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https://doi.org/10.15017/7343650

出版情報：Sieboldia : acta biologica . 4 (1), pp.1-24, 1968-03-30. 九州大学教養部生物学教室
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THE GENUS *BOLETINA* STAEGER FROM TAIWAN
(Diptera, Mycetophilidae)

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The genus *Boletina* Staeger is the largest genus of the tribe Gnoristini of the subfamily Sciophilinae, and contains more than 70 living species which are mostly distributed in the northern temperate and subarctic regions. Up to present, only a little is known about the *Boletina* species in the Eastern Palaearctic Region. Sasakawa (1961) recorded a few European species from Japan, but no species of the genus hitherto have been recorded from Taiwan. In Japan, however, I have collected many species at various localities and some groups of this genus are diversified there. The Japanese species of this genus are found from the lowland of Kyushu to the alpine region of Hokkaido, and they are more abundant in early spring or late autumn than other seasons.

In spring of 1967, Professor T. Shirôzu collected a fairly good series of Mycetophilids in Taiwan and he kindly offered this material for me. It contains six species of *Boletina*, upon which this paper is mainly based. As a member of the faunal research of Japan-U.S. Co-operative Science Programme, I visited Taiwan in spring of 1965 and collected three species of this genus. This material, of which the species are all represented in Professor Shirôzu's collection, are also added in this paper.

In Taiwan both Professor Shirôzu and I collected insects at the several localities ranging from the lowland to the subalpine region up to 2,900 m altitude, but the genus was found only at the subalpine region from Alishan (2,300 m) to Lulinshan (2,900 m). So it is very probable that most of Taiwan species of *Boletina* are confined to the high altitudes, where the Palaearctic insect fauna well remains as relict. Some species of the Holarctic genera *Bolitophila*, *Symmerus*, *Coelosia*, *Synapha*, *Docosia*, etc. were collected only at localities in the same ragion.

Of the six Taiwan species of *Boletina*, one is known species and other five are new to science. The known species is *Boletina trispinosa* Edwards which has been recorded only from England. The relationships of the new species to the Palaearctic or Nearctic species are as follows. *B. laticauda* has a closely allied species each in the Palaearctic and

Nearctic Regions, and the Palaearctic ally, *sahlbergi* from Lappland, is also distributed at the alpine region of Central Honshu.* *B. taiwana* is closely related to European *reuteri*, which seems to comprise a unique group together with several undescribed Japanese species, and a Nearctic species, *cincta*, seems to be included in this group judging from the description and illustrations given by Johannsen (1912). *B. longicauda* is somewhat characteristic in having the much lengthened male genitalia, but its fundamental genital structures are very similar to those of *shirozui* or many other known species. European *villosa* and *landrocki* have the similarly elongate genitalia, but the details of their relationships to Taiwan species are still obscure. I could not find close allies of *longicauda* among the Japanese material. *B. shirozui* and *B. takasago* have the male genitalia structurally common to those of the majority of the Palaearctic and Nearctic species, but the latter species is distinctive in having the setulose subcostal and anal veins.

In the description given in this paper, some morphological terms are used as follows: frons, facial sclerite between antennal sockets and clypeus; Rs, basal section of radial sector from its base to anterior end of r-m crossvein; R_5, apical section of radial sector from anterior end of r-m crossvein to its tip; basal section of M-stem, stem of M from its base to posterior end of r-m crossvein; petiole of M-fork (apical section of M-stem), stem of M from posterior end of r-m crossvein to forking point of M_1 and M_2; Cu-fork, posterior fork of veins between M-fork and A_1; Cu_2, posterior branch of Cu-fork; pleurotergite, a sclerite between postnotum and pteropleuron, "Metapleuren" of Landrock (1927); coxosternum of ♂ genitalia, united gonocoxites and 9th abdominal sternum. When the abdomen of the specimens are unnaturally strongly curved downwards, the length of body is shown as the combined length of that from the foremost portion of cranium to the most strongly curved portion of abdomen and that from the latter to the end of abdomen. The length of basal veins of the wings are measured from the level of posterior end of the humeral crossvein to the tip of each vein. To simplify the description, the following abbreviations are adopted in this paper: F, femur; T, tibia; ad, anterodorsal; a, anterior; av, anteroventral; pd, posterodorsal; p, posterior; pv, posteroventral; v, ventral.

Before going further I wish to express my cordial thanks to Professor Takashi Shirôzu of Kyushu University for his constant encouragement and kind help collecting and giving the valuable material for my study.

Acknowledgement is made of the partial financial support of this investigation through a grant from the Japan Society for the Promotion of Science as part of the Japan-U.S. Co-operative Science Programme.

* *Boletina sahlbergi* Lundström, 1907: 1 ♂, Kitazawa-tôge, Mt. Senjôdake, Nagano Pref., Honshu, Japan, 28. vii. 1961, T. Saigusa leg. New record from Japan.

Genus *Boletina* Staeger

Boletina Staeger, 1840: Naturhist. Tidsskr. 3: 233. (Type-species: *Leia trivitata* Meigen, 1818)

Head small, flattened anteriorly, placed low upon thorax; compound eye rounded, weakly emarginate opposite of antennal socket; 3 ocelli present on broad vertex, arranged in a flattened triangle or rarely in a line, median ocellus rather small, lateral ones widely separated from margin of compound eye; maxillary palpus of 4 segments, usually incurved; mouth parts short, at most 1/2 × as long as head depth; antenna long and slender, flagellum of 14 segments. Thorax short, oval and humpbacked, acrostichal and dorsocentral setae arranged in a row, postnotum bare, pleurotergite setose or bare. Legs long and slender, tibiae usually with outstanding setae. Wing elongate oval in shape, wing membrane covered only with microtrichiae; C more or less exceeding tip of R_5, Sc long, ending in C usually opposite of Rs base; Sc_2 before basal 2/3 point of Sc, sometimes absent, M- and Cu-forks present, Cu forking at opposite or proximad of forking point of M; A_1 incomplete. Abdomen elongate, in ♂ 7 segments visible externally and 7th segment small; ♀ genitalia variable in structure, but usually epandrium well developed, exceeding tip of gonostylus, and cercus with some combs of spine-like bristles.

Key to Taiwan species of the genus *Boletina*

1. Sc_2 present 2
   Sc_2 absent 3
2. Petiole of M-fork shorter than 1.5 × as long as r-m crossvein; Sc long, ending in C nearly opposite of Rs base, distinctly distad of posterior end of r-m crossvein. Viewed from above, mesoscutum extensively and densely greyish brown pollinose and with 3 broad subshining black stripes. Maxillary palpus, middle and hind coxae dark brown to blackish brown except on paled apical portion of middle coxa; abdomen entirely black. T_3 with av and pv setae. Male genitalia: cercus with short spine-like bristles, gonostylus bearing 3 long, stiff, spine-like bristles at outer posterior corner; phallic organs with a pair of long lamellate processes ..... *trispinosa* Edwards

   Petiole of M-fork longer than 2 × as long as r-m crossvein; Sc short, ending in C much proximad of both Rs base and posterior end of r-m crossvein. Viewed from above, mesoscutum entirely shining black, very sparsely dark grey pollinose, and without dull grey pollinose margins. Maxillary palpus, middle and hind coxae entirely yellow except for black extreme base of the latter. Abdomen black, with at least 3rd and 4th sterna and hind margin of 2nd to 4th terga yellow. Male genitalia: cercus without spine-like bristles, gonostylus without 3 strong spine-like bristles at

outer posterior corner, but with 2-3 stiff bristles before middle and numerous short spinuli on apical 1/2, phallic organs without a pair of long lamellate processes ..... *taiwana* sp. nov.

3. Pleurotergite setose; thoracic setae black, middle and hind coxae yellow 4

   Pleurotergite bare; thoracic setae yellow to whitish, middle and hind coxae blackish brown 5

4. Apical dark portion of wing brownish, rather distinctly bordered basally. Male genitalia much elongate, about 1/2 × as long as the combined length of 1st to 6th abdominal segments, epandrium 3 × as long as wide, apical portion of gonostylus curved inwards .... *longicauda* sp. nov.

   Apical dark portion of wing greyish, gradually paled basally. Male genitalia shorter than 6th abdominal tergum, epandrium only slightly longer than wide, apical portion of gonostylus curved outwards ..... *shirozui* sp. nov.

5. Petiole of M-fork and r-m crossvein very long, about 1/3 × as long as R_1; Sc ending in C opposite of posterior end of r-m crossvein or much proximad of Rs base; r-m crossvein setulose, but Sc and A_1 bare. Male genitalia peculiar as in *sahlbergi*, gonocoxite large and strongly expanded laterally; gonostylus long and slender, serrate on inner margin, and with a style-like subapical process; cercus without combs of spine-like bristles ..... *laticauda* sp. nov.

   Petiole of M-fork and r-m crossvein short, 1/6 × as long as R_1; Sc ending in C much distad of posterior end of r-m crossvein or opposite of Rs base; r-m crrossvein bare, but Sc and A_1 setulose. Male genitalia not much differentiated, gonocoxite neither much broader than epandrium nor strongly expanded laterally; gonostylus short and bifid apically, not serrate on inner margin and without a style-like subapical process; cercus with many spine-like bristles irregularly arranged in combs..... *takasago* sp. nov.

Boletina laticauda Saigusa, sp. nov.

(Figs. 1-3, ♂ genitalia; 4, anterior claw of ♂ front leg; pl. 1, fig. 1, ♂ wing)

♂. *Coloration*: Body extensively blackish brown. Head subshining black, sparsely covered with greyish pollen; antenna black except for yellow scape and basal portion of 1st flagellar segment; maxillary palpus yellow. Thorax black, pleura, scutellum and metanotum rather densely grey pollinose; humeral area yellow; mesoscutum almost shining black, very sparsely covered with dark grey pollen, and with extreme lateral portion and narrow dorsocentral stripes thinly greyish pollinose; metepisternum yellowish brown in ground colour. Legs yellow; middle and hind coxae, extreme base of front coxa, all trochanters, dorsal surface of

apical 1/3 of F_2 and that of apical 1/2 of F_3, extreme tips of all tibiae, and tarsi (except for basal portion of metatarsi) dark brown; coxae more or less pollinose; spurs black and black setulose. Wing faintly greyish, very weakly darkened towards tip; veins dark brown. Haltere yellowish white. Abdomen shining black, very sparsely pollinose, 2nd to 4th segments with a narrow yellow hind-marginal band. Genitalia dark brown, apical portion of gonocoxite paled.

Head: Antenna moderately long and slender, flagellum clothed with white pile, 1st flagellar segment 3.6 × as long as thick (18 : 5), 8th flagellar segment 2/3 × as long as 1st flagellar segment (12 : 18), and 3.5 × as long as thick (12 : 3.5). Vertex clothed with short yellowish setae, without strong postocular bristles; frons and clypeus with a few yellow setulae, the former not produced fowards at tip, the latter triangular, almost as long as basal width.

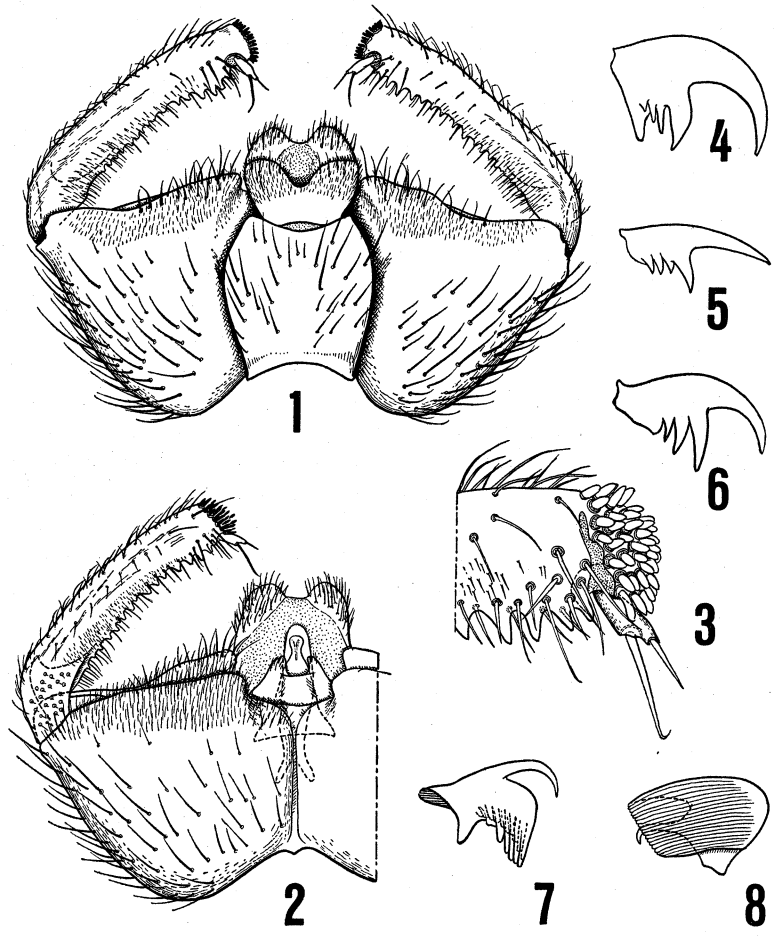
Thorax: Bristles and hairs yellow. Acrostichals extending to prescutellar portion; uppermost pronotal bristles very strong; scutellum with 2 strong bristles widely separated from each other and several short setae; pleurotergite bare. Legs: Hairs and bristles of coxae and trochanters yellow, those of femora, tibiae and tarsi black, F_1 and F_2 rather slender, F_3 thickened medially, 7 × as long as thick; av setae of femora short except for a few strong setae on apical portion of F_2 and F_3. T_1 with 2-3 short pd , 1 short p, and 3-4 very weak v setae, and 1 short ad, 1 short pd and 1 short p apical setae. T_2 with 4 long a, 4 long av, 1 short subbasal and 3 long pd and 1-2 weak pv setae and 1 short a apical seta. T_3 with 6 long a, 6-7 weak av, 5-6 long and 0-2 weak pd and 5 weak pv setae and 1 short pd, 1 weak av and 1 short pd apical setae. T_1 only slightly thickened at tip, with a rather small brownish av patch. Anterior claw of front leg with 4-5 teeth on basal half, apical tooth strong, posterior claw similar to anterior one. Relative lengths of leg segments are given in Table 1.

Table 1. Relative lengths of leg segments of *B. laticauda*.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	87	100	84	44	30	19	16
Middle leg	97	132	94	42	30	18	15
Hind leg	137	196	103	38	26	19	15

Wing: Elongate, 3 × as long as wide (155 : 49). C extending slightly beyond tip of R_5 and reaching to basal 1/5 point of wing margin between tips of R_5 and M_1; Sc ending in C well proximad of Rs base, Sc : R-stem =43 : 62, Sc_2 absent; R_1 1.2 × as long as R-stem (50 : 62), Rs 2/9 × as long

as r-m crossvein; r-m crossvein long and subparallel to C, slightly shorter than 1/2 of basal section of M-stem (18:43), and longer than 1/3 of R_1 (18:50); petiole of M-fork (apical section of M-stem) as long as r-m crossvein (17:18); base of Cu-fork slightly beyond posterior end of r-m crossvein but apparently proximad of base of M-fork, Cu_2 much shorter than petiole of Cu-fork (28:53), A_1 reaching to opposite of base of Cu-fork. R-stem, R_1, r-m crossvein, M_1 and M_2 (except for extreme base), apical 1/2 of each Cu_1 and Cu_2 setulose above; R_1 and R_5 setulose beneath.



Figs. 1-4, *Boletina laticauda* sp. nov.; 5, *Boletina shirozui* sp. nov.; 6, *Boletina taiwana* sp. nov.; 7-8, *Boletina trispinosa* Edwards. 1, ♂ genitalia, dorsal aspect; 2, same, ventral aspect; 3, apical portion of gonostylus, ventral aspect; 4-7, anterior claw of ♂ front leg, anterior aspect; 8, posterior claw of ♂ front leg, posterior aspect.

Abdomen: Evenly clothed with yellow setae, 1st abdominal sternum short-setulose. *Male genitalia*: Short and broad, 4/5 × as long as 6th abdominal tergum when gonostyli pulled to gonocoxites, much shorter than wide; epandrium short, distinctly separated from gonocoxites, shorter than the latter; cercus short and small, pilose, with a few weak setulae which are not arranged in combs; gonocoxite large and broad, triangular, strongly expanded laterally, sparsely black setulose; gonostylus long, slender, almost straight and parallel-sided, serrate on its inner margin, with small thorn-like spines at tip and bearing a style-like flexible process at subapical partion of inner margin, the process with a long subapical and a short apical setae; phallic organs consisting of a ventral plate with a pair of hairy short processes, a dorsal stout pilose process and a median bare process, the latter two invaginated into an apodemal structure.

Length: Body 4.5 mm; wing 4.8 mm.

Distribution: Taiwan.

Holotype ♂, Vicinity of Taataka, ca. 2,700 m, Lulinshan, Chiayi Hsien, Taiwan, 3. iv. 1967, T. Shirôzu leg. (right wing, left front leg and genitalia mounted on a slide with balsam).

Remarks. *B. laticauda* is apparently closely related to the Palaearctic *Boletina sahlbergi* Lundström, 1907 from Lappland and the Nearctic *Boletina longicornis* Johannsen, 1912 from Idaho, U.S.A. These two species have the male genitalia very similar to those of *laticauda* both in the structure and shape. The main differences among these three species are given in Table 2.

Table 2. Differences among *laticauda* and its allied species.

	laticauda	*sahlbergi*	*longicornis*
Gonostylus	straight	straight	curved inwards
Petiole of M-fork	as long as r-m crossvein	longer than r-m crossvein	———
Base of Cu-fork	proximad of M-fork base	opposite of M-fork base	———
Sc_2	absent	present	
Mesoscutum	entirely black	yellow with 3 black stripes	
Thoracic pleura	entirely black	yellow with dark ventral portion	
Middle & hind coxae	black	yellow	

Boletina trispinosa Edwards, 1913

(Figs. 7-8, claws of ♂ front leg; 9-12, ♂ genitalia; pl. 1, fig. 2, ♂ wing)

Boletina trispinosa Edwards, Trans. Ent. Soc. London 1913: 364 (1913).

♂. *Coloration* Body extensively blackish brown. Head black, fairly densely covered with greyish pollen; antenna black, maxillary palpus blackish brown. Thorax entirely black, rather densely greyish brown pollinose; when viewed from above, 3 weakly shining, broad black stripes appearing on a greyish brown ground of mesoscutum, the stripes indistinctly separated by narrow pollinose streaks. Legs predominantly yellow; front coxa darkened at base, middle coxa dark brown on basal half, hind coxa entirely dark brown, much blackish on basal portion, pollinosity of coxae very sparse; trochanters black; femora infuscated to dark brown beneath on basal 1/3, F_3 also dark brown above towards tip; tibiae yellow except on brownish tip, but appearing to be brownish owing to dense black setulae; spurs brown and black setulose; tarsi brown. Wing greyish, more or less darkened towards tip; veins pale brown, C and radial veins dark brown, A_1 paled. Haltere yellow. Abdomen inclusive of genitalia entirely blackish brown, sparsely greyish pollinose.

Head: Antenna moderately long and rather thick, flagellum densely clothed with whitish pile; 1st flageller segment 3 × as long as thick (13 : 4), 8th flagellar segment only slightly shorter than 1st flagellar segment (12 : 13), and 3 × as long as thick. Vertex, frons and clypeus with fine, minute, black setulae, the former without strong postocular bristles; frons not produced fowards, clypeus as long as wide, but rather weakly produced apically.

Thorax: Bristles and hairs yellow. Acrostichals extending to prescutellar area; scutellum with 4 strong bristles and several shorter setae; pleurotergite bare. *Legs*: Bristles and hairs of coxae and trochanters yellow, those of femora, tibiae and tarsi black, a few outer preapical setae of front and middle coxae black, av setae of all femora yellow; greyish pollinosity of coxae and femora sparse. All femora slender, F_3 8 × as long as thick; av setae of femora nearly as long as thickness of femora. T_1 with 1 short median pd and 2 minute pv setae, and 1 short ad, 1 short a and 1 short pd apical setae. T_2 with 3-4 longish a, 3 longish av, 4 long pd, 1 longish p and 2-3 short pv setae, and 1 short ad, 1 short a and 1 short pd apical setae. T_3 with 6 long ad (or a), 2 long av, 5-6 long and 1 longish pd and serveral (6-8) short weak p setae, and each 1 short a and ad apical setae. Posterior setulae of T_3 somewhat lengthened and suberect on apical 1/5. T_1 more or less thickened at tip, with a rather large yellowish av patch. Claws much modified, anterior claw of front leg with a slender apical tooth and a curved hemispherical lamella bearing many (nearly 10) small teeth, posterior claw being a lamella which is numerously serrate and striate, and has a slender apical tooth; claws of

middle and hind legs not examined in detail, but similar to those of front leg. Relative lengths of leg segments are given in Table 3.

Table 3. Relative lengths of leg segments of *B. trispinosa* ♂.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	102	100	74	48	33	20	20
Middle leg	122	139	87	50	35	20	18
Hind leg	148	206	107	46	33	22	20

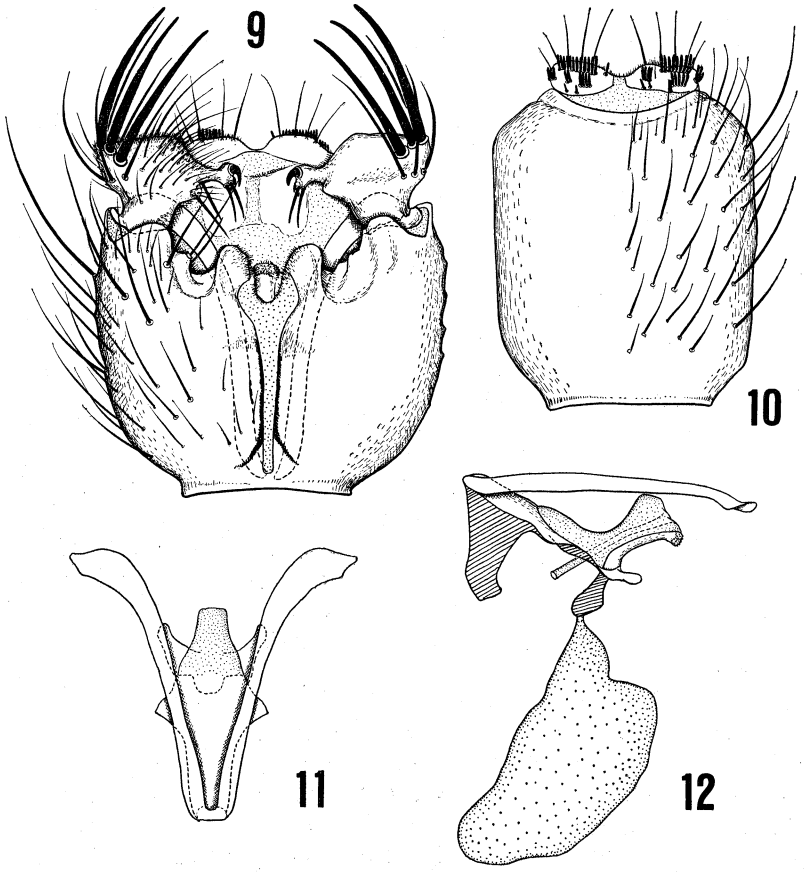
Wing: Broad, 2.6 × as long as wide (116 : 45). C much exceeding tip of R_5, reaching to basal 3/7 point of wing margin between tips of R_5 and M_1; Sc ending in C somewhat proximad of Rs base, Sc : R-stem = 33 : 36, Sc_2 present, slightly proximad of 2/3 point from tip of Sc; R_1 slightly longer than R-stem (42 : 36), Rs shorter than 1/3 of r-m crossvein (2.5 : 8); r-m crossvein rather short and oblique, shorter than 1/3 of basal section of M-stem (8 : 29); petiole of M-fork longer than r-m crossvein (11 : 8), or as long as 1/6 of M_1 (11 : 62); base of Cu-fork slightly distad of posterior end of r-m crossvein and much more proximal than base of M-fork, Cu_2 as long as petiole of Cu-fork (34 : 35); A_1 very weak, barely traceable till opposite of basal 1/3 point of Cu_2, but its apical 1/3 very much faint. R-stem, R_1 and R_5 setulose above, M and Cu mostly free from setulae except on upper side of apical 1/3 of M_1 and M_2, and extreme apical portion of Cu_1 and Cu_2.

Abdomen: Evenly clothed with short, fine, yellow setae, 1st abdominal sternum bare. *Male genitalia*: Somewhat modified, moderately large, black-setose, almost as long as 6th abominal tergum; epandrium subquadrate, slightly longer than wide; cercus short, 1/2 × as long as wide, with spine-like bristles irregularly arranged in 3 rows, several stiff setae on hind margin; coxosternum somewhat shorter than epandrium, with a pair of subventral processes, which are short, bluntly ended and pilose; gonostylus short, more or less broad, produced inwardly into a short process, bearing 3 strong sping-like bristles on distal portion close to outer margin, several stiff bristles and weaker setae on disc, and 2 strong bristles at base of inner process, tip of inner process furnished with 2 short, stiff, curved spines and 2 rather long bristles; protruded portion of phallic organs being a pair of long curved processes and rather short median process, which has numerous denticles at apical margin, the apex of the long process almost extending to base of gonostylus.

Length: Body 3.0 mm; wing 3.6 mm.

Distribution: England and Taiwan (new record).

Specimen examined: 1♂, Tungpu, 2,500 m, Lulinshan, Chiayi Hsien, Taiwan, 28. iii. 1967, T. Shirôzu leg. (right wing, left front leg and genitalia mounted on a slide with balsam).



Figs. 9-12, *Boletina trispinosa* Edwards. 9, ♂ genitalia, ventral aspect; 10, epandrium and cerci, dorsal aspect; 11, phallic organs, dorsal aspect; 12, same, lateral aspect.

Remarks. Although there are some colour differences between the Taiwan specimen described above and British *trispinosa* described by Edwards, the Taiwan specimen seems to be identical with *trispinosa* based mainly on the male genitalia which have three characteristically strong spines on dististylus. It is interesting that *trispinosa* is distributed in Taiwan. This species was originally described from England and since then no records of the species have been added. Only Landrock (1940) suggested the possibility of its occurrence in Germany. I have examined

the extensive Japanese material of the genus *Boletina* in my Mycetophilid collection, but *trispinosa* is not represented in it.

Boletina taiwana Saigusa, sp. nov.

(Fig. 6, anterior claw of ♂ front leg; 13-15, ♂ genitalia; 16, ♀ terminalia; pl. 1, fig. 3, ♂ wing)

♂. *Coloration*: Body extensively black to blackish brown. Head black, sparsely dark grey pollinose; antenna black, 1st flagellar segment yellowish at extreme base, mouth parts inclusive of maxillary palpus entirely yellow. Thorax blackish brown except narrow yellowish humeral portions, very weakly dark grey pollinose, pollinosity much thiner than that of head, mesothoracic notum almost shining black, without any pollinose bands or markings. Legs predominantly yellow; hind coxa usually darkened at posteroproximal portion; ventral 1/2 of front trochanter, entire middle and hind trochanters, ventral side of basal 1/2 to 1/3 of F_2 and F_3, apical 1/5 to 1/10 of F_3 dark brown; spurs yellow, front tibial spur darkened towards tip; tarsi yellowish on basal half, then darkened towards tip mainly by reason of dense black setulae. Wing faintly greyish, and somewhat darkened on apical 1/3 to 1/4; veins dark yellowish brown to pale brown, C and R dark brown. Haltere yellow. Abdomen inclusive of genitalia black, very sparsely dark greyish pollinose, 2nd to 4th terga with a narrow yellow hind-marginal band, posterior half of 2nd sternum and entire 3rd and 4th sterna yellow.

Head: Antenna long and slender, flagellum clothed with brownish pile; 1st flagellar segment short, 3 × as long as thick (18 : 6), 8th flagellar segment as long as 1st flagellar segment (19 : 18) and 3 × as long as thick (19 : 6). Vertex and occiput clothed with short black setulae, and bearing several strong black postocular bristles on each side; frons considerably produced forwards, with a row of longish, curved, black apical marginal setae and some scattered setulae; clypeus of a narrow transverse scelrite, much shorter than wide, emarginate on ventral margin, and free from setulae.

Thorax: Bristles and hairs yellow. Acrostichals ending before middle of mesoscutum, a pair of pronotal bristles strong, scutellum with a pair of widely separated strong bristles and several weaker setae; pleurotergite bare. *Legs*: Hairs and bristles of coxae, trochanters and femora yellow, those of tibiae and tarsi black, some dorsal setulae of F_2 and F_3 black. Femora rather slender, F_3 6-7 × as long as thick; av setae of femora short and weak, even those on apical 1/2 of F_3 almost as long as 1/2 of femur thickness. T_1 with 3-6 minute ad, 2 minute pd, 2-3 minute but rather stiff p and 0-3 minute pv setae and also with a dorsal semicirclet of several apical setae. T_2 with 3-4 long ad (or a), 2-4 (usually 3) longish av, 3 long pd, 7-9 minute p and 2-4 minute pv setae, and 1 short ad, 1

short pd, and 1 short p apical setae. T_3 with 4-7 long ad (or a) and 5-7 long pd setae, and also with 1 long apical seta each on ad and pd surfaces. T_1 rather well thickened at tip with a large yellowish av patch. Anterior claw of front leg with 4 teeth on basal half, most distal tooth as large as apical tooth, posterior claw of front leg similar to anterior one. Relative lengths of leg segments of holotype are given in Table 4.

Table 4. Relative lengths of leg segments of *B. taiwana* ♂.

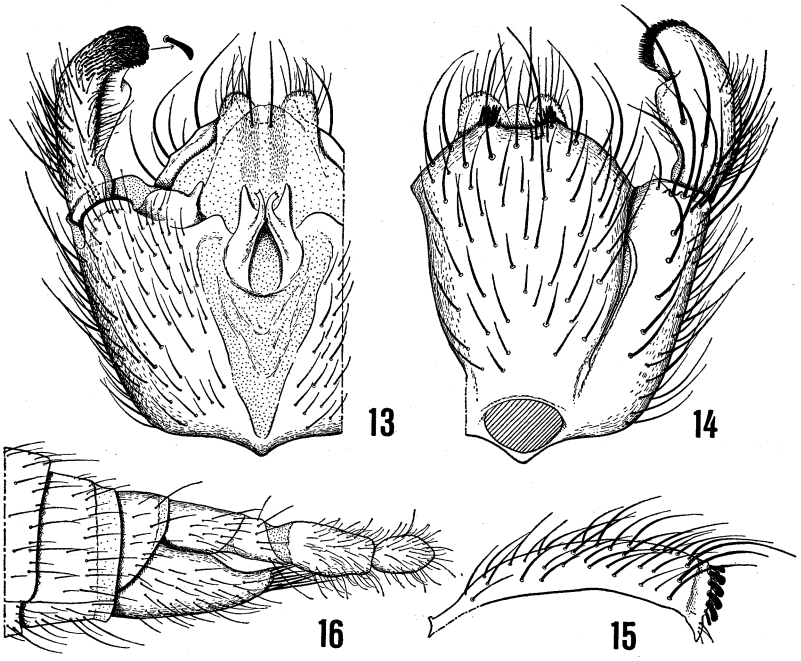
	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	95	100	66	59	46	26	20
Middle leg	113	130	99	44	31	20	18
Hind leg	126	174	112	36	26	21	18

Wing: Elongate, 2.9 × as long as wide (132:46). C only slightly exceeding tip of R_5, reaching to basal 1/4 point of wing margin between tips of R_5 and M_1; Sc ending in C much proximad of Rs base, Sc:R-stem=26:37, Sc_2 present at 1/3 from tip of Sc (11/15); R_1 1.6 to 1.7 × as long as R-stem (62:37), Rs shorter than 1/2 or r-m crossvein (2.5:6); r-m crossvein oblique and rather short, 1/5 × as long as basal section of M-stem (6:32); petiole of M-fork very long, 3 × as long as r-m crossvein (17:6), or 1/4 of M_1 (17:67); base of Cu-fork somewhat distad of posterior end of r-m crossvein and much proximad of base of M-fork, Cu_2 shorter than petiole of Cu-fork (31:38); A_1 rather weak, ending before Cu-fork base. R-stem, R_1, R_5, M_1 and apical 1/2 of each M_2, Cu_1 and Cu_2 setulose above, R_1 and apical 3/4 of R_5 setulose beneath.

Abdomen: Evenly clothed with short, fine, yellow setae, apical 2-3 segments mixed with black setae; 1st abdominal sternum quite bare. *Male genitalia*: Moderately large, slightly longer than 6th abdominal tergum, somewhat different from the ordinary *Boletina*-genitalia; epandrium slightly longer than wide, black-setose, some hind-marginal setae strong and curved, hind-marginal portion of epandrium bent downwards and with a pair of weak perpendicular keels adorned with short strong thorn-like bristles; coxosternum 2/3 × as long as epandrium, with a broad long membarnous incision from phallobase; gonostylus moderately long and broad, almost as long as coxosternum, rather simple, weakly curved inwardly, with a small lamellate edge on dorso-inner margin, the gonostylus short-setose on basal half, densely spinulose on apical half, and bearing several stiff bristles on basal half of dorsal margin; cercus short, rather membranous and clothed with several longish fine hairs; phallic organs as illustrated.

Length: Body 4.4—4.5 mm; wing 4.4—4.6 mm.

♀. Resembling male, but mainly differing as follows. Antenna somewhat shorter and more slender; hind coxa entirely yellow, femora not darkened beneath towards base. Scutellar bristles sometimes darkened. Most of abdominal tergal setae black. Female terminalia as illustrated. Relative lengths of leg segments are given in Table 5.



Figs. 13-16, *Boletina taiwana* sp. nov. 13, ♂ genitalia, ventral aspect; 14, same, dorsal aspect; 15, epandrium, lateral aspect; 16, ♀ terminalia, lateral aspect (most anterior segment is the 6th abdominal segment).

Table 5. Relative lengths of leg segments of *B. taiwana* ♀.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	94	100	63	46	36	26	19
Middle leg	113	127	93	38	27	23	17
Hind leg	135	181	104	37	27	22	18

Length: Body 4.3—5.1 mm; wing 4.6—5.3 mm.

Distribution: Taiwan.

Holotype ♂, Tungpu, 2,500 m, Lulinshan, Chiayi Hsien, Taiwan, 28. iii. 1967, T. Shirôzu leg. (right wing mounted on a slide with balsam).

Paratypes: 2♂♂ 2♀♀, Alishan, 2,300 m, Chiayi Hsien, Taiwan, 9. iv. 1965, T. Saigusa leg.; 6♂♂ 1♀, Tungpu, Lulinshan, Chiayi Hsien, Taiwan, 10. iv. 1965, T. Saigusa leg.; 1♂, same locality, 2. iv. 1967, T. Shirôzu leg.

Remarks. Notwithstanding the absence of Sc_2, *B. taiwana* seems to be very closely related to *Boletina reuteri* Lundström, 1907 in the European species. The male genitalia of *reuteri* are similar to those of *taiwana* not only in the general shape but in the hind-marginal structure of epandrium. The petiole of M-fork is also long in *reuteri*. I have several Japanese species which belong to a species-group including *taiwana* and *reuteri*. One of these species is very closely related to *reuteri* in every characters except for some slight colour differences. The main differences between *taiwana* and *reuteri* are given in Table 6.

Table 6. Differences between *taiwana* and *reuteri*.

	taiwana	*reuteri*
Sc_2	present	absent
Thoracic pleura	entirely black	yellow with brown markings
♂ gonostylus	a strong central spine absent	a strong central spine present

Among the Nearctic species, *Boletina cincta* Johannsen, 1912 from U.S.A. somewhat resembles *taiwana* in the general shape of the male genitalia and the long petiole of M-fork, but in *cincta* the base of Cu-fork is proximad of the posterior end of r-m crossvein.

Boletina takasago Saigusa, sp. nov.

(Figs. 17-21, ♂ genitalia; pl. 1, fig. 4, ♂ wing)

♂. *Coloration*: Body entirely blackish brown. Head black, densely grey pollinose; antenna entirely black, maxillary palpus blackish brown, greyish pollinose. Thorax entirely black, densely grey pollinose; mesoscutum weakly subshining black with broad greyish pollinose margins; when viewed from above, the subshining black area constricted on anterior portion and incised posteriorly by prescutellar pollinose area; when viewed from anteriorly, the subshining black area separated into 4 bands by narrow pollinose acrostichal and dorsocentral stripes. Legs predominantly yellow; front coxa yellow with blackish extreme base, and narrow black anterodistal margin, middle and hind coxae and all trochanters black, pollinosity of coxae whitish and dense; femora yellow (hind leg missing), weakly darkened at dorsodistal portion; tibiae yellow, more or less brownish owing to covering of dense black setulae, extreme tips of tibiae dark brown; tibial spurs brown and black-setulose; tarsi brown, darkened

apically. Wing faintly greyish, slightly darkened on apical 1/5, veins pale brown, C and R dark brown. Haltere yellow. Abdomen inclusive of genitalia blackish brown, and sparsely greyish pollinose.

Head: Antenna moderately long and rather slender, flagellum densely clothed with yellowish pile; 1st flagellar segment 4 × as long as thick (22 : 5), 8th flagellar segment 0.6 × as long as 1st flagellar segment (13 : 22), and 2.6 × as long as thick (13 : 5). Vertex clothed with short yellow setulae, without strong postocular bristles; frons and clypeus with very short, fine, yellow setulae; frons more or less produced forwards near ventral margin, clypeus rather short.

Thorax: Bristles and hairs yellow. Acrostichals extending to prescutellar area; scutellum with 6 strong bristles and several shorter setae; pleurotergite bare. *Legs*: Hind leg missing. Hairs and bristles of coxae, trochanters and femora yellow, those of tibiae and tarsi black, some dorsal setulae of femora black. Femora rather slender, av setae well differentiated on apical 1/2, as long as thickness of femora or longer. T_1 with 1 minute a, 2 short pd, 1 minute p and 4 very minute pv setae, and 1 minute a, 1 minute pd, 1 minute p apical setae. T_2 with 4 longish a, 5 short av, 4 longish pd, 1 minute (at apical 1/4) p and 6 minute pv setae, and 1 short a, 1 minute av, 1 short pd and 1 minute p apical setae. T_1 slightly thickeded at tip, with a rather small brown av patch. Apical tarsomeres of front leg missing; anterior claw of middle leg being a broad rounded lamella, posterior claw of middle leg bifid, apical tooth somewhat slenderer than basal one. Relative lengths of leg segments are given in Table 7.

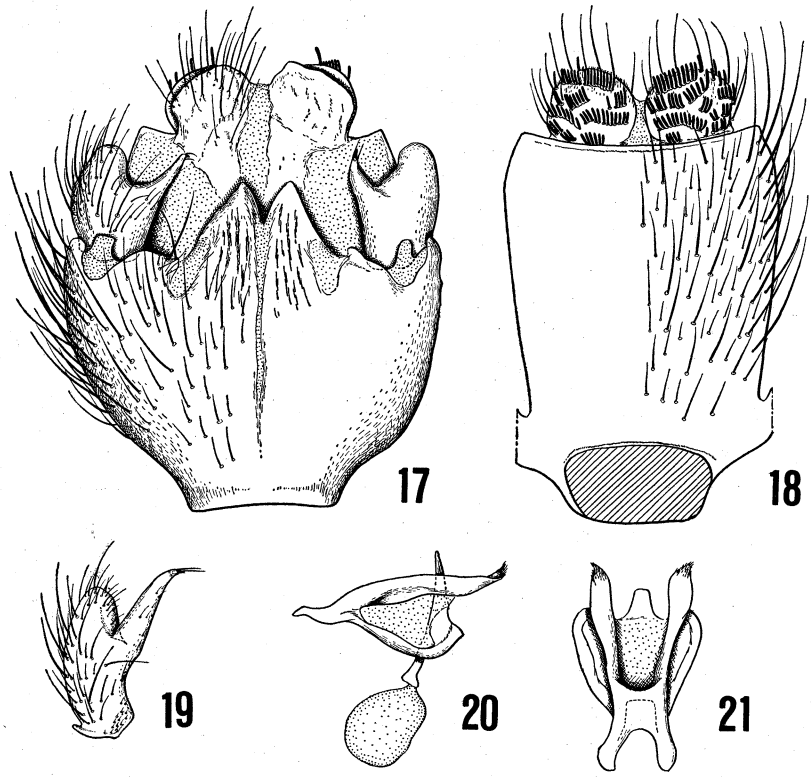
Table 7. Relative lengths of leg segments of *B. takasago* ♂.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	100	100	89	45	28	—	—
Middle leg	122	142	95	45	29	22	22

Wing: Broad, 2.6 × as long as wide (130 : 50). C only slightly exceeding tip of R_5, reaching to basal 1/5 point of wing margin between tips of R_5 and M_1; Sc ending in C opposite of Rs base, Sc : R-stem = 43 : 41, Sc_2 absent; R_1 longer than R-stem (49 : 41); Rs slightly shorter than 1/2 of r-m crossvein (3 : 8), somewhat oblique, so that posterodistal corner of 1st basal cell rather acute; r-m crossvin short and oblique, shorter than 1/4 of basal section of M-stem (8 : 36); petiole of M-fork as long as r-m crossvein (8 : 8), or 1/9 of M_1 (8 : 71); base of Cu-fork slightly proximad of posterior end of r-m crossvein and consequently much proximad of base of M-fork, Cu_2 slightly longer than petiole of Cu-fork (42 : 36); A_1 well developed, extending to opposite of basal 0.4 point of Cu_2. Sc

setulose above on its apical 1/2, R-stem, R_1, R_5, M_1 and M_2 (except for extreme base) and apical 1/2 of Cu_1 and Cu_2 normally setulose above, in addition A_1 setulose above except for basal 1/4.

Abdomen: Evenly clothed with long, fine, yellow setae; 1st abdominal sternum entirely setose. *Male genitalia*: Rather small, 2/3 × as long as 6th abdominal tergum and black-setose; epandrium subquadrate, slightly longer than wide; cercus short, almost as long as wide, with spine-like bristles irregularly arranged in several groups of combs, and some stiff setae on hind margin; coxosternum almost as long as wide, with a pair of subventral processes, which are pointedly produced and wrinckled;



Figs. 17–21, *Boletina takasago* sp. nov. 17, ♂ genitalia, most of setae of right half omitted, ventral aspect; 18, epandrium and cerci, setae of right half of epandrium omitted, dorsal aspect; 19, left gonostylus, ventro-outer aspect; 20, phallic organs, lateral aspect; 21, same, dorsal aspect.

gonostylus short and small, rounded apically, short-bristled, and bearing a longish process from the middle of inner side, the process directing posterodorsally, sharply pointed at tip, and furnished with a short apical

thorn-like bristle and 2 subapical setae; phallic organs small, with phallic processes short and pilose at tip.

Length: Body 3.7 mm; wing 4.1 mm.

♀. Resembling male and chiefly differing as follows. Dorsal surface of F_3 dark brown on its apical 1/4; female terminalia yellowish brown. *Antenna* shorter and more slender; 1st flagellar segment 3 × as long as thick (17 : 5), 8th flageller segment 1/2 × as long as 1st flagellar segment (8 : 17), and 1.5 × as long as thick (8 : 5). *Legs*: Most of dorsal setulae on apical 1/2 of femora black. One longish ad at the middle and 2 minute p setae on left T_2. F_3 with short brown av setae on basal half and longish (about as long as F_3 thickness) yellow av setae on apical half. T_3 with 6–8 long a, 5–6 longish av, 6 long pd, 6–7 short p and 2–3 short pv setae, and also with 1 minute a and 1 short pd apical setae. Claws of middle leg bifid, basal tooth weaker than apical one. Relative lengths of leg segments are given in Table 8. Wing venation similar to that of male.

Table 8. Relative lengths of leg segments of *B. takasago* ♀.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	100	100	84	48	32	20	18
Middle leg	120	136	90	48	35	23	18
Hind leg	140	192	109	48	35	21	18

Female terminalia small, 8th sternum short, sparsely short-setose and weakly bifid at tip, cercus flattened dorsoventrally, its apical segment 2/5 × as long as basal segment, slightly longer than wide, with its apex slightly extending posteriorly beyond 8th sternum.

Length: Body 4.1 mm; wing 4.6 mm.

Distribution: Taiwan.

Holotype ♂, Niitakaguchi—Alishan, ca. 2,400 m Chiayi Hsien, Taiwan, 6. iv. 1967, T. Shirôzu leg. (left wing, left front leg and genitalia mounted on a slide with balsam).

Paratype: 1♀, Alishan, 2,300 m, Chiayi Hsien, Taiwan, 8. iv. 1965, T. Saigusa leg.

Remarks. *B. takasago* superficially resembles *Boletina dubia* Meigen, 1804 from Europe, but easily distinguished from the latter as in Table 9. The differences between these two are also distinct in the male genitalia, i.e. the gonostylus of *dubia* seems to have an inner process arising from its base not from the middle. Among the Nearctic species, the new species most resembles *B. inops* Coquillett, 1900 from Alaska, but in *inops* the legs and the scape of antennae are entirely yellow.

Table 9. Differences among *takasago* and its allied species

	takasago	*dubia*	*inops*
Pleurotergite	bare	setose	
Middle and hind coxae	black	yellow	yellow
Cu-fork base	proximad of M-fork base	opposite of M-fork base	proximad of M-fork base
Antennal scape	black	black	yellow

Boletina shirozui Saigusa, sp. nov.

(Fig. 5, anterior claw of ♂ front; 22-23, ♂ genitalia; pl. 1, fig. 5, ♂ wing)

♂. *Coloration*: Body extensively blackish brown. Head subshining black, sparsely covered with greyish pollen; antenna black except for basal half of 1st flagellar segment and ventral surfaces of scape and 2nd flageller segment yellow; maxillary palpus pale brown. Thorax entirely subshining black, very thinly covered with greyish pollen, mesoscutum without pollinose markings, posterolateral portions of pronotum yellow. Legs yellow; trochanters, basal 1/3 of F_2 and F_3 extreme tip of T_3 and apical portions of tarsi dark brown, white pollinosity on coxae and femora very sparse. Spurs black and black-setulose. Wing slightly greyish, very weakly darkened on apical 1/3; Rs with a narrow outer dark border (as broad as the vein) and a similar but weaker inner border; veins pale brown, R and Cu_2 somewhat darker. Haltere yellowish white. Abdomen blackish brown, sparsely greyish pollinose, 1st to 4th abdominal terga with a yellow hind-marginal band which is widened laterally, constricted and almost separated at dorsomedian portion, posterolateral corners of 5th tergum paled; 1st to 5th sterna with a yellow hind-marginal band; genitalia dark brown, yellowish on most part of gonocoxites, gonostylus and basal portion of epandrium.

Head: Antenna rather short and thick, flagellum clothed with greyish pile; 1st flagellar segment 3 × as long as thick (14:5), 8th flagellar segment 0.6 × as long as 1st flagellar segment (8:14). Vertex clothed with short black setae, without strong postocular bristles; frons and clypeus with fine short black setulae, the former not produced forwards, the latter triangular in shape.

Thorax: Bristles and hairs black. Acrostichals extending to prescutellar portion, scutellum with 2 pairs of strong bristles and a few short setae, pleurotergite setose. *Legs*: Bristles and hairs black. F_1 and F_2 slender, F_3 slightly thickened, 7 × as long as thick, av setae of femora

prominent, as long as thickness of femur on F_1 and F_4 or slightly longer on F_2. T_1 with 1 short pd seta beyond the middle and 1-2 longish apical setae. T_2 with 3 rather short a, 1 minute av (at the middle), 3-4 longish pd, 2-4 minute p and 4-5 minute pv setae, and 1 weak ad, 1 short pd and 1 minute p apical setae. T_3 with 4-5 longish a (or ad), 1-2 minute av (on apical 1/2), 4-6 longish pd, 2-4 minute p, and 0-1 minute pv setae, and 1 short a and 1 short pd apical setae. T_1 only slightly thickened at tip with a rather small brownish av patch. Anterior claw of front leg with 4 teeth on basal half, of which the apical one is stronger than other teeth, posterior claw of front legs and claws of other legs similar to it except for number of small teeth which may be variable. Relative lengths of leg segments are given in Table 10.

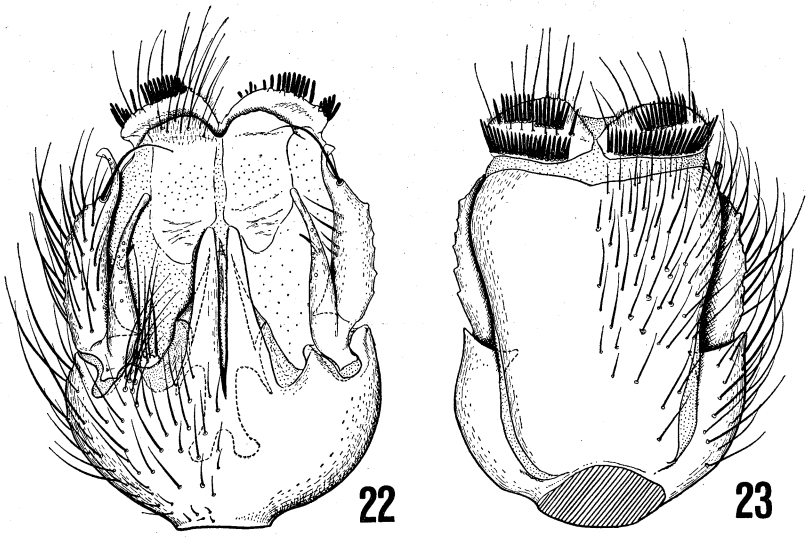
Table 10. Relative lengths of leg segments of *B. shirozui* ♂.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	90	100	104	50	36	22	19
Middle leg	112	140	107	44	32	20	17
Hind leg	140	184	111	39	30	20	19

Wing: Broad, 2.7 × as long as wide (124 : 46). C much exceeding tip of R_5, reaching to basal 1/3 point of wing margin between tips of R_5 and M_1; Sc ending in C opposite of Rs base, Sc : R-stem = 40 : 40, Sc_2 absent; R_1 as long as R-stem (39 : 40), Rs 2/9 × as long as r-m crossvein; rather short and oblique, almost 1/4 × as long as basal section of M-stem (9 : 39); petiole of M-fork as long as r-m crossvein (8 : 9), or 1/9 of M_1 (8 : 70); base of Cu-fork only slightly proximad of base of M-fork, Cu_2 3/4 × as long as petioloe of Cu-fork (30 : 41); A_1 reaching to the level of basal 1/3 point of Cu_2. R-stem, R_1, R_5, apical 1/4 of each M_1, M_2, Cu_1 and Cu_2 setulose above.

Abdomen: Evenly clothed with blackish setae, which are paled on yellowish portion of integument; 1st abdominal sternum with 4 short yellow hind-marginal setulae. *Male genitalia*: Moderately large, slightly shorter than 6th abdominal tergum, black setose; epandrium large, as long as gonopod, slightly longer than wide; cercus short, with 2 combs of bristles, a few setae between combs and on apical margin of cercus; coxosternum produced into a pair of rather narrow and long processes, of which apices extend to opposite of apical 2/3 of gonostylus, between these processes a slender rather membranous phallic organs which has a few minute setulae at tip; gonostylus consisting of an outer and an inner processes, the inner process shorter than the outer process, slender, tapered apically, weakly curved inwardly, and with a spine-like dorsal

bristle at the middle and a few sensory pits, the outer process tapered on apical 1/3 into a slender tip which curves outwardly and dorsally, a strong bristle arising from base of tapered portion of outer process.



Figs. 22-23, *Boletina shirozui* sp. nov. 22, ♂ genitalia, most of setae on right half omitted, ventral aspect; 23, same, dorsal aspect.

Length: Body 3.7 mm; wing 3.9 mm.

Distribution: Taiwan.

Holotype ♂. Tungpu, 2,500 m, Lulinshan, Chiayi Hsien, Taiwan, 2. iv. 1967, T. Shirôzu leg. (right wing, left front leg and genitalia mounted on a slide with balsam).

Remarks. *B. shirozui* seems to be somewhat related to *Boletina flaviventris* Stroble, 1894 from Europe in the wing venation (absence of Sc_2 and the same level of tip of Sc and Rs base) and the abdominal markings. It is also similar to *Boletina nacta* Johannsen, 1912 from Wyoming, U.S.A. The main differences among these three species are given in Table 11.

Table 11. Differences among *shirozui* and its allies species.

	shirozui	*flaviventris*	*nacta*
Thoracic pleura	black	brownish yellow	black
Thoracic setae	black	yellow	yellow
Tip of gonostylus	slender, curved outwards	thick, curved inwards	slender, curved inwards

Boletina longicauda Saigusa, sp. nov.

(Figs. 24-26, ♂ genitalia; pl. 1, fig. 6, ♂ wing)

♂. *Coloration*: Body extensively blackish brown. Head black, sparsely covered with dark greyish pollen; antenna blackish brown, pedicel, scape, 1st flagellar segment and basal 1/2 of 2nd and 3rd flagellar segments yellow, maxillary palpus yellow. Thorax blackish brown except narrow yellowish humeral portions, yellow dorsomedian portion of pronotum and dorsally yellowed pteropleuron. Thorax. very weakly greyish pollinose, mesonotum almost shining black, without any pollinose bands or markings. Legs extensively yellow, ventral 1/2 of trochanters, ventral surfaces of basal 1/4 to 1/5 of F_2 and F_3 dark brown, tarsi beyond apical 1/4 of metatarsus darkened, extreme base of dorsal surface of T_3 infuscate; spurs black and black-setulose. Wing faintly greyish, and distinctly darkened on apical 1/3, basal border of this dark brown portion curved distally and very distinct; veins brown, C and R darker. Haltere yellow. Abdomen blackish brown, thinly greyish pollinose, 2nd to 4th terga with a pair of large yellow posterolateral markings, posterior half of 2nd sternum, entire 3rd and 4th sterna yellow. Genitalia black, coxosternum yellowish on basal half in a male paratype, basal process of gonostylus yellow.

Head: Antenna rather short and slender, flagellum densely clothed with whitish pile; 1st flagellar segment short, 3 × as long as thick (18 : 6.5), 8th flagellar segment 1/2 × as long as 1st flagellar segment (18 : 9) and 1.5 × as long as thick (9 : 6). Vertex and occiput clothed with short black setulae, without strong postocular bristles; frons and clypeus covered with minute black setulae, the former small, not produced forwards, the latter narrow and somewhat elongate, 1.5 × as long as wide.

Thorax: Bristles and hairs black. Acrostichals extending to prescutellar portion, a pair of uppermost pronotal bristles weak, scutellum with 2 pairs of strong bristles and several weaker setae, inner bristles widely separated from each other; pleurotergite setose. *Legs*: Hairs and bristles black, weaker setulae of font coxae and of posterior surface of F_3 yellowish. Femora rather slender, F_3 7 × as long as thick; av setae of femora

Table 12. Relative lengths of leg segments of *B. longicauda* ♂.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	80	100	84	42	28	16	14
Middle leg	102	122	86	34	22	14	13
Hind leg	122	163	90	30	22	14	13

rather long, those of apical portion of F_3 as long as thickness of F_3. T_1 with 1 minute ad, 2-4 minute pd and 3 minute pv setae, and 1 minute ad and 1 minute pd apical setae. T_2 with 4-5 longish a (or ad), 2 short av, 3-4 longish pd, 3-4 minute p and 8-10 minute pv setae, and 1 short a (or ad) and 1 short pd apical setae. T_3 with 7-8 long a (or ad), 2 minute av, 6-7 long pd, 7 short and weak p and 2-3 minute pv setae, and 1 minute ad (or a) and 1 short pd apical setae. T_1 rather well thicknened at tip with a large blackish av patch. Claws similar to those of *shirozui*. Relative lengths of leg segments are given in Table 12.

Wing: Somewhat elongate, 2.8 × as long as wide (147 : 53). Veins strong; C slightly exceeding tip of R_5, reaching to basal 1/4 point of wing margin between tips of R_5 and M_1; Sc ending in C opposite of base of Rs, Sc : R-stem = 43 : 42, Sc_2 absent; R_1 1.3 × as long as R-stem (55 : 42), Rs as long as 1/5 of r-m crossvein (2 : 10); r-m crossvein moderately long and somewhat oblique, 1/3 × as long as basal section of M-stem (10 : 34); petiole of M-fork moderately long, as long as r-m crossvein (9 : 10), or 1/9 × as long as M_1 (9 : 86); base of Cu-fork slightly proximad of base of M-fork, but much distad of posterior end of r-m crossvein, Cu_2 slightly shorter than petiole of Cu-fork (38 : 45); A_1 well developed, ending opposite of basal 1/5 point of Cu_2, a weak indication of a vein appearing between petiole of Cu-fork and A_1. R-stem, R_1, R_5, M_1 and M_2 (except for extreme base) and apical 1/2 of each Cu_1 and Cu_2 setulose above.

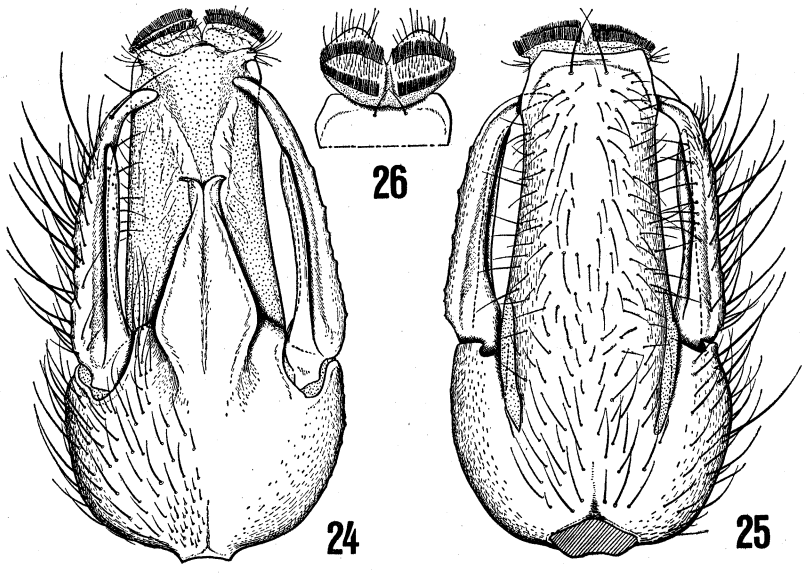


Fig. 24-26, *Boletina longicauda* sp. nov. 24, ♂ genitalia, most of setae on right half omitted, ventral aspect; 25, same, dorsal aspect; 26, ♂ cerci and tip of epandrium, posterior aspect.

Abdomen: Evenly clothed with longish brown setae, those on yellow integument tawny or yellow; 1st abdominal sternum sparsely covered with short, fine, yellow setae. *Male genitalia*: Large and much elongate, slightly shorter than 1/2 of combined length of 1st to 6th abdominal segments, longer than 2 × length of 6th abdominal tergum, black-setose; epandrium much elongate, 3 × as long as wide, almost parallel-sided, and short-setose, with discal setae on its apical 1/2 proclinate, a pair of strong setae at apical submargin; coxosternum short, with an elongate distal projection which is weakly bilobed and short-pilose apically; gonostylus very long and slender, weakly curved inwardly at tip, bearing many strong setae on outside, several weaker setae on inside and a strong preapical bristle, gonostylus with a slender inner process from its base, this process slightly shorter than gonostylus and almost bare; cercus small, almost as long as wide, with 2 complete combs of dense, short, rather fine setae; subanal region with a pair of small, membranous, short-setose tubercles close to cerci, and a pair of strongly sclerotized, narrow, black areas.

Length: Body 4.8—5.5 mm; wing 4.6 mm.

♀. Much resembling male, but differing as follows. Apical portion of abdomen black, cercus tawny. Antenna slenderer, genitalia short, 8th sternum only short-pilose, cercus only slightly exceeding tip of 8th sternum. Relative lengths of leg segments are given in Table 13. Length: Body 4.4—4.8 mm; wing 4.6—5.0 mm.

Table 13. Relative lengths of leg segments of *B. longicauda* ♀.

	Femur	Tibia	Tarsus				
			1	2	3	4	5
Front leg	80	100	98	48	33	20	15
Middle leg	96	129	100	39	36	18	12
Hind leg	119	176	100	33	26	19	14

Distribution: Taiwan.

Holotype ♂, Vicinity of Taataka, 2,700 m, Lulinshan, Chiayi Hsien, Taiwan, 3. iv. 1967, T. Shirôzu leg. (right wing and genitalia mounted on a slide with balsam).

Paratypes: 1♂ 2♀♀, Alishan, 2,300 m, Chiayi Hsien, Taiwan, 8. iv. 1965, T. Saigusa leg.

Remarks. *B. longicauda* is most closely related to European *Boletina villosa* Landrock, 1912 and *Boletina landrocki* Edwards, 1924 in the much elongate male genitalia, but it may be distinguishable from these two species as in Table 14.

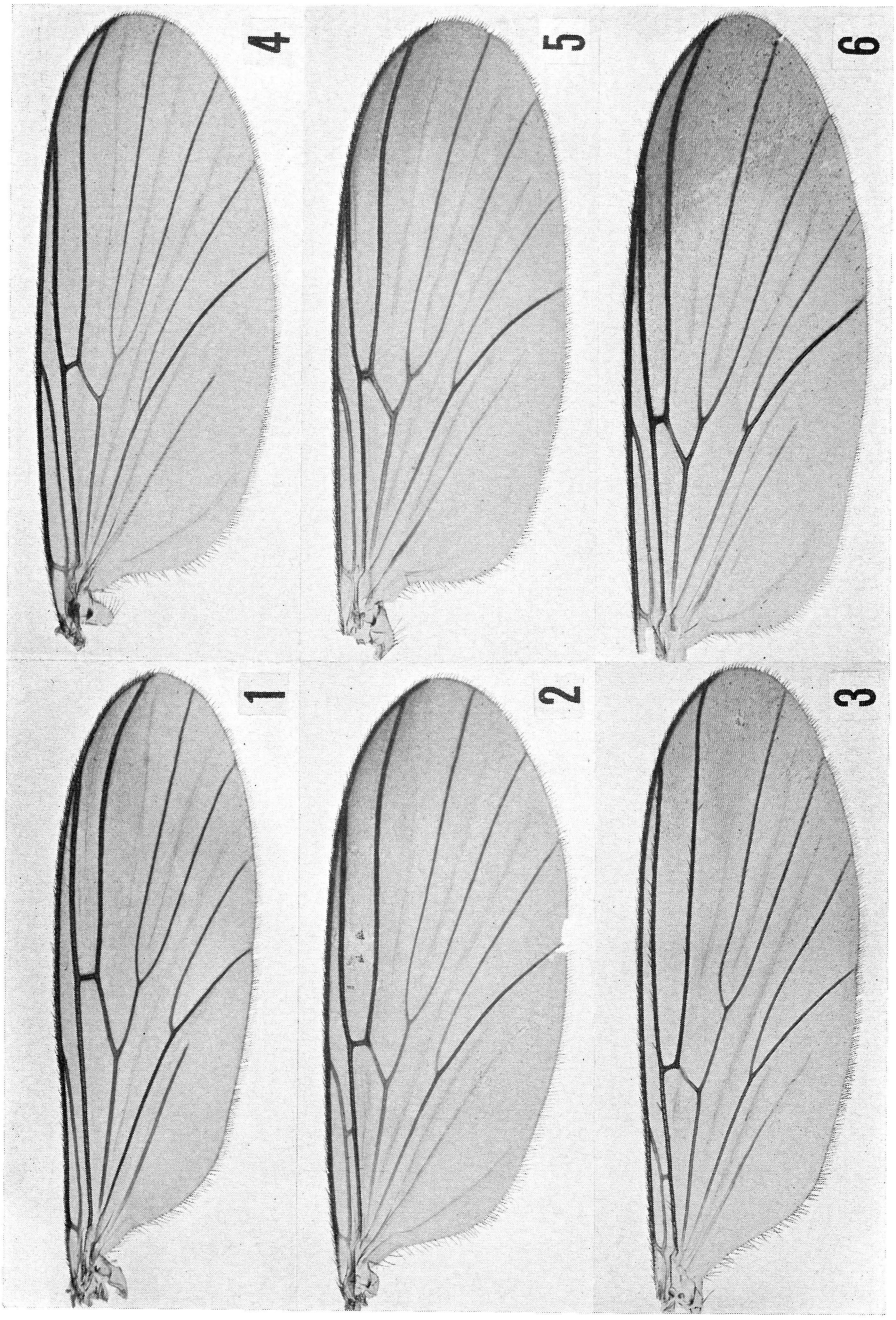
Table 14. Differences among *longicauda* and its allied species.

	longicauda	*villosa*	*landrocki*
Thoracic setae	black	yellow	yellow
Colour of Sc	dark brown	pale	——
Sc_2	absent	absent	present
♂ gonocoxite:			
subventral process	absent	absent	present
distal projection	tapered	broad	broad

Explanation of Plate 1

The wings of Taiwan species of the genus *Boletina*.

1. *Boletina laticauda* Saigusa, sp. nov. Holotype ♂.
2. *Boletina trispinosa* Edwards ♂ from Tungpu.
3. *Boletina taiwana* Saigusa, sp. nov. Holotype ♂.
4. *Boletina takasago* Saigusa, sp. nov. Holotype ♂.
5. *Boletina shirozui* Saigusa, sp. nov. Holotype ♂.
6. *Boletina longicauda* Saigusa, sp. nov. Holotype ♂.



Saigusa, T. The genus *Boletina* from Taiwan.