

**Descriptions of Two New Species of the Genus
Calosphyrum Townes from Japan
(Hymenoptera : Ichneumonidae)**

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Introduction

The genus *Calosphyrum* Townes belonging to the subtribe Goryphina of the tribe Mesostenini in the subfamily Gelinae has hitherto been represented by a single species, *Calosphyrum obscurum* Townes from the Solomons. Townes (1970) studied two species of this genus from the Solomons and New Britain, giving no species name except for *obscurum*, the type-species. *Calosphyrum* is reported here for the first time from Japan (southern part of Japan). No host has been recorded for the species of this genus though Japanese members of the genus have been associated with low vegetation in the forests. The holotypes will be preserved in the collection of the Entomological Institute, Hokkaido University, Sapporo.

Genus *Calosphyrum* Townes

Calosphyrum Townes, Mem. Amer. Ent. Inst. 12 : 272, 1970. Type-species : *Calosphyrum obscurum* Townes, 1970.

The chief distinguishing features of this genus are as in the following :—

Body moderate-sized and slender. Frons with a weak median vertical carina ; lower tooth of mandible slightly shorter than upper tooth. Epomia usually absent or indistinct. Venation of wings as in Figs. 5-8 ; nervellus inclivous or almost vertical. Apical carina of propodeum represented in female by heavy sublateral crest-like apophyses, in male by small, weak sublateral crests. First abdominal tergite rather slender, without lateral tooth at base, without longitudinal carinae or ridges except for a lateral ridge near base ; ovipositor tip very long, tapering towards apex, without a nodus and without ridges or teeth on lower valve (Fig. 4).

The Japanese species can be distinguished by the following key :—

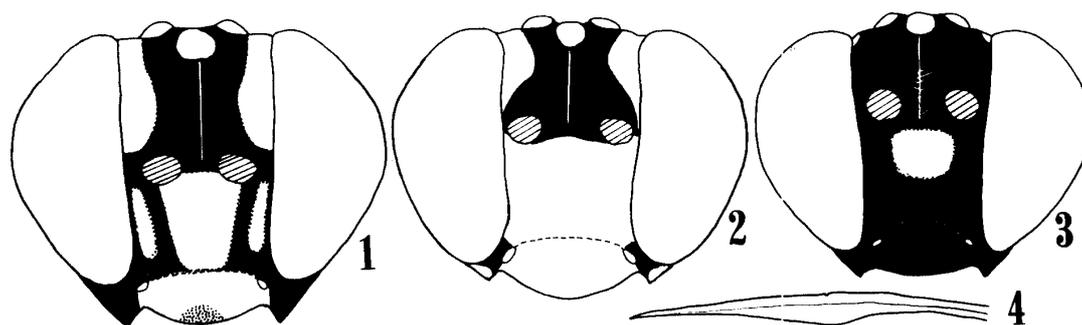
Key to the Japanese species of *Calosphyrum*

1. Male. 2
- Female. 3
2. First abdominal tergite comparatively stouter, 3.6-3.8 times as long as wide at apex. Face, clypeus, lower part of temple, frontal orbit, and vertex except for ocellar area,

- whitish yellow (Fig. 2); malar space blackish (Fig. 2). *alboorbitalis* sp. nov.
- First abdominal tergite comparatively slender, 4.0-4.2 times as long as wide at apex. Head almost entirely black, the large dorsal spot of face and semicircular spot at top of eye whitish yellow (Fig. 3); malar space black, the lateral corner weakly tinged with whitish yellow (Fig. 3). *bimaculatum* sp. nov.
3. Frons with a median longitudinal carina, without distinct trans-striae beside the median carina (Fig. 1). Hind basitarsus comparatively shorter, 1.9-2.0 times as long as the 2nd segment. Face (Fig. 1) whitish yellow, with a pair of vertical stripes; frontal orbit (Fig. 1), vertex except for ocellar area (Fig. 1), and collar whitish yellow *alboorbitalis* sp. nov.
- Frons with a median longitudinal carina, with trans-striae beside the median carina (Fig. 3). Hind basitarsus comparatively longer, 2.1-2.2 times as long as the 2nd segment. Head black, with a semicircular whitish yellow marking at top of eye; collar infusate to black. *bimaculatum* sp. nov.

***Calosphyrum alboorbitalis* sp. nov. (Figs. 1, 2, 5 & 7)**

♀. Face 1.3-1.4 times as wide as high at level of lower margin of antennal socket, moderately strongly convex medially, not mat, with distinct and dense punctures, with short and vertical striae along lower margin of antennal socket; clypeus 1.9-2.1 times as wide as high, weakly convex, polished, with large, rather sparse punctures, the punctures sparser ventrally, and denser than in *bimaculatum*; apical margin of clypeus roundedly convex, thin, slightly reflexed; malar space $5/9-2/3$ as long as basal width of mandible; temple almost flat, narrow, rather strongly convergent posteriorly; frons polished, widely and shallowly concave, impunctate on lower $1/2$, finely and rather densely punctate on dorsal $1/2$, with a weak median vertical carina without trans-striae beside the median carina (Fig. 1); distance between lateral ocelli and eyes $2/3-7/9$ as long as diameter of an ocellus; inner margins of eyes slightly convergent ventrally. Flagellum with 27 or 28 segments; 1st flagellar segment 5.0-5.2 times as long as wide at apex and 1.0-1.1 times as long as the 2nd. Mesoscutum polished, very finely and densely punctate, with a small, longitudinally striate area on posteromedian portion, the striate area smaller than in that of *bimaculatum*; notauli strongly impressed, reaching to anterior $2/3-3/4$; striation and punctuation of pronotum a little weaker than in those of *bimaculatum*; scutellum polished, with very sparse punctures, and with a lateral carinae on basal $1/3$; mesopleurum horizontally rugoso-punctate, horizontally striate in front of speculum, with a finely and densely punctate area on basoventral part; metapleurum obliquely rugoso-punctate. Median and apical sections of propodeum strongly reticulate-rugose; 1st lateral area of propodeum with strong and sparse punctures, and with a impunctate area on basal portion; apical carina of propodeum interrupted medially; propodeal spiracle elliptic, 2.6-3.1 times as long as wide. Venation of fore and hind wings as in Figs. 5 and 7. Legs slender; hind femur 4.8-5.1 times as long as wide in lateral view; hind basitarsus 1.9-2.0 times as long as wide in lateral view; hind basitarsus 1.9-2.0 times as long as the 2nd segment; inner spur of hind tibia 1.5-1.7 times as long as the outer one. First abdominal tergite polished, slender, 2.7-2.9 times as long as wide at apex; postpetiole with very finely and very sparsely punctate; 2nd tergite polished, very finely and densely punctate,



Figs. 1-3. Head in frontal view: 1, *Calosphyrum alboorbitalis* sp. nov., ♀; 2, *C. alboorbitalis* sp. nov., ♂; 3, *C. bimaculatum* sp. nov., ♂.
Fig. 4. Apical part of ovipositor, *C. bimaculatum* sp. nov.

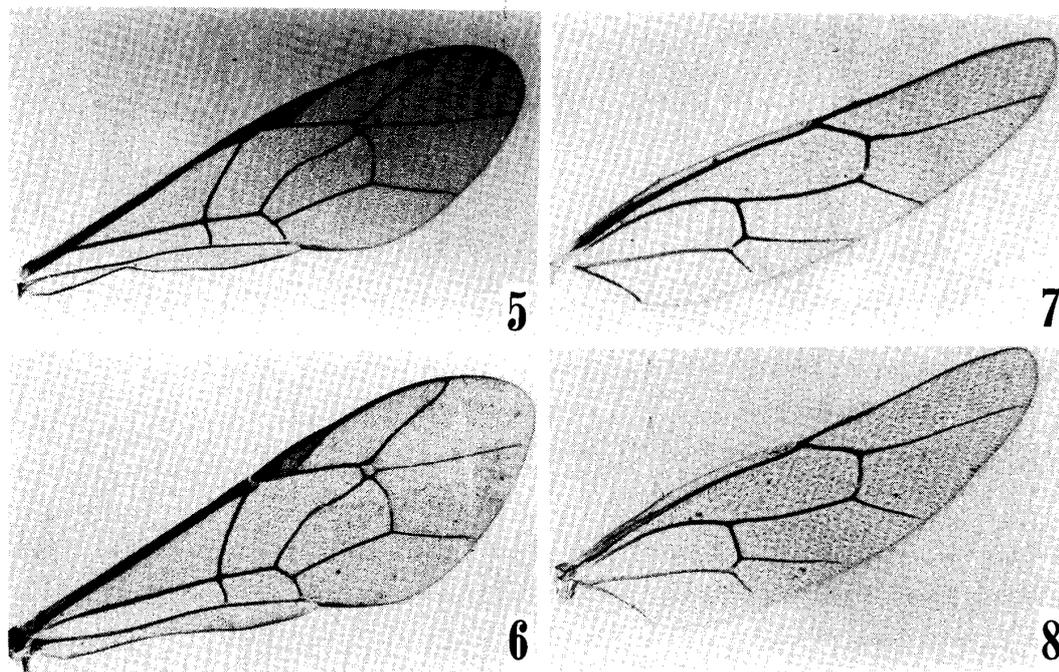
1.1-1.2 times as long as wide at apex and 1.5-1.7 times as long as the 3rd. Ovipositor strongly compressed, weakly decurved, with a small dorsal notch; ovipositor sheath approximately as long as hind tibia.

Black with many whitish yellow bands or spots. Mouth parts except for dark brown mandibular teeth, whitish; clypeus whitish yellow, with a dark brown apical spot (Fig. 1); lower corner of temple slightly tinged with whitish yellow; face whitish yellow, the lower lateral corner and sublateral stripe black, the stripe sometimes obsolete or entirely absent; frontal orbit widely whitish yellow, the yellow band confluent with yellow area of vertex; colouration of head in frontal view as in Fig. 1. Lower part of propleurum whitish yellow; posterior margin of propleurum ivory to fuscous; collar, tegula, subtegular ridge, scutellum, postscutellum, and upper division of metapleurum whitish yellow; posterior corner of metapleurum tinged with yellowish brown. Antennae infusate; apex of 5th flagellar segment, 6th to 12th or 13th flagellar segments except for ventral side, white. Petiolar area of propodeum whitish yellow, with a median longitudinal blackish band. Front and middle legs with coxae and trochanters ivory; femora piceous, dark brown dorsally; tibiae piceous to fuscous, a little darker dorsally; tarsi except for infusate last segment fuscous, both ends of each segment narrowly yellowish brown. Hind leg with coxa yellowish brown, a little darker laterodorsally; trochanter fuscous; femur piceous, a little darker dorsally; tibia piceous, fuscous at both ends; tarsus yellowish brown to fuscous, the last segment infusate. All tibial spurs yellowish brown to fuscous. First to 6th tergites with a whitish yellow apical band, the band of 4th and 5th tergites indistinct on dorsal part; 7th and subsequent tergites entirely whitish yellow; subgenital plate fuscous; ovipositor sheath infusate. Wings subhyaline; stigma pale to fuscous, with infusate hairs.

Length: Body 7.7-8.3 mm., forewing 5.3-5.6 mm.

♂. Differs from female as follows: —

Face 1.0-1.1 times as wide as high at level of lower margin of antennal socket; clypeus 1.6-1.8 times as wide as high; malar space $2/3$ - $7/9$ as long as basal width of mandible; flagellum with 31-33 segments; 1st flagellar segment 5.0-5.3 times as long as wide at apex and 1.2-1.3 times as long as the 2nd. Striation or rugoso-punctuation of meso- and metapleurum weaker than in female; rugoso-reticulation of median and apical section of propodeum weaker than in female. First abdominal tergite slender, 3.6-3.8 times as long as wide at apex; 2nd



Figs. 5-8. Fore (5 & 6) and hind (7 & 8) wings, ♀: 5 & 7, *Calosphyrum alboorbitalis* sp. nov.; 6 & 8, *C. bimaculatum* sp. nov.

tergite 1.6-1.8 times as long as wide at apex. Hind femur 5.3-5.5 times as long as wide in lateral view.

In colouration similar to female. Face and clypeus entirely ivory (Fig. 2); malar space and lower corner of inner orbit blackish (Fig. 2); lower part of temple (Fig. 2) and propleurum entirely ivory; posterior corner of mesopleurum light yellowish brown; mesopleurum almost entirely light yellowish brown, a little darker anteriorly; hind margin of mesopleurum tinged with yellowish brown. Flagellum with 10th or 11th to 17th or 18th segments except for ventral side white. Petiolar area of propodeum entirely whitish yellow, without dark brown marking. Front tarsus except for last segment light yellowish brown; middle tarsus darker than in female; hind tibia a little darker than in female; hind basitarsus infuscate on basal 2/3; apical 1/3 of hind basitarsus, 2nd to 4th segments of hind tarsus ivory. Clasper infuscate, paler basally.

Length: Body 7.6-9.1 mm., forewing 5.2-5.8 mm.

Holotype (♀): Komi, Iriomote-jima, Okinawa-ken, 6-vii-1982, K. Kusigemati leg. Paratypes: 3 ♀♀, 3-vii-1982, 8 ♂♂ & 5 ♀♀, Banna-dake, Ishigaki-jima, Okinawa-ken, K. Kusigemati leg.; 1 ♂ & 1 ♀, 3-vii-1982, Kabira, Ishigaki-jima, K. Kusigemati leg.; 1 ♂ & 1 ♀, 6-vii-1982, Komi, Iriomote-jima, Okinawa-ken, K. Ôhara leg.; 2 ♀♀, same data as holotype; 1 ♀, 30-vii-1985, Amitori, Iriomote-jima, A. Nagatomi leg.; 2 ♀♀, 31-vii-1985, Kanokawa, Iriomote-jima, A. Nagatomi leg.

Distribution: Japan (Ishigaki-jima; Iriomote-jima).

This species is closely allied to the Solomons' *C. obscurum* Townes, 1970, from which it is easily distinguished by the lateral carina which is present on the basal 1/3, the almost entirely whitish face and clypeus, the entirely whitish palpi, the whitish frontal orbit, and the 1st to 3rd tergites with a apical whitish band, respectively.

Calosphyrum bimaculatum sp. nov. (Figs. 3, 4, 6 & 8)

♀. Face 1.3-1.4 times as wide as high at level of lower margin of antennal socket, moderately strongly convex medially, weakly mat, with strong and dense punctures, and with weak and vertical striae just below antennal socket; clypeus 2.0-2.2 times as wide as high, weakly convex, polished, weakly and sparsely punctate, the punctures very sparser ventrally, its apical margin roundedly convex, thin, and slightly reflexed; malar space $4/9-5/9$ as long as basal width of mandible; temple almost flat, narrow, rather strongly convergent posteriorly; frons polished and widely concave on lower $1/2$, weakly mat with fine and rather dense punctures on dorsal $1/2$; frontal median vertical carina weak, with rather long, trans-striae beside the median carina on lower $1/2$ (Fig. 3); distance between lateral ocelli and eyes $3/4$ as long as diameter of an ocellus; inner margins of eyes slightly convergent ventrally; spot at top of eye rather large, semicircular, touching eye margin. Flagellum with 27-29 segments; 1st flagellar segment 4.8-5.2 times as long as wide at apex and 1.1 times as long as the 2nd. Mesoscutum polished, very finely and densely punctate, the posterior part of median lobe weakly and longitudinally striate; notauli distinct, reaching to anterior $3/4$; pronotum almost entirely striate horizontally, the posterodorsal part distinctly and densely punctate; speculum polished, very sparsely punctate; metapleurum strongly and obliquely striate entirely. Median and apical sections of propodeum rather strongly reticulate-rugose; basal section of propodeum striate-punctate or rather sparsely and distinctly punctate, with a wide impunctate area on basal portion; apical carina of propodeum interrupted medially; propodeal spiracle elliptic, 3.0-4.1 times as long as wide. Venation of fore and hind wings as in Figs. 6 & 8. Legs slender; hind femur 4.5-4.9 times as long as wide in lateral view; inner spur of hind tibia 1.5-1.7 times as long as the outer one; hind basitarsus 2.1-2.2 times as long as the 2nd segment. First abdominal tergite polished, slender, 2.8-3.0 times as long as wide at apex; postpetiole with very fine and sparse punctures; 2nd tergite subpolished, very finely and densely punctate, 1.1-1.2 times as long as wide at apex and 1.5-1.7 times as long as the 3rd. Ovipositor rather strongly compressed, weakly decurved, with a very small notch; ovipositor sheath 0.9-1.0 times as long as hind tibia.

Black. Mouth parts except for dark brown apical teeth, whitish yellow; marking at top of eye whitish yellow. Scape dark brown; pedicel dark brown, with a apical yellowish brown band; flagellum dark brown to black, a little paler apically, the 5th to 11th or 12th segments except for ventral side, white. Tegula and subtegular ridge ivory, the former a little darker; scutellum ivory, dark brown basomedially, sometimes entirely dark brown; postscutellum ivory to yellowish brown. Upper division of metapleurum usually yellowish brown, sometimes dark brown; posterior corner of metapleurum yellowish brown. Apical section of propodeum yellowish brown, the median part sometimes dark brown; posterior part along apical carina sometimes yellowish brown. Front and middle legs with coxae and trochanters ivory to light yellowish brown; femora and tibiae yellowish brown; 1st to 4th tarsal segments of front and middle legs fuscous, each segment with a narrow, yellowish brown apical band; 5th segment of front and middle tarsi infuscate. Hind leg with coxa yellowish brown, dark brown on dorsolateral side; trochanter infuscate; femur yellowish brown to dark brown, paler ventrally; tibia yellowish brown, infuscate at both ends; basitarsus fuscous to light yellowish brown, paler apically; 2nd and 3rd tarsal segments light yellowish brown; 4th and

5th tarsal segments infusate. All tibial spurs fuscous to infusate. Abdomen black; apical 1/2 of postpetiole yellowish brown to dark brown; 2nd tergite with an apical yellowish brown band; extreme apex of 3rd to 5th tergites weakly tinged with dark brown; 6th and 7th tergites white; ovipositor sheath infusate. Wings subhyaline; stigma pale, with infusate hairs.

Length: Body 8.0–8.5 mm., forewing 5.2–6.1 mm.

♂. Differs from female as follows:—

Face 1.0–1.1 times as wide as high at level of lower margin of antennal socket, the punctures and striae a little weaker than those in female; clypeus 1.8–2.0 times as wide as high; malar space 3/8–4/9 as long as basal width of mandible; trans-striae of frons weaker than those in female. Flagellum with 28–30 segments; 1st flagellar segment 4.8–5.0 times as long as wide at apex and 1.2–1.3 times as long as the 2nd. Striation or rugoso-punctuation of pronotum, meso- and metapleurum weaker than those in female; rugoso-reticulation of median and apical sections of propodeum weaker and coarser than those in female. Hind femur 5.1–5.2 times as long as wide in lateral view; hind basitarsus 2.0–2.1 times as long as the 2nd segment. First tergite slender, 4.0–4.2 times as long as wide at apex; 2nd tergite 1.6–1.8 times as long as wide at apex.

Very similar to female in colouration. Face with a large dorsomedian white spot (Fig. 3); collar weakly tinged with dirty yellow; scutellum entirely ivory; upper division of metapleurum more extensively white; metapleurum almost entirely yellowish brown to dark brown. Flagellum with 10th to 17th segments except for ventral side white. Median and apical sections of propodeum yellowish brown, dark brown to blackish along basal carina; basal section of propodeum blackish. First to 4th segments of front tarsus light yellowish brown; tarsus of middle leg infusate, the 2nd to 4th segments with a narrow, yellowish brown apical band; hind tibia more extensively infusate; hind tarsus ivory, the basal 1/5 of basitarsus and 5th segment infusate; all tibial spurs a little paler than in female. Apical band of 2nd tergite a little wider than in female; 3rd tergite with a distinct apical white band; 7th and 8th tergites and subgenital plate white, the 7th tergite on basal half sometimes blackish; clasper whitish basally, dark brown apically.

Length: Body 6.9–8.7 mm., forewing 5.1–5.9 mm.

This species is variable in colouration. In one specimen (♀, 31-v-1969) from Yakushima the yellow spot at top of eye absent, the scutellum dark brown, the upper division of metapleurum black, and the apical section of the propodeum almost entirely blackish.

Holotype (♀): Takakuma-yama, Kagoshima-ken, 30-viii-1970, K. Kusigemati leg. Paratypes: 3 ♀♀, 27-viii-1970, 4 ♂♂ & 1 ♀, 28-viii-1970, 4 ♀♀, 30-viii-1970, Takakuma-yama, Kagoshima-ken, K. Kusigemati leg.; 1 ♀, 11-ix-1985, Udono, Tashiro, Kagoshima-ken, H. Fukuda leg.; 2 ♀♀, 31-v-1969, Ambo, Yaku-shima, Kyushu, K. Kusigemati leg.; 4 ♀♀, 4-vi-1975, Miyanoura, Yaku-shima, K. Kusigemati leg.

Distribution: Japan (Kyushu).

This species is very similar to the preceding species, *C. alboorbitalis* sp. nov., but it differs from the latter by the frons with trans-striae, the entirely black face in female, the black face with a large whitish spot in male, the black frons, etc. as stated in the key.

Summary

Two new species of the genus *Calosphyrum* are described: *C. alboorbitalis* sp. nov. from Ryukyu; *C. bimaculatum* sp. nov. from Kyushu. This is the first record of the genus from Japan. A key to the Japanese species is provided.

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Reference

- 1) Townes, H.: The genera of Ichneumonidae, part 2. *Mem. Amer. Ent. Inst.*, **12**, 1-537 (1970).