chou (2 ♂♂ 1 ♀, NTU); same locality, 3.x.1994 23:00, forest #1, sheet light trap, leg. A. Warneke (1 ♀, TFRI, barcode No. 00079631).**Diagnosis.** It differs from the nominotypical subspecies by the presence of a distinct longitudinal brown stripe in the middle of the fore wing.**Distribution.** Japan: Honshū, Shikoku, Kyūshū, Amami-Oshima, Okinawa; Taiwan! (new record).**Discussion**

Only a few saicine specimens have been found in the collections; however, the number of species is quite high. There is no doubt that more intensive collecting might reveal the occurrence of several additional species in Taiwan.

Among the recorded species, *Polytoxus fuscovittatus* is a widely distributed South-East Asian species, reaching also the neighbouring areas of the Palaearctic Region. *Polytoxus annulipes* has been reported to occur in Japan and Korea: Jeju Island so far. It probably reaches the southern limit of its distribution in Taiwan. *Polytoxus rufinervis* occurs in continental South-East Asia (China, Vietnam), Japan and Taiwan. Two species, *Polytoxus esakii* and the micropterous *Gallobelgicus heissi*, are probably endemic to Taiwan. *Polytoxus minimus*, a species occurring in south-eastern China (Guangxi, Fujian) and the Ryūkyūs, was found only in the Kinmen Islands about 2 km off the mainland of China.

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