

Orthopelmatinae of Japan

(Hymenoptera, Ichneumonidae)

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The subfamily Orthopelmatinae are a small group of the Ichneumonidae, being represented by a single genus containing about 10 described species in the world. So far as I am aware, no species of the subfamily Orthopelmatinae has been known to occur in Japan. In the course of the present investigations I have found two species in Japan, all of which are new to science. Insofar as their habits are known, the species of the Orthopelmatinae are parasites of Cynipidae. The types of the new species described below are preserved in the collection of the Entomological Institute, Hokkaido University, Sapporo.

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Genus *Orthopelma* Taschenberg

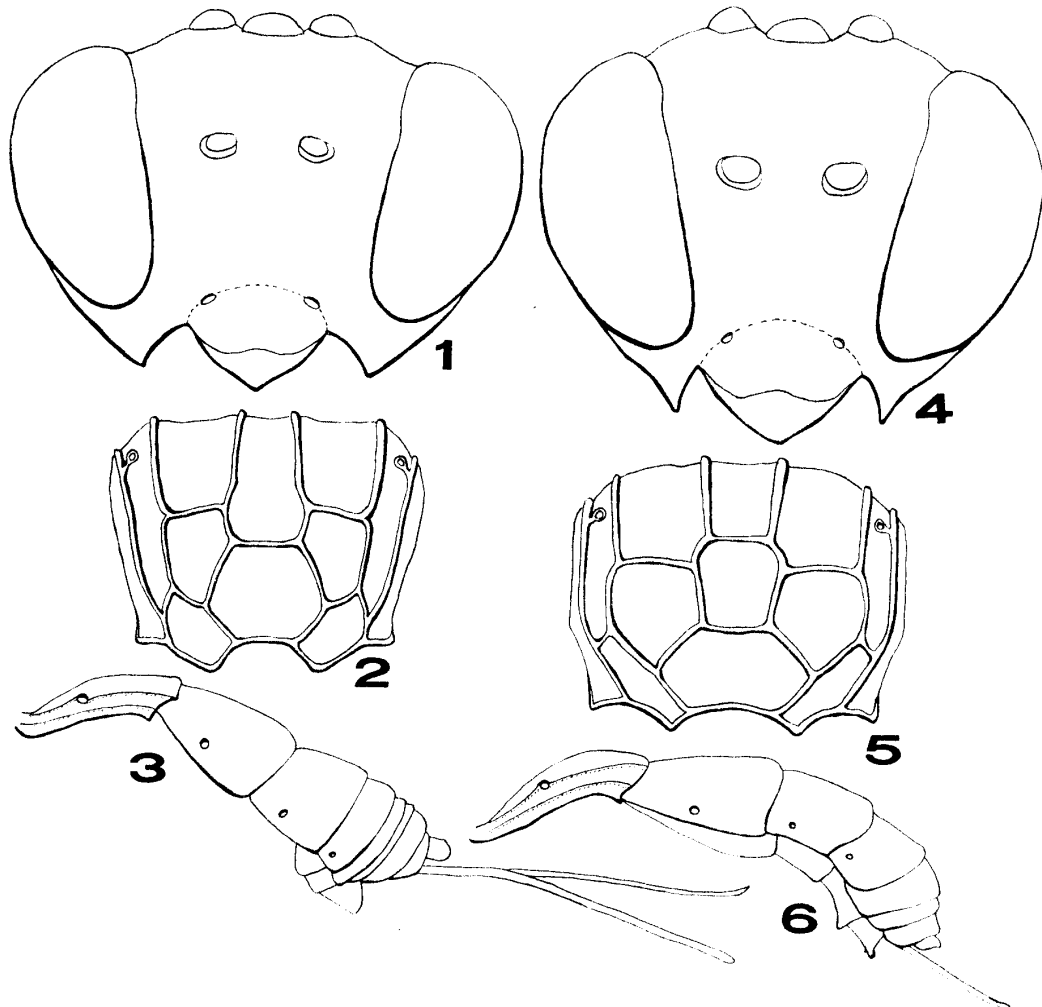
Orthopelma Taschenberg, Ztschr. Gesam. Naturw., Halle 25 : 137, 1865. [Type-species : (*Hemiteles luteolator* Gravenhorst) = *Ichneumon mediator* Thunberg].

Proëdrus Foerster, Verh. Naturh. Ver. Rheinlande 25 : 147, 1868. [Type-species : (*Hemiteles luteolator* Gravenhorst) = *Ichneumon mediator* Thunberg].

The genus *Orthopelma* Taschenberg is a relatively small group of the Orthopelmatinae, and its distribution is confined to the Palearctic and Nearctic regions. Members of this genus are bred from galls of *Diastrophus* on *Rubus*, galls of *Diplolepis* on *Rosa* in North America and galls of *Rhodites* on various wild roses in Europe.

Key to the Japanese species of *Orthopelma*

1. Head with face more weakly punctured, weakly convergent below (Fig. 1), 1.4–1.6 times as wide as high; antennae filiform, long, with 19 segments in female, 20–22 in male. Scutellum with strong lateral carinae. Propodeum (Fig. 2) with areola confluent with basal area. Ovipositor long, the ovipositor sheath being 2.3–2.8 times as long as 2nd tergite (Fig. 3). 1. *japonicum* sp. nov.



Figs. 1-3. *Orthopelma japonicum* sp. nov., female. 1, head in frontal view; 2, propodeum in dorsal view; 3, abdomen in lateral view.

Figs. 4-6. *Orthopelma simile* sp. nov., female. 4, head in frontal view; 5, propodeum in dorsal view; 6, abdomen in lateral view.

- Head with face more strongly punctured, strongly convergent below (Fig. 4), 1.2-1.4 times as wide as high; antennae somewhat clavate, short, with 14-16 segments in female, 20-22 in male. Scutellum without lateral carinae. Propodeum (Fig. 5) with areola separated from basal area by a distinct carina. Ovipositor short, the ovipositor sheath being 5/7-11/12 as long as 2nd tergite (Fig. 6)
..... 2. *simile* sp. nov.

1. *Orthopelma japonicum* sp. nov. (Figs. 1-3)

♀. Head (Fig. 1) with face weakly convergent below, about 1.5 times as wide as high, finely punctured and rather strongly convex longitudinally; clypeus separated from face by a distinct groove, weakly convex, 1.7-1.9 times as wide as high, the apical margin being faintly concave; labrum exposing, rather triangular; mandible short, with

a few punctures on outer surface, strongly tapering towards apex, and the upper tooth longer than the lower; malar space rather short, $\frac{3}{5}$ as long as basal width of mandible; temple wide, weakly convex, moderately densely haired, the hairs becoming sparser towards eye; occipital carina distinct, joining hypostomal carina at far base of mandible; frons weakly convex, finely and closely punctured; distance between lateral ocelli and eyes $\frac{2}{3}$ as long as diameter of an ocellus; antennae rather long, filiform, with 19 segments; 1st flagellar segment 1.4-1.6 times as long as the 2nd; 2nd flagellar segment 1.7-2.0 times as long as wide at apex. Pronotum weakly and transversely striate on lower half, weakly punctured on upper half; epomia short but distinct, not reaching to upper margin of pronotum; mesonotum rather strongly convex, strongly punctured, the punctures becoming denser and weaker anteriorly; notauli very short, rising vertically from edge of mesonotum; scutellum short, weakly convex, sparsely haired, with weak lateral carinae, the carina reaching near apex; mesopleuron polished, smooth, obliquely striate just below subtegular ridge, and vertically and shortly striate along lower margin; speculum polished and smooth; metapleuron rather strongly convex, strongly rugoso-punctured; mesosternum sparsely and weakly punctured; postpectal carina present only medially. Propodeum (Fig. 2) strongly areolated; basal area confluent with areola; basal area and areola polished, with a shallow longitudinal groove; 1st pleural area confluent with 2nd pleural area; petiolar area flat, almost entirely bare; propodeal spiracle small, and circular. Wing with nervulus postfurcal by about $\frac{1}{2}$ of its own length; stigma large, triangular; radius originating from middle of stigma; nervellus almost vertical, weakly curved, without discoidella. Leg with hind femur slender, about 4.5 times as long as wide in lateral view; middle and hind tibial spurs approximately equal in length, respectively; tarsal claws small and simple. Abdomen (Fig. 3) with 1st tergite cylindrical, weakly rugulose, the spiracle being weakly produced, situated on basal $\frac{1}{3}$; postpetiole 1.9-2.0 times as long as wide at apex; 2nd tergite strongly convex, moderately densely haired, a little shorter than its apical width; 3rd tergite strongly convex and moderately densely haired as in 2nd tergite, $\frac{3}{5}$ - $\frac{2}{3}$ as long as 2nd tergite; ovipositor long, gradually tapering towards apex, without nodus and apical teeth; ovipositor sheath 2.3-2.8 times as long as 2nd tergite (Fig. 3).

Black. Head with clypeus light yellowish brown, dark brown along upper margin; labrum and mouth parts light yellowish brown, the apical margin of mandible being blackish; antennae blackish brown, the scape and pedicel light yellowish brown ventrally. Tegula pale yellow. Subtegular ridge weakly tinged with dark brown. Front and middle legs with coxae dark brown basally, light yellowish brown apically; front and middle trochanters, femora, tibiae and tarsi yellowish brown, the outer side of tibiae being pale yellowish. Hind leg with coxa blackish, a little paler apically; trochanter, femur, tibia and tarsus dark brown, the 2nd trochanter and base of tibia being a little paler. Abdomen with 1st tergite black, yellowish brown at extreme apex; 2nd tergite light yellowish brown, with a pair of dark brown, indistinct spots; 3rd tergite light yellowish brown; 4th and the following tergites blackish brown, pale yellow at extreme apex; ovipositor sheath blackish.

Length: Body 3.8-4.6 mm., forewing 3.2-3.7 mm.

♂. Differs from the female the following characters except for general sexual differences:—

Antennae more slender than female, with 20-22 segments. Abdomen with 2nd tergite

longer than wide, about 1.1 times as long as wide at apex; 2nd to 4th tergites dark brown, a little paler basally; 5th and the following tergites blackish.

Length: Body 4.3-5.4 mm., forewing 3.2-3.9 mm.

Holotype (♀) and paratypes (2♂♂ & 2♀♀): Hachinohe, Iwate-ken, Honshu, 27-v-68, reared from galls of *Diplolepis japonica* on *Rosa rugosa* by A. FUKADA.

Host: *Diplolepis japonica* (Walker) (Hym., Cynipidae).

Distribution: Japan (Honshu).

This species is very closely related to the European species, *O. luteolator* (Gravenhorst), from which it is readily distinguished by the propodeum of which the areola is confluent with the basal area and by the scutellum with lateral carinae.

2. *Orthopelma simile* sp. nov. (Figs. 4-6)

♀. Head (Fig. 4) with face strongly convergent below, 1.2-1.4 times as wide as high, and rather closely punctured, the punctures becoming sparser and weaker towards eye, and rather strongly convex longitudinally; clypeus separated from face by a distinct groove, weakly convex, shallowly and sparsely punctured, 1.6-1.9 times as wide as high, the apical margin being weakly concave; labrum rather strongly exposing, semicircular; mandible short, strongly tapering towards apex, with rather fine, transverse wrinkles on outer surface, the upper tooth being longer than the lower; malar space short, 2/5-3/5 as long as basal width of mandible; temple rather flat, wide, strongly and rather moderately closely haired, the hairs becoming sparser towards eye; occipital carina very strong, joining hypostomal carina at far base of mandible; frons strongly and closely punctured, the punctures becoming weaker and sparser laterally and dorsally; distance between lateral ocelli and eyes 2/3-6/7 as long as diameter of an ocellus; antennae somewhat clavate, short, with 14-16 segments; 1st flagellar segment 1.4-1.6 times as long as wide at apex. Pronotum weakly and transversely striate below, strongly and closely punctured on upper part, the collar being polished and smooth; epomia very short but distinct; mesonotum strongly and closely punctured, the punctures being a little denser and weaker anteriorly; notauli present as in *japonicum*; scutellum short, rather strongly convex, strongly and sparsely punctured, without lateral carinae; mesopleuron polished and smooth, obliquely striate just below subtegular ridge, with a shallow and broad groove along lower margin of mesopleuron, the groove being more weakly and shortly wrinkled; speculum polished and smooth; metapleuron rather strongly convex, strongly rugoso-punctured; mesosternum strongly and sparsely punctured; postpectal carina present only medially. Propodeum (Fig. 5) strongly and completely areolated and strongly punctured; basal and petiolar areas and areola polished, impunctured, with few hairs; 1st pleural area confluent with 2nd pleural area. Wing very similar to *japonicum* in venation. Legs with middle and hind tibial spurs approximately equal in length, respectively; hind femur 3.8-4.1 times as long as wide in lateral view; tarsal claws small and simple. Abdomen (Fig. 6) with 1st tergite cylindrical, sparsely and longitudinally wrinkled, and the spiracle being produced as tubercles, situated on basal 3/8; 2nd tergite moderately densely haired, strongly convex, approximately as long as wide at apex; 3rd tergite strongly convex and moderately densely haired as in 2nd tergite, 5/8-5/7 as long as 2nd tergite; ovipositor short, gradually tapering towards apex, without nodus and apical teeth; ovipositor sheath short, 5/7-

11/12 as long as 2nd tergite (Fig. 6).

Black. Head with clypeus light reddish brown, blackish dorsally and laterally; mandible dark reddish brown, the apical teeth being blackish; palpi light yellowish brown; scape yellowish brown ventrally, dark brown dorsally; pedicel and apical segments of flagellum yellowish brown to dark brown; flagellum except for apical segments blackish. Tegula pale yellow. Subtegular ridge black. Legs very similar to *japonicum* in colour. Abdomen with 1st tergite black, weakly tinged with dark brown; 2nd and 3rd tergites light reddish brown; 4th tergite dark brown basally, blackish apically, sometimes reddish brown wholly; 5th to the following tergites blackish, with a whitish yellow marking along apical margin, respectively; ovipositor sheath black.

Length: Body 4.2-5.4 mm., forewing 3.5-4.0 mm.

♂. Closely resembles the female in general structure and colour, from which it differs by the following points:—

Antennae filiform, more slender, with 20-22 segments. Abdomen with 2nd tergite 1.1-1.3 times as long as wide at apex; 2nd and 3rd tergites dark brown, sometimes with a pair of blackish spots posteriorly; 4th and the following tergites blackish. Legs a little darker than female.

Length: Body 4.2-6.1 mm., forewing 3.5-4.4 mm.

Holotype (♀) and paratypes (21 ♂♂ & 18 ♀♀), Terayama, Kagoshima-shi, Kyushu, 27-iv-, 1- & 8-v-70, 19-iv-73, K. Kusigemati leg. Paratypes; 2 ♂♂ & 6 ♀♀, Nagata, Yaku-shima, Kagoshima-ken, Kyushu, 5-v-73, K. Kusigemati leg.; 1 ♀, Kurohimeyama, Nagano-ken, Honshu, 8-vi-59, K. Kamijo leg.

Host: Unknown.

Distribution: Japan (Honshu and Kyushu).

This species resembles the preceding species, *O. japonicum* sp. nov., but it differs from the latter by the propodeum with the areola separated from the basal area, by the short ovipositor, etc. as stated in the key. Furthermore, this species is similar to the European species, *O. luteolator* (Gravenhorst), but easily separated from the latter by the short and somewhat clavate antennae, by the short ovipositor and by the scutellum with lateral carinae.

REFERENCES

- ASHMEAD, W. H. 1890. Descriptions of new Ichneumonidae in the collection of the U. S. National Museum. *Proc. U. S. Nat. Mus.* **12**: 387-451.
- CALLAN, E. McC. 1934. A note on *Orthopelma luteolator* Grav. and *O. brevicornis* Morl. (Hymenoptera, Ichneumonidae). *Proc. R. Ent. Soc. Lond. (A)* **18**: 30-32.
- MORLEY, C. 1907. The Ichneumons of Great Britain 2. Plymouth.
- TOWNES, H. 1945. A catalogue and reclassification of the Nearctic Ichneumonidae, Part 2. *Mem. Amer. Ent. Soc.* **11**.
- 1971. The genera of Ichneumonidae, Part 4. *Mem. Amer. Ent. Inst.* **17**.
- WALKLEY, L. M. 1967. Hymenoptera of America North of Mexico. Synoptic catalog. Agr. Monograph No. 2 (2nd supplement): 179.