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Study on the Tribe Blondeliini from Japan (Diptera, Tachinidae)

VII. Genus *Oswaldia* ROBINEAU-DESVOIDY

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Abstract Nine Japanese species of *Oswaldia* are revised, four of which are described as new to science: *flavitibia* sp. nov., *gilva* sp. nov., *glauca* sp. nov., and *strigosa* sp. nov. Five known Japanese species are discussed and briefly redescribed. A key to the Japanese species is provided.

Key words: Systematics; revision; Tachinidae; Blondeliini; *Oswaldia*.

The genus *Oswaldia* ROBINEAU-DESVOIDY has been known from 7 species in the Palaearctic Region and 10 in the Nearctic (HERTING, 1984; WOOD, 1985). In the present revision I recognize 9 species of the genus from Japan, 4 of which are described as new to science: two of 9 Japanese species are widely distributed in the Palaearctic Region, but others are endemic to Japan or restricted to the Far East.

As WOOD (1985) mentioned, species of *Oswaldia* have no distinctive features that enable to discriminate them from the other genera, but are characterized by the combination of rather unmodified features. The male genitalia also seem to retain generalized structure of the Blondeliini and are not much diversified from species to species in this genus. In the Japanese species of *Oswaldia* the male fifth abdominal sternum is roundly projected downward on inner basal portion of the posterior lobe. This seems to be the only positive feature that characterizes this genus.

This genus is rather diverse in Japan, but hosts of Japanese species have been unrecorded. Noctuidae, Geometridae and Sphingidae are known as hosts of *Oswaldia* in Europe and North America (HERTING, 1960; ARNAUD, 1978).

The following abbreviations are used for the institutions where the types and other material are deposited: BLKU (Biological Laboratory, College of General Education, Kyushu University, Fukuoka); CNC (Canadian National Collection, Ottawa); EIHU (Entomological Institute, Hokkaido University, Sapporo).

Genus *Oswaldia* ROBINEAU-DESVOIDY

Oswaldia ROBINEAU-DESVOIDY, 1863: 840. Type species: *Oswaldia muscaria* ROBINEAU-DESVOIDY, 1863 (= *Tachina muscaria* FALLÉN, 1810), by original designation. For detailed synonyms see HERTING (1984) and WOOD (1985).

Diagnosis. Rather slender, medium-sized dark blondeliines with the following combination of characters: Eye bare; ocellar seta developed; 2 reclinate orbital setae in ♂, 2 reclinate and proclinate orbital setae in ♀; parafacial bare; upper occiput with rows of black setulae; arista bare, at most thickened on basal 1/2. Propleuron bare; humeral callus with 3–4 setae, 3 basal setae standing in a triangle; 2+1 *stpl*; scutellum with 3 pairs of long and strong marginal setae, apical seta very fine or absent. Wing with last section of vein M_3 longer than 1/2 length of discal crossvein. Fore tibia with 2 *p* setae; mid tibia with 2–4 *ad*, 2 *pd* and 1 *v* setae. Abdomen black in ground color, elongate; mid-dorsal excavation of syntergum 1+2 not extending to its posterior margin; 3rd to 5th terga each with discal and marginal setae.

Key to Japanese species of *Oswaldia*

1. 2 *prst dc* 2
— 3 *prst dc* 4
2. Tibiae yellowish, darkened on ventroproximal and ventrodistal portions; 3+3 *ac*; facial ridge at most with several fine hairs just above vibrissae; frons, thorax and abdomen pale yellowish white pollinose .... *flavitibia* sp. nov.
— Tibiae black; 1−2+3 *ac*; facial ridge finely setose on its lower 2/5–1/2; pollinosity grayish white or whitish on head, thorax and abdomen 3
3. Gena about 1/3 of eye height; anterior reclinate orbital seta situated on posterior 1/3 of parafrontal in profile; abdomen rather densely grayish white pollinose on anterior 2/3–4/5 of each tergum, with tessellate appearance; ♂ claws and pulvilli very long; ♀ with strong outer vertical seta ..... *muscaria*
— Gena narrower, about 1/4 of eye height; anterior reclinate orbital seta situated on posterior 2/5 of parafrontal; abdomen rather thinly whitish, somewhat bluish, pollinose on anterior 1/2–1/3 of each tergum; ♂ claws and pulvilli very short, shorter than 5th tarsomere; ♀ without outer vertical seta .... *issikii*
4. Facial ridge strongly bristled on its lower 4/5; gena wide, about 2/5 of eye height ..... *strigosa* sp. nov.
— Facial ridge with fine hairs at most on its lower 1/2; gena narrower, 1/3–1/4 of eye height 5
5. 2+2 *ac*; abdominal setae long and strong, 3rd tergum sometimes with a row of marginal setae and 4th usually with a transverse row of discal setae; parafacial strongly narrowed below; arista thickened at most on its basal 1/5; ♀ without outer vertical seta ..... *hirsuta*
— 3+3 *ac*; 3rd abdominal tergum at most with 4 median marginal setae, 4th with 2–4 median discal setae; parafacial at most evenly narrowed below;

arista thickened on basal 1/4–1/3; ♀ with strong outer vertical seta* 6

6. Rather thinly grayish white pollinose species, pollinosity on parafrontal sometimes slightly yellowish; abdominal dorsum grayish pollinose on anterior 1/2–2/3 of each tergum, posterior portion dark, well defined; mid-dorsal longitudinal vitta broad and distinct on 3rd to 5th terga 7
— Densely whitish, pale yellowish or golden yellowish pollinose species; abdomen densely and broadly pollinose on dorsum of 3rd to 5th terga, posterior dark portion of each tergum rather weakly defined, mid-dorsal vitta distinct at most on 3rd tergum 8
7. Vertex 0.27–0.3 of head width in ♂, 0.31–0.32 in ♀; 3rd antennal segment 3–3.4× as long as 2nd and 2.8–3× as long as wide; abdominal hairs fine and dense, distinctly finer than discal setae ..... *glauca* sp. nov.
— Vertex 0.21–0.24 of head width in ♂; 3rd antennal segment 2.5–3× as long as 2nd and 3.5–4× as long as wide; abdominal hairs strong and rather sparse, very strong on mid-dorsal region ..... *eggeri*
8. Gena slightly less than 1/4 of eye height; parafacial 1/2–3/5 as wide as 3rd antennal segment at middle height; 3rd antennal segment about 4× as long as 2nd in ♂, 3.5–3.6× in ♀; abdominal dorsum densely pale yellowish white pollinose, 3rd and 4th terga each sometimes weakly dark brownish on posterior 1/4–1/6, 5th tergum darkened on posterior 2/5; frons and thorax densely yellowish white or golden yellowish pollinose ..... *gilva* sp. nov.
— Gena about 2/7 of eye height; parafacial subequal in width to 3rd antennal segment; 3rd antennal segment 3× as long as 2nd in ♂; abdominal dorsum densely whitish pollinose, with tessellate appearance, posterior 1/4–1/5 of 3rd and 4th terga and posterior 2/5 of 5th darkened; frons and thorax pale yellowish white pollinose ..... *apicalis*

Oswaldia flavitibia sp. nov.

(Figs. 1, 3, 5, 13)

♂. Head densely whitish pollinose, parafrontal and upper postorbit densely whitish yellow pollinose; palpus yellow, weakly darkened basally. Vertex about 0.25 of head width; interfrontal area subequal in width to parafrontal at middle; parafacial about 3/5 as wide as 3rd antennal segment at middle height; gena about 0.33 of eye height. Parafrontal with sparse and fine hairs; facial ridge with several fine hairs at most on its lower 1/4; genal dilation occupying lower 2/5 of gena, with sparse fine hairs. Antenna with 3rd segment about 4.5× as long as 2nd, and about 3× as long as wide. Arista thickened on its basal 2/5. Palpus about 3/4 as long as 3rd antennal segment.

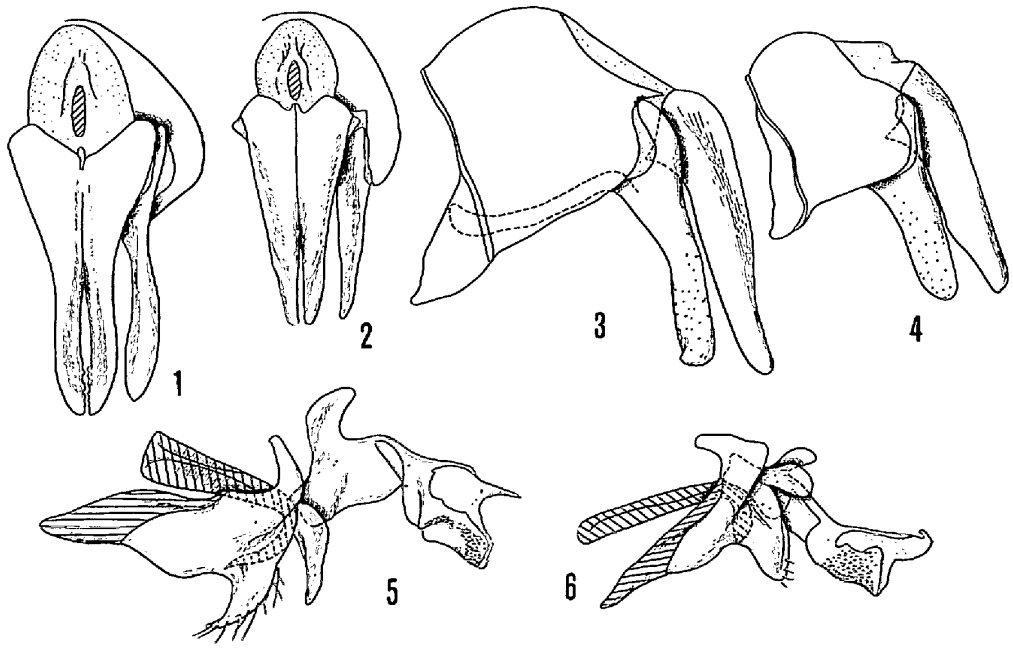
* ♀ of *apicalis* and *eggeri* unknown.

Thorax densely yellowish white pollinose on dorsum, pale grayish white pollinose on pleura; basal 1/2 of scutellum blackish; dorsum with 4 distinct longitudinal vittae, outer vitta rather narrowed posteriorly on postsutural region and subequal in width to pollinose portion between outer and inner vittae on anterior portion of postsutural region. Mediotergite bare; 3+3 *ac*; 2+3 *dc*; apical scutellar seta absent.

Wing faintly tinged with pale yellowish on basal portion; calypter pale brownish yellow. Second costal sector sparsely haired on basal portion of ventral surface; relative lengths of costal sectors 2nd, 3rd and 4th approximately as 2 : 4.5 : 2; vein M_1 from discal crossvein to its bend slightly shorter than that from bend to its apex, about 1.5× distance between bend and wing margin.

Legs with tibiae reddish yellow, darkened ventroproximally and ventrodistally. Mid tibia with 3 *ad* setae; hind tibia with a short but distinct preapical *pd* seta. Claws and pulvilli very long.

Abdominal dorsum densely pale yellowish white pollinose on anterior 2/5 of 3rd tergum, 3/5 of 4th and 1/4 of 5th; the pollinosity diffusing posteriorly on each tergum; a rather narrow median longitudinal vitta distinct on 3rd to 5th terga. Hairs rather strong, dense and suberect on dorsum; 3rd tergum with 2 regularly set median discal, 1 lateral discal, 2 median marginal and 1 lateral marginal setae; 4th tergum with 2 regularly set median discal, 1 lateral discal and a row of marginal setae; 5th tergum with an irregularly set row of discal setae and a regular row of



Figs. 1–6. Male genitalia of *Oswaldia flavitibia* sp. nov. (1, 3, 5) and *O. hirsuta* MESNIL (2, 4, 6). —— 1–2, Epandrium, cerci and surstylus in dorsal view; 3–4, same in lateral view; 5–6, hypandrium and aedeagus in lateral view.

marginal setae.

♂ genitalia: 5th sternum with a weak inner basal process on posterior lobe; cerci slender, in dorsal view narrowly separated from each other on apical 2/5, median portion weakly concave, inner apical portion of each cercus minutely dentate, in lateral view weakly narrowed to apex; surstylus narrow, nearly straight and parallel-sided in lateral view; pregonite with weak longitudinal ridge at base; epiphallus broad; distiphallus with median portion expanded laterally, apical membraneous portion short.

♀. Closely resembling ♂, but differing as follows: Vertex wider, about 0.29 of head width; parafacial about 3/4 as wide as 3rd antennal segment at middle height; gena about 0.31 of eye height; outer vertical seta developed, about 1/2 as long as inner one; 3rd antennal segment shorter than in ♂, about 3.5× as long as 2nd and 3× as long as wide; arista thickened on basal 1/3; palpus about 4/5 as long as 3rd antennal segment; claws and pulvilli short; hairs on abdominal dorsum rather recumbent on 3rd and 4th terga.

Body length, 6.3–6.9 mm; wing length, 5.4–5.6 mm.

Distribution. Japan (Honshu).

Holotype ♀, HONSHU, S. Jpn. Alps, Yamanashi, Okambazawa, 1,500–2,000 m, 25–26.vii.1986, H. SHIMA (BLKU).

Other specimen examined. 1 ♂, same data as the holotype (BLKU).

Remarks. This species is distinct among Japanese species of this genus in its yellowish tibiae. The second costal sector of the wing is sparsely haired on ventral surface in the examined specimens, but it is not clear if this condition is merely aberrant or not. This species seems to retain the plesiomorphic state of characters in the structure of the male genitalia, *i.e.*, inner basal process of posterior lobe of the 5th sternum weak and the pregonite with only weakly developed longitudinal ridge.

Oswaldia issikii (BARANOV)

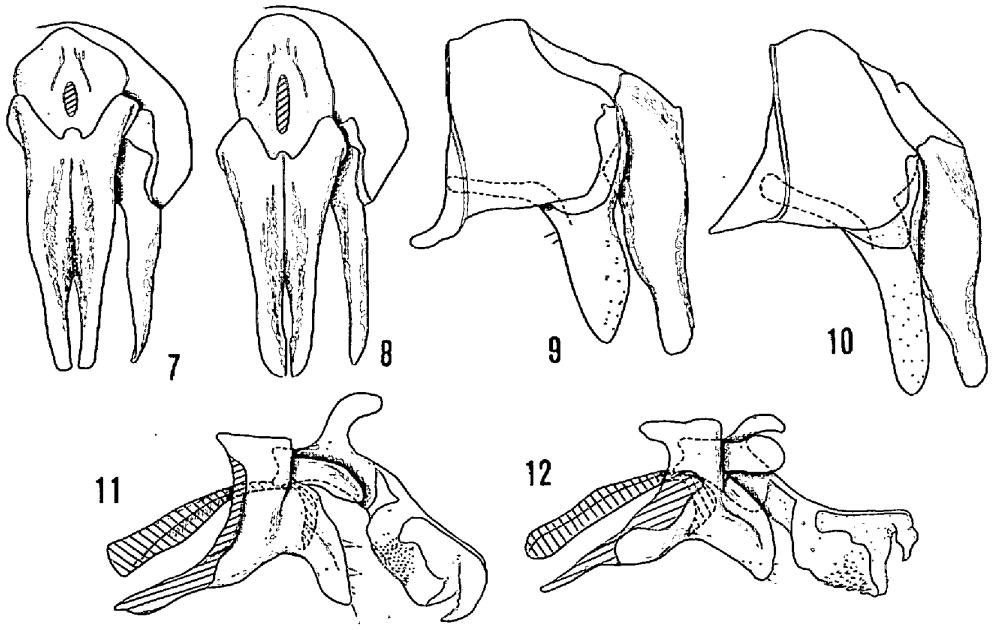
(Figs. 7, 9, 11, 14–15, 19)

Arrhinomyia issikii BARANOV, 1935: 557.
Oswaldia micronychia MESNIL, 1957: 22. —— MESNIL, 1962: 762. —— MESNIL & PSCHORN-WALCHER, 1968: 162. —— CHAO & SHI, 1982: 264.
Oswaldia issikii: HERTING, 1982: 3. —— HERTING, 1984: 28. —— RICHTER, 1986: 91.

This species was originally described from Japan and later recorded from China (CHAO & SHI, 1982) and eastern USSR (HERTING, 1984; RICHTER, 1986). I have seen several specimens of this species from mountainous area in Taiwan.

The male of this species is described in detail by MESNIL (1962) under the name of *O. micronychia*. The male genitalia and the main characters of the female are described below.

♂ genitalia: 5th sternum with rather well projected process on inner basal



Figs. 7–12. Male genitalia of *Oswaldia issikii* (BARANOV) (7, 9, 11) and *O. muscaria* (FALLÉN) (8, 10, 12). —— 7–8, Epandrium, cerci and surstylus in dorsal view; 9–10, same in lateral view; 11–12, hypandrium and aedeagus in lateral view.

portion of posterior lobe; cerci in dorsal view weakly narrowed to apex, broadly separated from each other at apical 1/3, in lateral view nearly straight, evenly narrowed to apex; surstylus in lateral view weakly widened near middle, then narrowed to blunt apex; pregonite with several hairs on posterior margin, longitudinal ridge weak; epihallus long, weakly curved posteriorly at apex; distiphallus short and broad in lateral view.

♀. Vertex slightly wider than in male, 0.3–0.32 of head width; parafacial subequal in length to parafrontal in profile; 3rd antennal segment about 3.5× as long as 2nd, about 3× as long as wide; palpus about 2/3 as long as 2nd and 3rd antennal segments together; sometimes 1+1−2 *ac*; abdominal hairs short, recumbent.

♀ genitalia: 6th tergum subequal in length to 7th tergum, distinctly broader than the latter, with several hairs on posterior portion; 6th sternum subequal in length to 7th sternum, at most 1.5× as long as intersegmental membrane between 6th and 7th segments, posteroventral margin roundly produced; 7th sternum with posteroventral portion broadly and roundly produced; 8th sternum small, V-shaped, with a few hairs; epiproct small, elliptic.

Distribution. Japan (Hokkaido, Honshu, Kyushu); USSR (Sakhalin (HERTING, 1984), Primorskiy (RICHTER, 1986)), China (Xizang, Sichuan, Yunnan (CHAO & SHI, 1982), Taiwan).

Type material examined. Holotype ♂ of *Oswaldia micronychia* MESNIL,

Kushiro, Obihiro, 12.vii.1951, S. TAKANO (CNC).

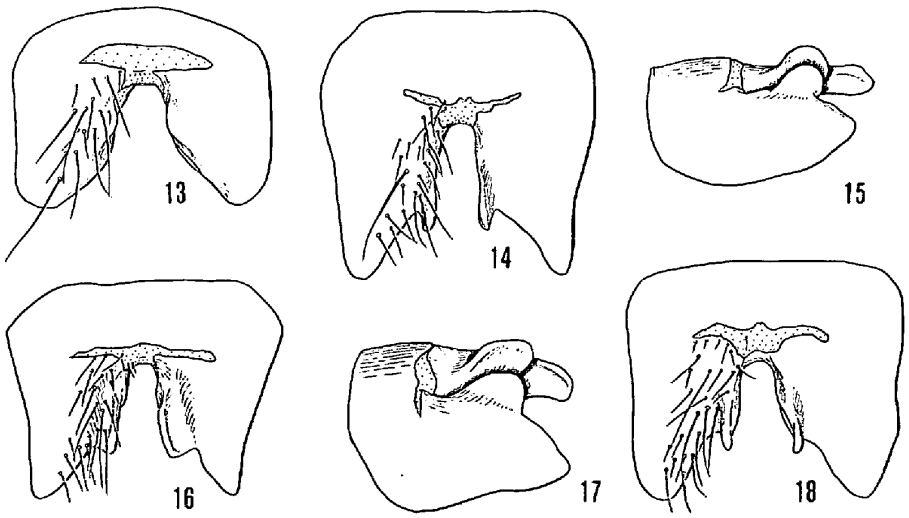
Other specimens examined. HOKKAIDO- 2♂, Sorachi, Mt. Yubari, 15.vii.1976, H. SHIMA (BLKU); 1♂, Kushiro, Obihiro, 13.vii.1951, S. TAKANO (EIHU); 1♀, Ashoro, Ashorobuto, Suigenchi, 2.viii.1962, Y. MIYATAKE; 3♂, Mts. Daisetsu, Aizankei, 550-800 m, 18-20.vii.1986, H. SHIMA; 1♀, Sapporo, Maruyama Park, 27.vii.1965, R. KANO & S. SHINONAGA (all in BLKU): HONSHU- 8♂, Nagano, Okushiga, 23.vii.1986, H. SHIMA; 2♂, Yamanashi, Kanayama, 24.vii.1986, H. SHIMA; 1♂, Yamanashi, Lake Yamanaka, 5.viii.1973, R. KANO; 2♂, Niigata, Shiraike, 18.vii.1966, H. SHIMA; 1♂, Tochigi, Nikko, 23.vii.1982, K. KUMAZAWA; 2♂, Saitama, Karisaka, 13.vii.1973, K. HARA; 1♂, Gifu, Shinhotaka, 13.vii.1969, A. NAGATOMI (all in BLKU): KYUSHU- 4♂, Kumamoto, Mt. Hakucho [=Mt. Shiratori], 19.vii.1977, K. OHARA & T. GOTO (BLKU).

Oswaldia muscaria (FALLÉN)

(Figs. 8, 10, 12, 16-17, 20)

Tachina muscaria FALLÉN, 1810: 272. For detailed synonyms see HERTING (1984).

This species occurs sympatrically with *O. issikii*, but appears earlier than the latter in Japan. This species may be easily distinguished from *issikii* by the wide gena, densely whitish gray pollinose abdomen with tessellate appearance, long male claws and pulvilli, and well developed female outer vertical seta. I have seen a female of *muscaria* from Taiwan. Although this species has been only known from Europe and Japan (HERTING, 1984), it is most likely that it is widely distributed in the Palaearctic Region and extends to mountainous areas of south



Figs. 13-18. Male 5th abdominal sternum of *Oswaldia flavitibia* sp. nov. (13), *O. issikii* (BARANOV) (14-15), *O. muscaria* (FALLÉN) (16-17) and *O. hirsuta* MESNIL (18). —— 13-14, 16, 18, Ventral view; 15, 17, posterolateral view.

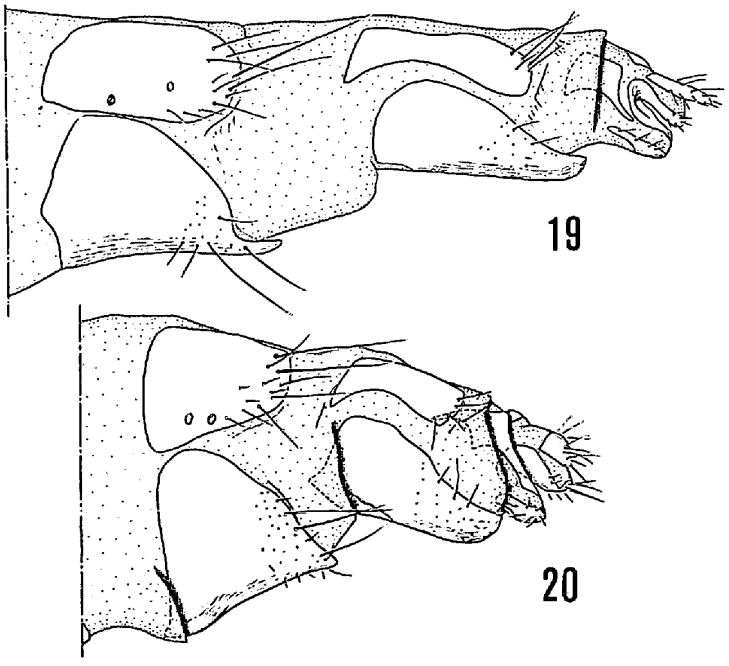
Asia.

♂ genitalia: 5th sternum with short downwardly projected inner basal process of posterior lobe; cerci in dorsal view rather narrow, narrowly separated from each other on apical 2/5, in lateral view narrowed at apical 2/5; surstylus in lateral view slender, apical portion rounded; pregonite short, with a few hairs on posterior portion, longitudinal ridge well developed.

♀ genitalia: 6th tergum subequal in length to 7th tergum, distinctly wider than the latter; 6th sternum broadly and weakly produced anteriorly on anteroventral portion, about 3× as long as intersegmental membrane between 6th and 7th segments and 1.5× as long as 7th sternum; 7th tergum with only a few hairs on posterior portion; 7th sternum broadly flattened on anteroventral portion and roundly produced on posteroventral portion, with minute hairs.

Distribution. Japan (Hokkaido, Honshu, Shikoku, Kyushu); China (Taiwan), Europe.

Specimens examined. HOKKAIDO- 2♂1♀, Shiretoko Pass, 8.vii.1986, H. SHIMA; 1♂, Mts. Daisetsu, Tenninkyo, 9.vi.1968, T. SAIGUSA; 1♀, Tenninkyo, 9-13.vii.1986, H. SHIMA; 2♀, Mts. Daisetsu, Aizankei, 1,000-1,800 m, 15-17.vii.1986, H. SHIMA; 4♀, Aizankei, 550-800 m, 18-20.vii.1986, H. SHIMA; 1♂, Mts. Daisetsu, Yukomanbetsu, 10-13.vii.1986, H. SHIMA; 1♂3♀, Tokachi, Shotoshibetsu, 5.vii.1986, H. SHIMA & M. ABE; 1♂1♀, Ashoro, Berabonai, 16.vi.1968, T. SAIGUSA; 2♀, Berabonai, 5.vii.1986, H. SHIMA & M. ABE; 1♀,



Figs. 19-20. Female genitalia of *Oswaldia issikii* (BARANOV) (19) and *O. muscaria* (FALLÉN) (20) in lateral view.

Hidaka, Mt. Apoi, 18.vii.1968, M. HONDA: HONSHU- 1 ♀, Hirosaki, Zatoishi, 29.iv.1972, S. FUKUSHI; 1 ♂, Iwate, Mt. Hayachine, 17-18.vi.1971, S. SHINONAGA; 2 ♂, Tokyo, Mt. Takao, 29.iv.1974, 14.v.1970, R. KANO & S. SHINONAGA; 1 ♂, Saitama, Minano, Minoyama, 2.v.1972, K. HARA; 2 ♂, Saitama, Ogano, 3.v.1973, K. HARA; 1 ♀, Niigata, Mikuni Pass, 13.vii.1966, H. SHIMA; 1 ♂1 ♀, Nagano, Shimashimatani, 22-23.vi.1975, A. NAKANISHI; 4 ♂, Yamanashi, Kanayama, 26.v-3.vi.1976, A. NAKANISHI & J. EMOTO (Malaise trap): SHIKOKU- 1 ♀, Tokushima, Mt. Tsurugi, 3.vi.1981, T. GOTO: KYUSHU- 3 ♂4 ♀, Kumamoto, Mt. Hakucho [=Mt. Shiratori], 15.v.1979, H. SHIMA & K. OHARA; 1 ♀, Mt. Hakucho, 27.v.1978, T. GOTO; 1 ♂, Kumamoto, Mt. Ichifusa, 800-1,200 m, 26.v.1974, H. SHIMA; 2 ♂, Miyazaki, Shiiba, Yatate, 24-25.v.1974, H. SHIMA; 1 ♀, Mts. Kirishima, Mt. Takachiho, 4.vi.1968, A. TANAKA; 2 ♀, Yakushima, Kusugawa-hodo, 18.v.1972, S. SHINONAGA; 2 ♀, Yakushima, Arakawa, nr. Kosugidani, 3.vii.1965, H. SHIMA (all in BLKU).

Oswaldia hirsuta MESNIL

(Figs. 2, 4, 6, 18, 50)

Oswaldia hirsuta MESNIL, 1970: 115.
Oswaldia hirsuta: HERTING, 1984: 28.

Besides the type female from Hokkaido, I have seen specimens of this species from many localities in Japan. The males and the female genitalia are described below.

♂. Vertex narrow, 0.2-0.22 of head width; interfrontal area about 2× as wide as parafrontal at middle; palpus nearly cylindrical; thorax sometimes whitish or grayish yellow pollinose; claws and pulvilli very long; 3rd abdominal tergum with 4-6 irregularly set median discal and a row of marginal setae; 4th abdominal tergum usually with 2-4 anterior and a transverse row of posterior discal setae, if transverse discal setae undeveloped, then lateral discal setae distinct.

♂ genitalia: 5th sternum with rather short process on inner basal portion of posterior lobe; cerci in dorsal view narrowly separated from each other on apical 1/3, in lateral view nearly straight; surstylus in lateral view nearly straight; pregonite with several short hairs on apical portion, longitudinal ridge rather weak; epiphallus rather small; apical membraneous portion of distiphallus well narrowed.

♀ genitalia: 6th tergum subequal in length to 7th tergum; 6th sternum about 2/3 as long as 5th sternum, anterior and posterior margins roundly produced, posterior margin weakly swollen; 7th sternum shorter than 6th, posteroventral portion well convex ventrally; 8th sternum rather broad, with fine hairs.

Body length, 6.6-10.3 mm; wing length, 5.6-8.8 mm.

Distribution. Japan (Hokkaido, Honshu, Kyushu).

Type material examined. Holotype ♀ of *Oswaldia hirsuta* MESNIL, HOK-

KAIDO, Nukabira, 1.viii.1961, S. TAKANO (CNC).

Other specimens examined. HOKKAIDO- 1 ♀, Mt. Rausu, 200-900 m, 3.viii.1967, H. SHIMA; 1 ♀, Mts. Daisetsu, Tenninkyo, 9-13.vii.1986, H. SHIMA; 1 ♀, Ashoro, Kiyokawa, 23.vii.1967, A. NAKANISHI; 1 ♀, Ashoro, Berabonai, 24.vii.1967, H. SHIMA; 1 ♂, Sapporo, 11.vii.1967, K. KUSIGEMATI (all in BLKU): HONSHU- 2 ♂, Niigata, Mt. Myoko, 16-18.vii.1973, K. NISHIDA; 1 ♀, Niigata, Naeba, 14.vii.1966, H. SHIMA; 11 ♂, Niigata, Mt. Atema, 13, 14, 27, 28.vii.1971, M. HONDA; 1 ♂, Niigata, Mikuni Pass, 13.vii.1966, H. SHIMA; 9 ♂ 1 ♀, Nagano, Karuizawa, Kutsukake, 9-11.vii.1966, H. SHIMA & M. HONDA; 1 ♂, Nagano, Kamikochi, 30.vii.1965, A. NAKANISHI; 2 ♂, Saitama, Mt. Buko, 16.v.1974, T. NAMBU; 1 ♂, Mt. Buko, 23.vii.1978, K. HARA; 4 ♂, Saitama, Yokose, 15.vii.1973, K. HARA; 2 ♂, Saitama, Ochigawa, 17.vi.1972, K. HARA; 3 ♂, Saitama, Mitsumine, 23.vii.1974, K. HARA; 1 ♂, Mitsumine, 19.viii.1972, K. HARA; 1 ♂, Saitama, Shiraiwa, 17.viii.1972, K. HARA; 1 ♂, Saitama, Chichibu, 27.vii.1977, K. HARA; 1 ♀, Saitama, Otaki, 22.vii.1975, K. HARA; 2 ♂, Yamanashi, Kanayama, 1,200-1,600 m, 24.vii.1986, H. SHIMA; 1 ♂, Gifu, Hida, Shin-hodaka, 12.vii.1969, A. NAGATOMI; 3 ♂, Hida, Akigami-onsen nr. Ontake, 20.vii.1969, A. NAGATOMI (all in BLKU): KYUSHU- 1 ♂, Fukuoka, Mt. Kusenbu, 11.vi.1987, H. SHIMA; 1 ♀, Kagoshima, Kirishima, Yunono, 6.vi.1966, H. SHIMA; 5 ♂, Miyazaki, Mt. Osuzu, 22-23.v.1966, A. TANAKA & A. NAGATOMI; 1 ♂, Miyazaki, Mt. Wanizuka, 28.v.1966, A. TANAKA (all in BLKU).

Oswaldia eggeri (BRAUER et BERGENSTAMM)

(Figs. 21-26, 33-35)

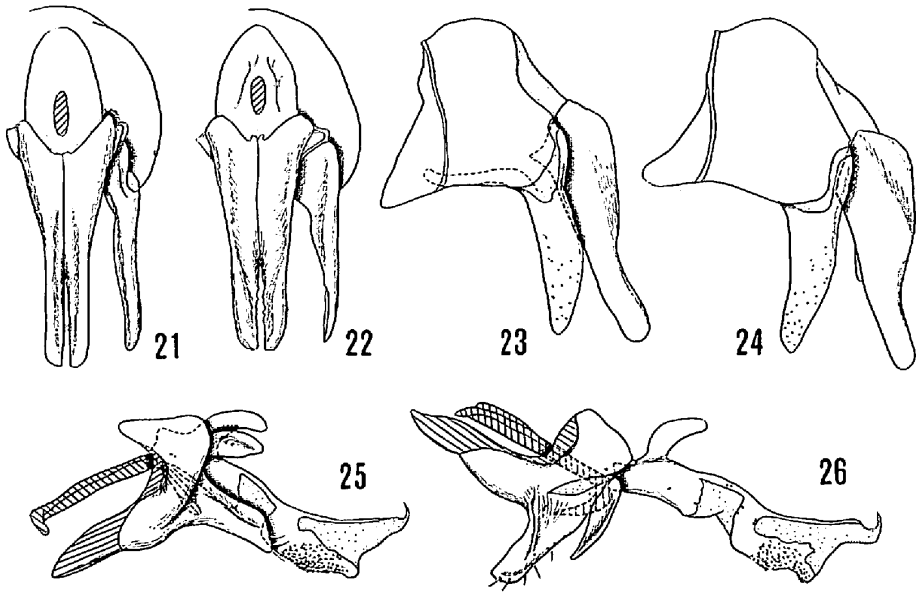
Dexodes eggeri BRAUER et BERGENSTAMM, 1889: 128, 169. For other synonyms see HERTING (1984).

I have identified eight males from Fukuoka with this species. In these specimens the head and thoracic pollinosity is more whitish and the body size is larger than in European specimens examined. Their male genitalia are also slightly different from those of European specimens: Cerci in lateral view broader at base and in dorsal view more broadly excavated medially in Japanese specimens than in European ones. This species is recorded for the first time from Japan. Description of this species was given in detail by MESNIL (1962).

♂ genitalia: 5th sternum with well downwardly projected and rounded process on inner basal portion of posterior lobe; cerci in lateral view weakly curved dorsally, in dorsal view rather broadly separated from each other on apical 3/8; surstylus in lateral view slender, weakly bent ventrally; apical membraneous portion of distiphallus evenly tapering to apex.

Distribution. Japan (Kyushu); Europe, S. Siberia (HERTING, 1984)

Specimens examined. KYUSHU- 1 ♂, Fukuoka, Mt. Kusenbu, 23.v.1986, H. SHIMA; 7 ♂, same locality as the preceding one, 28.v.1987, H. SHIMA (all in BLKU).



Figs. 21–26. Male genitalia of *Oswaldia eggeri* (BRAUER et BERGENSTAMM) from West Germany (21, 23, 25) and from Kyushu (22, 24, 26). —— 21–22, Epandrium, cerci and surstylus in dorsal view; 23–24, same in lateral view; 25–26, hypandrium and aedeagus in lateral view.

Oswaldia gilva sp. nov.

(Figs. 27–32, 36–38, 42–43)

♂. Closely resembling *O. eggeri*. Head densely whitish pollinose, parafrontal and upper postorbit densely pale yellowish to golden yellow pollinose; interfrontal area sometimes thinly golden yellowish in frontal view; palpus reddish yellow, darkened on basal 1/3–1/2. Vertex 0.22–0.24 of head width; parafacial narrowed below, 1/2–3/5 as wide as 3rd antennal segment at middle height; gena 0.22–0.25 of eye height. Parafrontal with sparse, fine and short hairs; facial ridge with fine hairs at most on lower 1/3. Antenna with 3rd segment 3.5–4× as long as 2nd, about 3× as long as wide. Arista with 3rd segment thickened nearly on basal 1/3. Palpus about 4/5 as long as 3rd antennal segment.

Thorax densely yellowish white or yellow pollinose on dorsum, whitish pollinose on pleura; dorsum with 4 narrow black longitudinal vittae. Mediotergite sometimes bare; 3+3 *ac*; 3+3 *dc*; scutellum with 2–4 long and strong hairs on preapical region; apical scutellar seta usually absent.

Wing hyaline, slightly tinged with pale brown from level of apex of basal cells to that of discal crossvein between subcosta and vein M_3. Relative lengths of costal sectors 2nd, 3rd and 4th as 2 : 4.5–5 : 2–2.5; vein M_1 from discal crossvein to its bend about 4/5 as long as that from bend to apex, and about 1.5× distance between bend and wing margin.

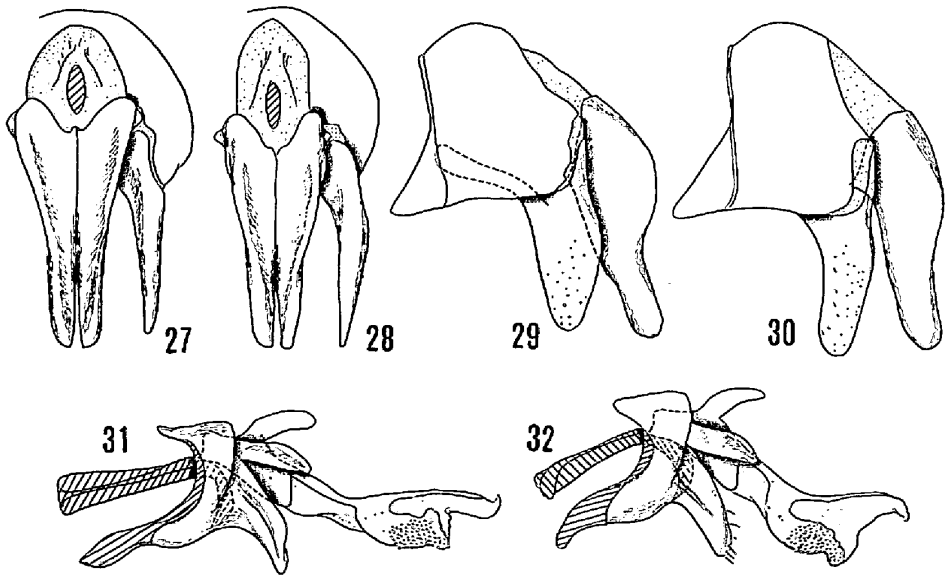
Hind tibia without preapical *pd* seta. Claws and pulvilli very long.

Abdomen densely pale yellowish white pollinose; dorsum of posterior 1/6 of 3rd tergum, 1/5 of 4th and 1/2–1/3 of 5th darkened, dark portions brownish pollinose in posterior view and not sharply defined; mid-dorsal portion of 3rd tergum sometimes longitudinally darkened, dark portion not sharply defined. Dorsum with dense, long, strong and erect hairs; 3rd tergum with 2–4 irregularly set median discal and 2–4 median marginal setae; 4th tergum usually with 4 irregularly set median discal and a row of strong marginal setae; 5th tergum with rows of irregularly set discal and marginal setae; lateral discal setae indistinct on intermediate terga.

♂ genitalia: 5th sternum very closely resembling that of *eggeri* in shape; cerci in dorsal view narrowly separated from each other on apical 1/4, in lateral view swollen on basal 1/2; surstylus in lateral view broad, weakly narrowed to blunt apex; pregonite with several rather strong hairs on posterior margin, longitudinal ridge weak; epiphallus long; distiphallus with apical membraneous portion distinctly narrowed.

♀. Differing from ♂ as follows: Vertex 0.26–0.3 of head width; interfrontal area densely golden yellowish pollinose in frontal view; outer vertical seta developed; 2 proclinate orbital setae; 3rd antennal segment 3–3.5× as long as 2nd, 2–2.5× as long as wide; palpus clavate, only slightly shorter than 3rd antennal segment; mediotergite usually with 1–2 fine short hairs; hind tibia with a weak preapical *pd* seta; claws and pulvilli short.

♀ genitalia: 6th tergum shorter than 7th tergum; 6th sternum slightly shorter



Figs. 27–32. Male genitalia of *Oswaldia gilva* sp. nov. from Honshu (27, 29, 31) and from Kyushu (28, 30, 32). —— 27–28, Epandrium, cerci and surstylus in dorsal view; 29–30, same in lateral view; 31–32, hypandrium and aedeagus in lateral view.

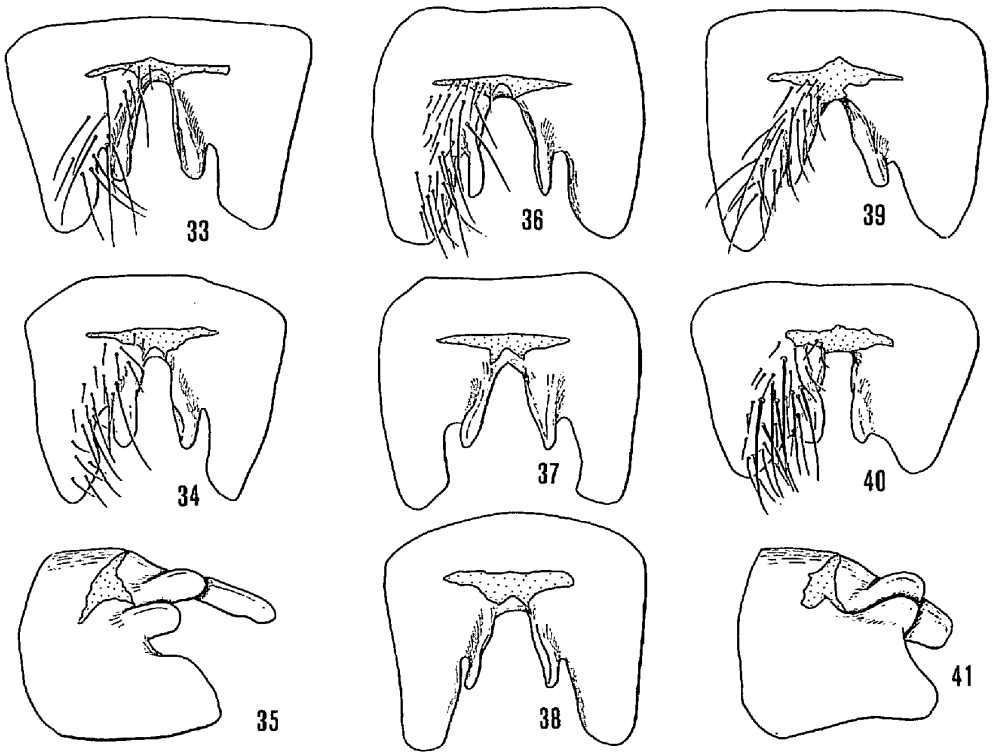
than 5th sternum, anterior and posterior margins weakly and roundly produced; 7th sternum shorter than 6th sternum, posteroventral portion rather weakly swollen; 8th sternum absent.

Body length, 6.2-9.9 mm; wing length, 5.5-8.6 mm.

Distribution. Japan (Hokkaido, Honshu, Kyushu).

Holotype ♂, KYUSHU, Kumamoto, Mt. Hakucho [=Mt. Shiratori], 30.vii.1977, H. SHIMA (BLKU).

Paratypes: HOKKAIDO- 1♂, Mt. Rausu, 200-900 m, 3.viii.1967, A. NAKANISHI; 3♂, Mts. Daisetsu, Aizankei, 1,000-1,800 m, 15-17.vii.1986, H. SHIMA; 1♀, Aizankei, 9.viii.1967, T. SAIGUSA; 1♀, Mts. Daisetsu, Yukomanbetsu, 10-13.vii.1986, H. SHIMA; 1♂, Shibecha, Shirarutoro, 1.vii.1967, A. NAKANISHI; 1♀, Nukabira, Fujikawa, 19.vii.1967, H. SHIMA (all in BLKU); 1♀, Obihiro, Nukabira, 31.vii.1949, S. TAKANO (det. as *O. apicalis* by L. P. MESNIL) (CNC); 1♀, Obihiro, Honbetsu, 4.viii.1950, S. TAKANO; 1♂, Sapporo, 13.viii.1942, Y. NISHIJIMA (all in EIHU): HONSHU- 1♀, Niigata, Kurokawa, 24.ix.1963, K. BABA; 1♀, Niigata, Mt. Atema, 29.vii.1971, M. HONDA; 1♂, Nagano, Karuizawa, Sengataki, 27.vii.1970, R. KANO; 1♂, Nagano, Matsubara



Figs. 33-41. Male 5th abdominal sternum of *Oswaldia eggeri* (BRAUER et BERGENSTAMM) from West Germany (33) and from Kyushu (34-35), *O. gilva* sp. nov. from Honshu (36), from Kyushu (37) and from Hokkaido (38), *O. glauca* sp. nov. (39) and *O. strigosa* sp. nov. (40-41). —— 33-34, 36-40, Ventral view; 35, 41, posterolateral view.

Lake, 29.vii.1977, T. NAMBU; 1 ♂, Saitama, Yokose, 15.vii.1973, K. HARA; 1 ♀, Saitama, Moroyama, 16.viii.1978, C. TAMAKI (all in BLKU): KYUSHU- 3 ♂, same data as the holotype (all in BLKU).

Remarks. This species seems to be very closely allied to *O. eggeri*, but differs from it in its longer 3rd antennal segment, densely yellowish pollinose frons and thorax, densely and broadly pollinose abdomen and broad cerci and surstylus in the male genitalia. The male genitalia of this species show some variation in the shape of the cerci and surstylus among individuals from different localities (Figs. 27-32).

Oswaldia glauca sp. nov.

(Figs. 39, 44, 46, 48, 51)

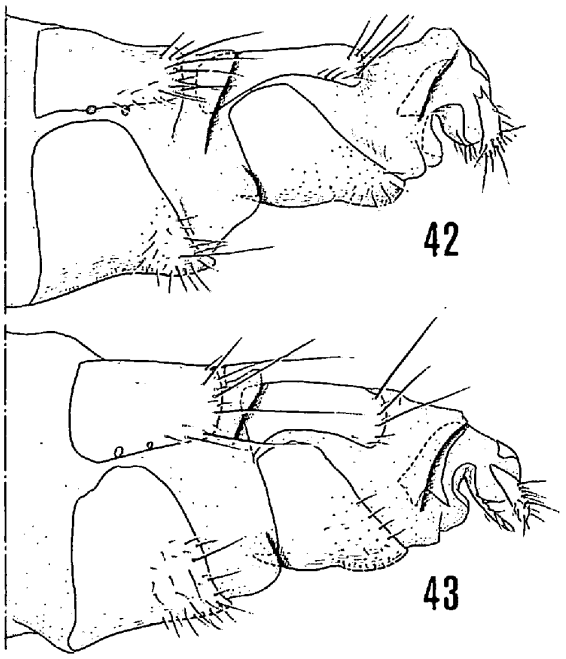
♂. Head whitish pollinose, parafrontal grayish or pale yellowish gray and occiput whitish gray; palpus dark brown, reddish yellow on apical 1/2-1/3. Vertex 0.27-0.3 of head width; interfrontal area about 1.5× as wide as parafrontal at middle; parafacial about 3/5-4/5 as wide as 3rd antennal segment at middle height; gena 0.28-0.3 of eye height. Parafrontal with rather dense fine hairs, 1-2 fine hairs descending below lowest frontal seta; facial ridge with fine hairs at most on its lower 2/5; genal dilation occupying lower 1/5 of gena, with rather sparse short fine hairs. Antenna long and wide, 3rd segment 3-3.4× as long as 2nd, 2.8-3× as long as wide. Arista thickened on basal 1/3. Palpus about 2/3 as long as 2nd and 3rd antennal segments combined.

Thorax including scutellum grayish white pollinose, pollinosity on dorsum appearing brownish with direction of light; dorsum with 4 rather broad longitudinal vittae, inner pair sometimes fused with each other on postsutural region. Mediotergite bare or with a few fine short hairs; 3+3 *ac*; 3+3 *dc*; 2-4 long and fine suberect setae on preapical region of scutellum; apical scutellar seta absent.

Wing slightly tinged with pale brown on anterior portion and along veins; calypter whitish, pale brownish yellow marginally. Relative lengths of costal sectors 2nd, 3rd and 4th approximately as 2 : 4.5 : 2.5; vein M_1 from discal crossvein to its bend about 2/3 as long as that from bend to its apex, and about 1.5× distance between bend and wing margin.

Legs black. Mid tibia with 2-4 *ad* setae; hind tibia without preapical *pd* seta. Claws and pulvilli long, fore claw and pulvillus slightly longer than 5th tarsomere.

Abdominal dorsum grayish white pollinose on anterior 2/3-3/4 of 3rd tergum, 3/4-4/5 of 4th and 1/3 of 5th, mid-dorsal longitudinal vitta broad and distinct on 3rd to 5th terga. Hairs on dorsum fine long and erect, especially long on median and lateral discal portion; 3rd tergum with 2-4 rather irregularly set median discal, 2-4 median marginal and 1 lateral marginal setae; 4th tergum with 2-6 irregularly set median discal, 1-2 lateral discal and a row of marginal setae; 5th



Figs. 42–43. Female genitalia of *Oswaldia gliva* sp. nov. from Hokkaido (42) and from Honshu (43) in lateral view.

tergum with an irregular row of discal and a regular row of marginal setae.

♂ genitalia: 5th sternum with rather short process on inner basal portion of posterior lobe; cerci in dorsal view broad, apical 1/4 portion narrowly separated from each other, in lateral view weakly curved dorsally; surstylus in lateral view broad, weakly angulate near middle; pregonite with many hairs on posterior portion, with weak longitudinal ridge; epiphallus long; apical membraneous portion of distiphallus distinctly narrowed.

♀. Differing from ♂ as follows: Parafrontal pale yellowish gray pollinose, with sparse fine hairs not descending below lowest frontal seta; vertex 0.31–0.32 of head width; interfrontal area subequal in width to parafrontal at middle; palpus about 3/4 as long as 2nd and 3rd antennal segments combined; thorax pale yellowish gray pollinose on dorsum; claws and pulvilli short; abdominal hairs shorter and slightly stronger than in ♂.

♀ genitalia: 6th sternum broad, anterior margin broadly extended anteriorly on mid-ventral portion; 7th tergum subequal in length to 6th tergum; 7th sternum short, 3/4 as long as 6th sternum, anterior margin invaginated at middle, posteroventral portion weakly and narrowly swollen; 8th sternum absent; epiproct rather broad.

Body length, 7.3–10.2 mm; wing length, 6.2–8.7 mm.

Distribution. Japan (Hokkaido, Honshu).

Holotype ♂, HONSHU, S. Jpn. Alps, Yamanashi, Okambazawa, 1,500–

2,000 m, 25-26.vii.1986, H. SHIMA (BLKU).

Paratypes: HOKKAIDO- 1 ♂, Nukabira, 4.vii.1986, H. SHIMA; 1 ♀, Mts. Daisetsu, Tenninkyo, 9-13.vii.1986, H. SHIMA; 2 ♀, Mts. Daisetsu, Yukomanbetsu, 9-13.vii.1986, H. SHIMA & M. ABE (all in BLKU): HONSHU- 3 ♂, same data as the holotype (BLKU).

Remarks. This species runs down to *O. albisquama* ZETTERSTEDT (=*spectabilis* MEIGEN; HERTING, 1984) in MESNIL's key to species of *Oswaldia* (1962), but apparently differs from it in having the narrower gena and parafacial, finer hairs on the abdominal dorsum and thinner pollinose thorax and abdomen. The male genitalia are also different from those of *spectabilis* in the shape of the cerci.

Oswaldia apicalis (MESNIL)

Lomatacantha apicalis MESNIL, 1957: 25.
Oswaldia apicalis: MESNIL, 1962: 768. —— MESNIL & PSCHORN-WALCHER, 1968: 162. —— RICHTER, 1980: 521. —— HERTING, 1984: 28.

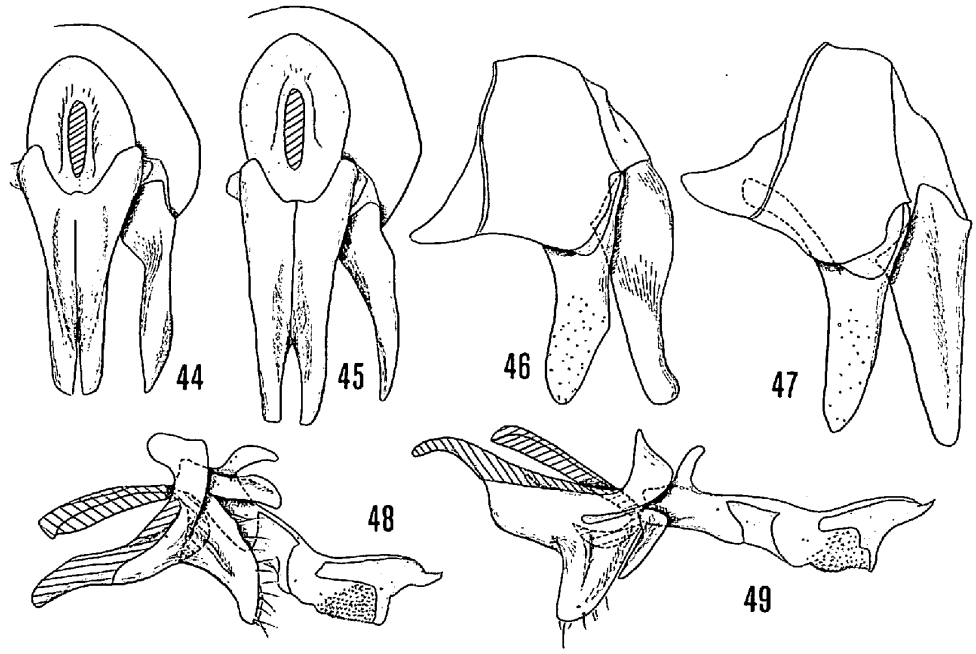
This species was originally described from a male from Sapporo. MESNIL (1962) redescribed the male and female and MESNIL and PSCHORN-WALCHER (1968) added Tsukisappu as a locality of this species. RICHTER (1980) recorded it from Mongolia. I have seen no specimens of this species from Japan, except for the type specimen, and a female from Obihiro determined as *apicalis* by MESNIL is in fact a female of *gilva* described above. These early records need to be confirmed. Here is given a description of the male based on the type specimen.

♂ (holotype). Head densely whitish pollinose, parafrontal weakly grayish; antenna brown, base of 3rd segment narrowly reddish; palpus entirely yellow. Vertex about 0.26 of head width; interfrontal area about 1.5× as wide as parafrontal at middle; parafacial slightly narrowed below, as wide as 3rd antennal segment at middle height; gena about 0.29 of eye height, with narrow genal dilation. Parafrontal with sparse fine hairs; facial ridge with several short hairs on its lower 1/4; genal dilation with a few fine hairs; upper occiput only with 3-4 black hairs behind postocular row. Antenna with 3rd segment about 3× as long as 2nd, about 3.4× as long as wide. Palpus nearly cylindrical, subequal in length to 3rd antennal segment.

Thorax densely grayish white pollinose, dorsum faintly pale yellowish; 4 rather weak longitudinal vittae. 3+3 *ac*; 3+3 *dc*; mediotergite hairy; scutellum with 2 fine preapical setae and 2 still fine apical setae, the latter hair-like, crossing and suberect.

Wing faintly and evenly tinged with pale brown. Relative lengths of costal sectors 2nd, 3rd and 4th approximately as 2 : 5 : 2.5; vein M_1 from discal crossvein to its bend about 4/5 as long as that from bend to apex, about 1.5× distance between bend and wing margin.

Legs dark brown. Mid tibia with 2 *ad* setae, upper seta fine; hind tibia with a



Figs. 44–49. Male genitalia of *Oswaldia glauca* sp. nov. (44, 46, 48) and *O. strigosa* sp. nov. (45, 47, 49). —— 44–45, Epandrium, cerci and surstylus in dorsal view; 46–47, same in lateral view; 48–49, hypandrium and aedeagus in lateral view.

fine preapical *pd* seta. Claws and pulvilli long.

Abdominal dorsum densely grayish white pollinose, with tessellate appearance, posterior 1/4–1/5 of 3rd and 4th terga and 2/5 of 5th darkened. Dorsum with rather sparse suberect fine hairs on 3rd tergum, sparse fine and erect hairs on 4th and still sparse and erect hairs on 5th; 3rd tergum with 2 strong regularly set median discal and 4 median marginal setae, outer pair of marginal setae fine; 4th tergum with 2 anterior and 2 posterior median discal, 2 lateral discal and a row of marginal setae, posterior median discal setae rather fine and situated laterally; 5th tergum with 2 median discal, 2–3 lateral discal and a row of marginal setae.

♂ genitalia: Cerci in dorsal view rather broad, nearly parallel-sided from base to apical 1/4, then weakly narrowed to apex.

Body length, ca. 7.9 mm; wing length, ca. 6.4 mm.

Distribution. Japan (Hokkaido), Mongolia (RICHTER, 1980).

Type material examined. Holotype ♂ of *Lomatacantha apicalis* MESNIL, Sapporo, 5.vii.1942, Y. NISHIJIMA (CNC).

Oswaldia strigosa sp. nov.

(Figs. 40–41, 45, 47, 49)

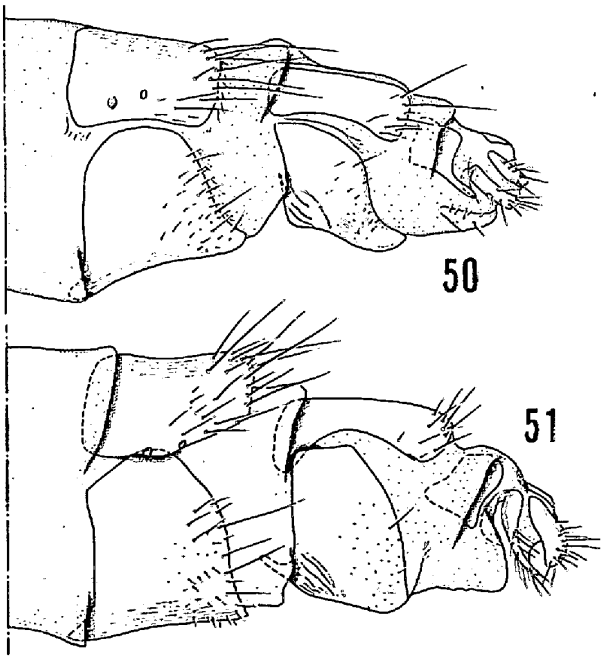
♂. Head grayish white pollinose, upper parafrontal and occiput grayish; palpus reddish yellow, darkened on basal 1/2–1/3. Vertex 0.28–0.3 of head

width; interfrontal area about 2× as wide as parafrontal at middle; parafacial only slightly narrower than 3rd antennal segment at middle height; gena 0.37–0.4 of eye height, genal dilation occupying lower 1/3. Parafrontal with dense long and fine hairs not descending below lowest frontal seta; facial ridge with many long down-curved setae on lower 3/4-4/5; genal dilation with long and rather dense hairs. Antenna with 3rd segment 3.2–3.4× as long as 2nd, about 2.6× as long as wide. Arista thickened on its basal 1/2–2/5. Palpus weakly clavate, subequal in length to 3rd antennal segment.

Thorax rather thinly pale brownish gray pollinose on dorsum; 4 broad and black dorsal longitudinal vittae present, inner vittae sometimes fused with each other on postsutural region and outer vitta about 2× as wide as pollinose portion between inner and outer vittae on postsutural region; pleura thinly grayish pollinose. Mediotergite with 1–2 fine hairs; 3+3 *ac*, foremost or hindmost seta of presutural region sometimes fine; 3+3 *dc*; scutellum with 4–5 rather strong and long hairs on preapical region; apical scutellar seta absent.

Wing slightly and evenly tinged with pale brown. Relative lengths of costal sectors 2nd, 3rd and 4th approximately as 2 : 4.5 : 2.5; vein M_1 from discal cross-vein to its bend only slightly shorter than that from bend to its apex, and about 1.5× distance between bend and wing margin.

Legs black. Mid-tibia with 2 *ad* setae, upper seta short; hind tibia without preapical *pd* seta. Claws and pulvilli very long.



Figs. 50–51. Female genitalia of *Oswaldia hirsuta* MESNIL (50) and *O. galuca* sp. nov. (51) in lateral view.

Abdominal dorsum rather thinly grayish white, somewhat dull yellowish, pollinose on anterior 1/2 of each 3rd and 4th terga and 2/3 of 4th; mid-dorsal longitudinal vitta broad and distinct on 3rd to 5th terga. Dorsum with dense long and erect hairs, stronger on lateral portion and finer on venter; 3rd tergum with 2-4 irregularly set median discal, 2 median marginal and 2-3 lateral marginal setae, lateral discal seta indistinct; 4th tergum with 2-4 irregular median discal, 1-2 lateral discal and a row of marginal setae; 5th tergum with irregularly set row of discal setae and a row of marginal setae.

♂ genitalia: 5th sternum with rather weakly downwardly projected process on inner basal portion of posterior lobe; cerci in dorsal view rather narrow, apical 1/3 rather well separated from each other, in lateral view nearly straight, weakly narrowed to apex; surstylus in lateral view nearly straight, weakly narrowed posteriorly; pregonite with several hairs on lower portion of posterior margin, longitudinal ridge weak; epiphallus long; apical membraneous portion of distiphallus distinctly narrowed.

♀. Unknown.

Body length, 6.5-8.1 mm; wing length, 5.8-6.3 mm.

Distribution. Japan (Kyushu).

Holotype, ♂, KYUSHU, Fukuoka, Mt. Sefuri, 13.v.1986, H. SHIMA (BLKU).

Paratype: KYUSHU- 1♂, Kumamoto, Mt. Kunimi, 11.v.1967, H. SHIMA (BLKU).

Remarks. This species is distinctive among members of *Oswaldia* in having strongly bristled facial ridge. In other features, including the male genitalia, this species is well assignable to this genus.

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