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OCCURRENCE OF TWO SPECIES OF THE GENUS PRAON HALIDAY IN JAPAN

(HYMENOPTERA : APHIDIIDAE)

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It is well-known that *Praon* is a peculiar genus of the family Aphidiidae, making a tent-like cocoon under the empty skin of the victim. In 1950 the senior author[1] mentioned two Japanese forms of *Praon*, which are provisionally identified with "*Praon volucris* Haliday" and "*Praon longicornis* Marshall". In the course of the present study the authors have come to the definite conclusion that these forms should be identified with *Praon volucre* (Haliday) and *Praon dorsale* (Haliday) (=*Praon longicorne* Marshall) as in the following lines.

Praon volucre (Haliday)

Aphidius (*Praon*) *volucris* Haliday, Ent. Mag. 1 : 484, 1833.

Praon volucris: Ruthe, Stettin. Ent. Zeitg. 20 : 315, 1859; Dalla Torre, Cat. Hym. 4 : 18, 1898; Szépligeti, Gen. Ins. 22-24 : 184, 1904.

Praon volucre: Marshall, Spe. Hym. Europe 5 : 539, 1896; ibid., Trans. Ent. Soc. London 1899 : 19, 1899; Beirne, Proc. Ent. Soc. London (A) 17 : 47, 1942; Mackauer, Beitr. Ent. 9 : 842 & 870, 1959, 11 : 104, 1961 & 12 : 636, 1962; Narayanan, Subba Rao, Sharma and Starý, Beitr. Ent. 12 : 702, 1962.

On the basis of the present specimens a brief redescription of this species will be given below :—

♀. Dark brown to black. Face brown to reddish brown ; clypeus and mouth parts yellowish brown ; palpi, first three antennal segments yellow. Prosternum yellowish brown ; mesopleurae sometimes of paler colour. Wings hyaline ; stigma and veins brown. Abdomen brown ; petiole dark to light brown ; second, third and apical tergites lightened. Legs yellow to brownish yellow.

Body 2.3–2.8 mm., antennae 1.8–2.3 mm. in length. Head wider than thorax at tegulae, smooth and shining, with sparse hairs. Ocelli round ; distance between each ocellus 0.5 to 1.5 times as long as its diameter. Antennae filiform, with 17 to 21 segments [17 (2♀♀), 18 (31), 19 (71), 20 (18), 21 (1)] ; 1st segment of flagellum 1.3 times as long as the 2nd. Thorax smooth and shining, with dense hairs ; notaulices distinct, deep, converging posteriorly, effaced at posterior end ; mesopleurae quite smooth and shining, with sparse hairs in middle. Propodeum almost smooth, not areolated. Abdomen lanceolate, much longer than head and thorax together ; petiole 1.2 to 1.5 times as long as wide at spiracles, nearly parallel-sided,

1) Watanabe, C., Ins. Mats. 17 : 87, 1950.

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rugose, strongly convex as seen laterally, with some long hairs, the spiracular tubercles being situated at basal two-fifths (Fig. 1, a); succeeding tergites smooth and shining with scattered hairs. Ovipositor sheath (valvulae III) rather long, slender, the edge being almost straight (Fig. 2, a). Stigma triangular, about 3.7 times as long as broad; first abscissa of cubitus slightly curved, not straight, sometimes partly decoloured; recurrent vein distinct.

♂. Similar to the female, but differs from the latter in the following aspects:—

Body and legs darker in colour. Antennae slightly longer than body, 1.7–2.3 mm. in length, with 20 to 23 segments [20 (17♂♂), 21 (73), 22 (45), 23 (10)]; first two segments yellow. Body 1.8–2.6 mm. in length.

Specimens examined: 11♀♀, 9♂♂, (23-vi-41), Sapporo, Watanabe leg.; 7♀♀, 5♂♂, (18-v-61), 15♀♀, 13♂♂, (23-v-61), 79♀♀, 45♂♂, (5-vi-61), Sapporo, Takada leg.; 2♀♀, (6-v-63), Kyoto, Takada leg. All specimens were reared from *Aulacorthum sambuci* infesting the elder-tree, *Sambucus Sieboldiana*.

Host: *Aulacorthum sambuci* (Matsumura) (in Japan). Furthermore, this parasite is very common in Europe, having been reared from various kinds of aphids (see: Mackauer, 1959).

Distribution: Europe, Israel, India, Japan, and U.S.A. (introduced).

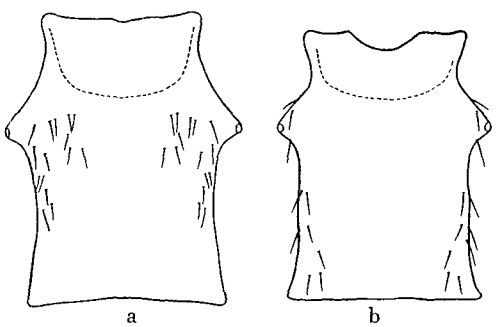

Fig. 1. Petioles of female: a, *Praon volucre*; b, *Praon dorsale*.

Praon dorsale (Haliday)

Aphidius (*Praon*) *dorsalis* Haliday, Ent. Mag. 1: 484, 1833; Thomson, Opusc. Ent. 20: 2333, 1895.

Praon dorsale: Marshall, Spec. Hym. Europe 5: 536, 1896; ibid., Trans. Ent. Soc. London 1899: 17, 1899; Mackauer, Beitr. Ent. 9: 825, 1959, 11: 102, 1961, & 12: 636, 1962; Narayanan, Subba Rao, Sharma and Starý, Beitr. Ent. 12: 699, 1962.

Praon dorsalis: Westwood, Introd. Mod. Classif. Ins. 2: 65, 1840; Dalla Torre, Cat. Hym. 4: 17, 1898; Szépligeti, Gen. Ins., 22–24: 184, 1904.

Praon longicorne Marshall, Spec. Hym. Europe 5: 536, 1896; ibid., Trans. Ent. Soc. London, 1899: 17, 1899; Mackauer, Beitr. Ent. 11: 103, 1961.

On account of the following aspects the present specimens may be identified with this species.

♀. Dark reddish brown to black. Face, clypeus, mouth parts, prosternum and mesopleurae yellowish brown; palpi, scape, pedicel and first flagellar segment except its apical part yellow. Abdomen brown, lightened apically. Wings hyaline; stigma pale yellow; veins brown. Legs yellow to brownish yellow, with tarsi apically obscured.

Body 2.3–2.9 mm., antennae, 2.0–2.7 mm. in length. Head wider than thorax, smooth and shining, with sparse hairs. Ocelli large, oval; distance between each ocellus as long as its diameter. Antennae filiform, a little shorter than the body, with 19 to 22 segments [19 (2♀♀), 20 (23), 21 (17), 22 (3)]; 1st segment of flagellum 1.4 times as long as the 2nd. Thorax smooth and shining, with dense hairs; notaulices very distinct, deep, converging

posteriorly, and effaced at the posterior end; mesopleurae smooth and shining. Propodeum almost smooth, not areolated. Abdomen lanceolate, much longer than head and thorax together; petiole about 1.5 times as long as wide at spiracles, somewhat rugose, almost parallel-sided, not so strongly as in *volucre*, with some long hairs, the spiracular tubercles being situated at basal third (Fig. 1, b); succeeding tergites smooth and shining, with scattered hairs. Ovipositor sheath (valvulae III) slender, the edge being strongly curved inwardly (Fig. 2, b). Stigma triangular, comparatively short, about 3.5 times as long as broad; first abscissa of cubitus slightly curved, not straight, partly decoloured; recurrent vein distinct or partly decoloured.

♂. Closely resembles the female, from which it differs by the following aspects:—

Body and legs darker in colour. Antennae longer than body, 1.9–3.0 mm. in length, with 21 to 24 segments [21 (1♂), 22 (8), 23 (16), 24 (2)]; first two segments yellow. Body 1.9–2.5 mm. in length.

Specimens examined: 36♀♀, 28♂♂, (16-vii-38), Sapporo, Watanabe leg. All specimens were reared from *Amphorophora indica* infesting *Staphylea pinnata*.

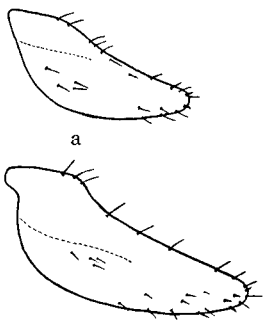

Fig. 2. Ovipositor sheath: a, *Praon volucre*; b, *Praon dorsale*.

Host: *Amphorophora indica* Van der Goot. Furthermore, according to the literature the following species are recorded as hosts in Europe:—*Dactynotus tussilaginis* (Walker) (after Mackauer, 1959) and *Siphonophora chelidonii* Kaltenbach (after Mackauer, 1961).

Distribution: Europe and Japan.

The Japanese form differs from the European one in having the recurrent vein always distinct and the spiracular tubercles of the petiole situated less basally. Having examined a number of specimens we have found that the petiole is variable in form and rugosity. By the way, in 1961 *Praon longicorne* Marshall was already sunken as a synonym of *Praon dorsale* (Haliday) by Mackauer.

In conclusion, the two species mentioned above are readily distinguishable by the following key:—

Key to the species

Thorax of female dark brown; mesopleurae brown. Petiole 1.2 to 1.5 times as long as wide at spiracles, not parallel-sided, the lateral margins being slightly curved inwardly, with spiracular tubercles situated at about basal two-fifths. Edge of ovipositor sheath almost straight. Antennae with 17 to 21 segments in female, and with 20 to 23 in male. . . . . *Praon volucre* (Haliday)

Thorax of female reddish brown; mesopleurae yellowish brown. Petiole 1.5 times as long as wide at spiracles, almost parallel-sided, with spiracular tubercles situated at about basal third. Edge of ovipositor sheath apparently curved inwardly. Antennae with 19 to 22 segments in female, and with 21 to 24 in male. . . . . *Praon dorsale* (Halidy)

Selected literature

Mackauer, M., 1959. Die europäischen Arten der Gattungen *Praon* und *Areopraon* (Hym. Braconidae, Aphidiinae). Ein monographische Revision. Beitr. Ent. 9: 810–865.

Mackauer, M., 1961. Die Typen der Unterfamilie Aphidiinae des Britischen Museums London. Beitr. Ent. 11: 96–154.

Narayanan, E. S., B. R. Subba Rao, A. K. Sharma & P. Starý, 1962. Revision of "A Catalogue of the known Species of the World belonging to the Subfamily Aphidiinae" (Hymenoptera: Braconidae). Beitr. Ent. 12: 662–720.

A NOTE ON PAUESIA KONOI (WATANABE) (HYMENOPTERA : APHIDIIDAE)

By CHIHISA WATANABE and HAJIMU TAKADA

As a supplement to the original description of *Aphidius konoi* Watanabe a brief note will be given below.

Pauesia konoi (Watanabe)

Aphidius kônoi Watanabe, Ins. Mats. 15: 106, ♂, 1941.

Paraphidius kônoi: Starý, Acta Faun. Ent. Mus. Nat. Pragae 6: 35, 1960.

Pauesia kônoi: Narayanan et al., Beitr. Ent. 12: 691, 1962.

Specimens examined: 4♂♂ (types of *Aphidius konoi*); 5♀♀, 1♂, 23-v-62, Yuni, Hokkaido, Watanabe leg.; 30♀♀, 20♂♂, 24-v-62, Yuni, Takada leg.; 13♀♀, 7♂♂, 18-v-63, 4♀♀, 2♂♂, 25-v-63, Naganuma, Hokkaido, Takada leg. All specimens were reared from *Cinara longipennis* (Matsumura) living in *Abies sachalinensis*.

♀. The female of this species was not previously known: it agrees closely with the original description of the male, apart from usual sexual differences, except as follows:—

Antennae with 27–29 segments [27 (15♀♀), 28 (33), 29 (2)], being 2.8–4.4 mm. in length. Petiole more widened towards the apex than in the male. Length of body, 4.2–5.8 mm.

♂. In the male specimens examined the antennae with 29–31 segments [29 (6♂♂), 30 (17), 31 (4)], being 3.5–4.8 mm. in length. Length of body, 3.1–4.7 mm.

As the senior author already pointed out in 1941 the present species is closely related to *Pauesia grossa* (Fahringer, 1937), a parasite of *Todolachnus abieticola* (Cholodkovsky) in Europe (Austria and Czechoslovakia). Having compared the specimens examend with Starý's redescription of *P. grossa* with figures (Acta Faun. Ent. Mus. Nat. Pragae 6: 13–14, figs. 1, 22, 45 & 50, 1960), we have corroborated that the two forms are different full species. The present species is immediately distinguishable therefrom by the following aspects:— (1) Head black, darker than in *grossa*. (2) Scape and pedicel black. (3) Prothorax black. Mesoscutum wholly black, being not yellow brown with a dark longitudinal spot on each lobe as in *grossa*. (4) Abdomen black ; 2nd tergite with a broad brown band at base. (5) Metacarp shorter than pterostigma. (6) Central, pentagonal areola of propodeum smaller than in *grossa*, the rami of central carina not reaching about spiracles. (7) Petiole stouter than in *grossa*. The female genitalia of this species, however, are very similar to the figure of those of *grossa* drawn by Starý (1960), and no special differences can be found between them.