

## Descriptions of Three New Ichneumonflies Parasitic on Lycaenid Butterflies in Japan (Hymenoptera: Ichneumonidae)

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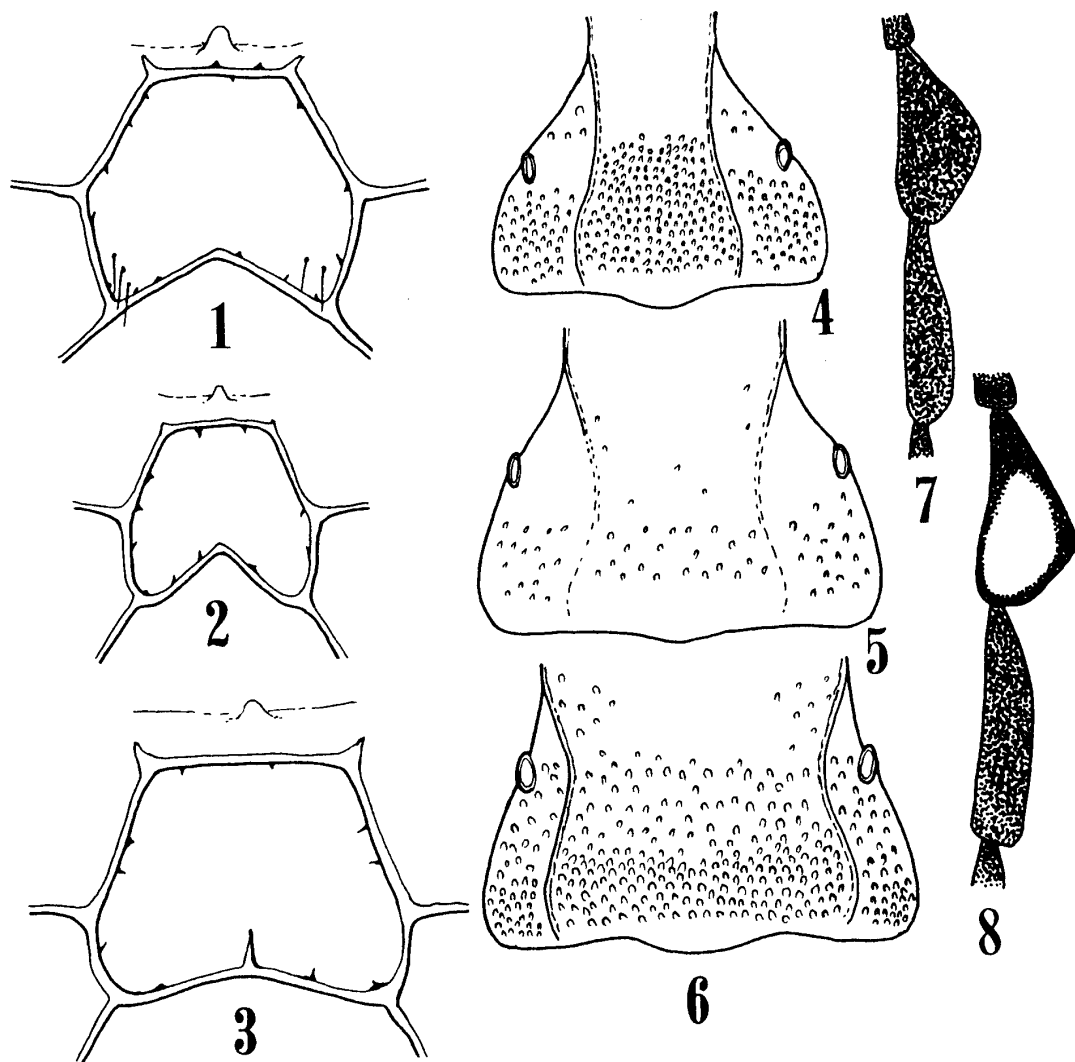
### Introduction

On the basis of material reared from Lycaenid butterflies, *Strymonidia w-album* Knoch, *S. iyonis* Ota et Kusunoki, and *Celastrina argiolus* Linnaeus in Japan by Dr. H. Tanaka, Messrs. M. Nanba, I. Ohtsuka, and K. Watanabe three new species of the Ichneumonidae are described in the following pages. The holotypes of the new species will be preserved in the collection of the Entomological Institute of the Hokkaido University, Sapporo, Japan.

#### *Barichneumon tanakai* sp. nov.

(Figs. 1, 4, 7, 9 & 12)

♀. Face subpolished, distinctly and densely punctate with trans-striae on upper central portion, about 1.7 times as wide as high at level of lower margin of antennal socket; upper transverse ridge of face distinct, with a very weak median tubercle; clypeus about 2.4 times as wide as high, polished, almost flat, weakly convex on dorsomedian portion, with large, rather dense punctures, the punctures very sparser ventromedially, its apical margin blunt, truncate, slightly convex medially; malar space about as long as basal width of mandible; frons almost flat, subpolished, weakly and densely punctate, with blackish dense hairs; antennal scrobe polished and bare; distance between lateral ocelli and eyes as long as diameter of an ocellus; 2nd segment of maxillary palpus weakly swollen, 2.3 times as long as wide and 5/6 as long as the 3rd (Fig. 7); 3rd and following segments of maxillary palpus not swollen. Flagellum 30-segmented; 1st flagellar segment 2.0 times as long as wide at apex and 1.2 times as long as the 2nd. Pronotum rather strongly and densely punctate, rugoso-punctate ventrally; mesoscutum strongly and densely punctate, the punctures weaker and closer anteriorly, and stronger and sparser posteriorly; scutellum short, weakly convex, moderately strongly and sparsely punctate, longitudinally striate on apical 2/7, its lateral carina distinct, extending to basal 5/9; mesopleurum almost entirely strongly and densely punctate, striate-punctate posteroventrally; speculum polished, smooth, with weak, sparse, punctures on dorsal portion; metapleurum coarsely punctate; juxtacoxal area polished, with large, shallow sparse punctures. Propodeum with areola almost entirely impunctate, with a few hairs at posterolateral corner, 0.9 times as long as wide at costula, receiving costula at the middle (Fig. 1); 1st and 2nd lateral areas strongly and rather densely punctate, with a few trans-striae on posterior portion of 2nd lateral area; petiolar area trans-striate, reticulate-rugose partly; 3rd lateral area, 1st pleural area except for basal 1/2, and 2nd pleural area strongly and transversely striate; basal 1/2 of 1st

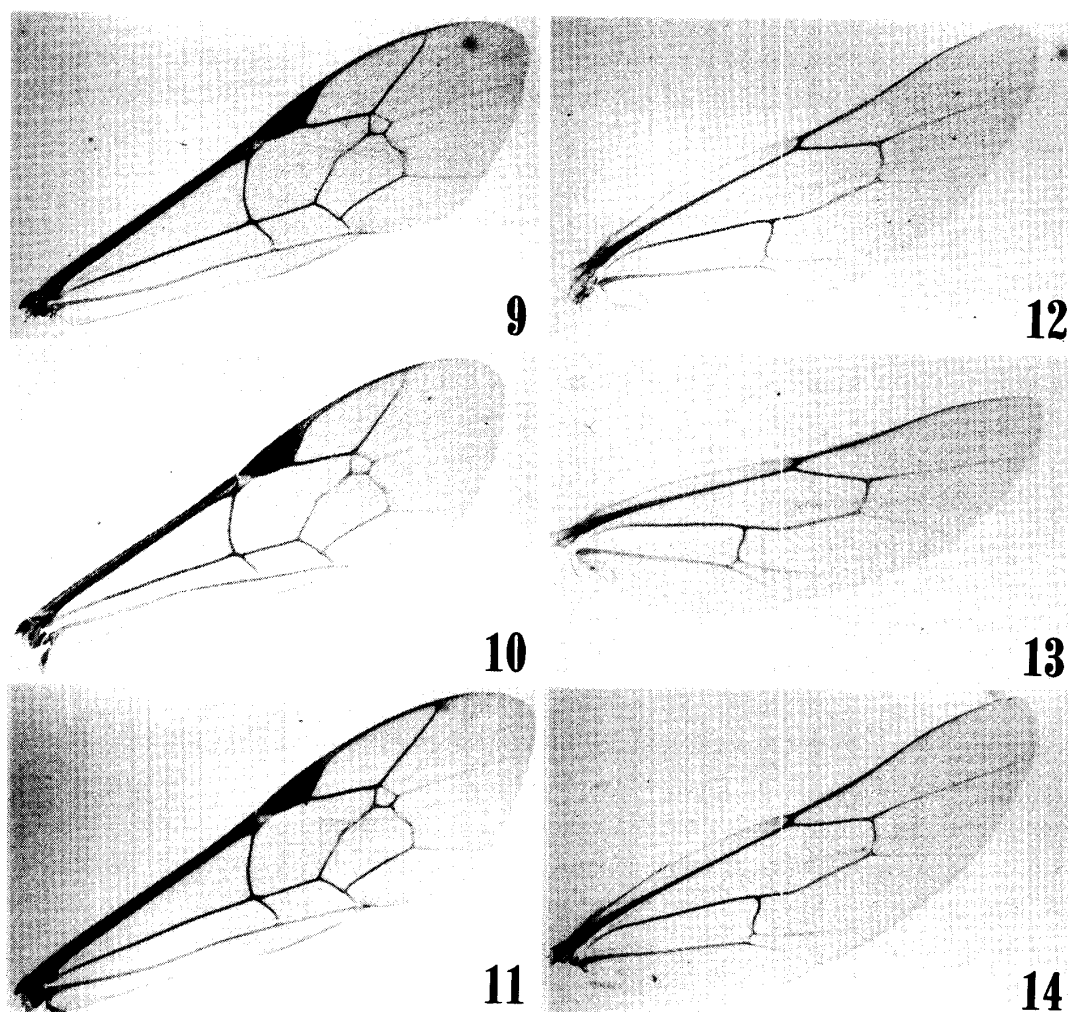


Figs. 1 - 3. Areola: 1, *Barichneumon tanakai* sp. nov., ♀; 2, *B. parvulus* sp. nov., ♀; 3, *B. strymonidia* sp. nov., ♀.

Figs. 4 - 6. Punctuation and carination of postpetiole in dorsal view: 4, *B. tanakai* sp. nov., ♀; 5, *B. parvulus* sp. nov., ♀; 6, *B. strymonidia* sp. nov., ♀.

Figs. 7 - 8. 2nd and 3rd segments of maxillary palpus: 7, *B. tanakai* sp. nov., ♀; 8, *B. strymonidia* sp. nov., ♀.

pleural area densely and weakly punctate; propodeal spiracle elliptic, 5.8 times as long as wide. Venation of wings Figs. 9 and 12; areolet pointed at front side, receiving 2nd recurrent vein at the middle; stigma 3.7 times as long as wide, with radius emitting from basal 1/2; nervellus rather strongly reclinous, weakly sinuate near the middle, intercepted at lower 2/7. Leg with hind femur 3.6 times as long as wide in lateral view; longer spur of hind tibia about 1.3 times as long as its shorter spur; basitarsus of hind tibia 2.3 times as long as the 2nd. Abdomen with 1st tergite 1.6 times as long as wide at apex; petiole polished, flat on dorsal side, its dorsolateral portion rather sparsely haired, vertically striate on lateral side; postpetiole strongly and densely punctate, 3/7 as long as its apical width (Fig. 4); median dorsal carinae of 1st tergite distinct wholly (Fig. 4); 2nd tergite 3/4 as long as wide at apex and about 1.5 times as long as the 3rd; thyridium wide, the space between the thyridia 1.3 times as long as a thyridium; punctuation of 2nd and 3rd tergites dense and strong, the former a



Figs. 9-14. Fore (9-11) and hind (12-14) wings: 9 and 12, *Barichneumon tanakai* sp. nov., ♀; 10 and 13, *B. parvulus* sp. nov., ♀; 11 and 14, *B. strymonidiae* sp. nov., ♀.

little stronger. Ovipositor sheath very short, about 1/2 as long as hind tibia.

Black. Face, clypeus and lower part of temple slightly tinged with dark brown; palpi yellowish brown to infusate, paler apically (Fig.7); frontal orbit narrowly yellowish brown. Flagellum fuscous to infusate, paler apicoventrally, the apicodorsal 1/2 of 7th, and dorsal and lateral sides of 8th to 11th flagellar segments white. Tegula weakly tinged with dark brown. Legs fuscous to infusate, the front leg and middle tibia and tarsus a little paler. Abdomen with 6th and following tergites white dorsally. Wings subhyaline; stigma infusate.

Length: Body 8.5mm., forewing 6.4mm.

♂. Unknown.

Holotype (♀): Miyazaki, Kyushu, 19-v-1966, emerged from pupa of *Celastrina argiolus* Linnaeus on *Castanopsis sieboldii* Hatusima by H. Tanaka.

Host: *Celastrina argiolus* Linnaeus (Lycaenidae, Lep.).

Distribution: Japan (Kyushu).

This species is very similar to the following species, *B. parvulus* sp. nov., but it is distinguished from the latter by the white frontal orbit, the strong costula, the postpetiole which is strongly and

entirely punctate, and the petiole with strong and vertical striae on the lateral side. Furthermore in general appearance and coloration this species is closely related to the Japanese *B. vexator* (Smith, 1874)<sup>1-3)</sup>, but it differs from the latter by the entirely black scutellum, the entirely white frontal orbit, and the bare antennal scrobe.

***Barichneumon parvulus* sp. nov.**

(Figs. 2, 5, 10 & 13)

♀. Face about 1.6 times as wide as high at level of lower margin of antennal socket; punctuation and striation of face similar to the preceding species, but the punctures a little weaker and sparser than in the preceding species; upper transverse ridge of face indistinct, with a weak median tubercle; clypeus about 2.5 times as wide as high, polished, almost entirely flat, very sparsely punctate, with a median large impunctate area, its apical margin blunt, slightly concave centrally; malar space about 1.2 times as long as basal width of mandible; frons slightly convex, mat, with dense and shallow punctures with blackish hairs, the punctures a little sparser than in the preceding species; antennal scrobe polished, bare, larger than in the preceding species; distance between lateral ocelli and eyes about 1.3 times as long as diameter of an ocellus; 2nd segment of maxillary palpus weakly swollen, 2.1 times as long as wide and 5/6 as long as the 3rd; 3rd and following segments of maxillary palpus slender. Flagellum 29-segmented; 1st flagellar segment 2.4 times as long as wide at apex and about 1.3 times as long as the 2nd. Pronotum weakly rugoso-punctate, the punctures a little stronger than in the preceding species; mesoscutum densely and strongly punctate, the punctures a little closer and weaker anteriorly, a little stronger and sparser posteriorly; scutellum short, weakly convex, weakly and sparsely punctate, longitudinally striate on about apical 1/3, its lateral carina weak, extending to basal 4/7; mesopleurum strongly and densely punctate almost entirely, striate-punctate posteroventrally; speculum polished, smooth, with a few punctures on dorsal portion; metapleurum coarsely punctate; juxtacoxal area polished, with shallow and large punctures. Propodeum with areola polished, impunctate, without hairs, about 5/6 as long as wide at costula, receiving costula at apical 4/9 (Fig. 2); costula weak, obsolete partly; 1st and 2nd lateral areas rather sparsely and strongly punctate, with bare area along the median longitudinal carina and costula; 1st pleural area weakly and rather densely punctate on anterior 1/2, coarsely and vertically striate on posterior 1/2; petiolar area weakly rugoso-punctate; 3rd lateral and 2nd pleural areas sparsely trans-striate; propodeal spiracle elliptic, 6.7 times as long as wide. Venation of wings as in Figs. 10 and 13; areolet pointed at front side, receiving 2nd recurrent vein at the middle; stigma 3.5 times as long as wide, with radius emitting from basal 5/9; nervellus weakly reclivous, weakly sinuate near the middle, intercepted at lower 1/4. Leg with hind femur 3.5 times as long as wide in lateral view; longer spur of hind tibia about 1.2 times as long as the shorter spur; basitarsus of hind tibia 2.5 times as long as the 2nd one. Abdomen with 1st tergite 1.7 times as long as wide at apex; petiole polished, weakly and very sparsely punctate on lateral portion of dorsal side, almost entirely bare on lateral side, sometimes with a few short and vertical striae on the median portion; postpetiole 3/8 as long as its apical width, virtually bare on basal 1/3, rather sparsely and strongly punctate on posterior 2/3 (Fig. 5); median dorsal carinae of 1st tergite weak, obsolete on postpetiole (Fig. 5); 2nd tergite 3/5 as long as wide at apex and 1.7 times as long as the 3rd; thyridium wide, the space between the thyridia 1.3 times as long as a thyridium; punctuation of 2nd and 3rd tergites dense and distinct, the latter a little weaker than the former. Ovipositor sheath very short, about 1/5 as long as hind tibia.

Black. Palpi fuscous to infusate, paler apically. Flagellum dark reddish brown to infusate, paler apicoventrally, dorsal and lateral sides of 8th to 10th segments and basodorsal 2/3 of 11th segment white. Tegula blackish, dirty yellowish brown apically. Legs infusate to black, the front and middle tibiae and tarsi a little paler. Abdomen with dorsoapical 1/2 of 6th tergite, 7th except at extreme base and lateral side, and dorsal side of 8th white. Wings subhyaline; stigma fuscous.

Length: Body 6.9mm., forewing 5.1mm.

♂. Unknown.

Holotype (♀): Nichinan, Shitsuki, Okayama-ken, 3-vi-1966, emerged from pupa of *Strymonidia iyonis* Ota et Kusunoki on *Prunus saliciana* Lindl. by M. Nanba.

Host: *Strymonidia iyonis* Ota et Kusunoki (Lycaenidae, Lep.).

Distribution: Japan (Honshu).

This species is very closely related to the preceding species, *B. tanakai* sp. nov., but differs from it by the entirely black frons, the weak costula, the 2nd lateral area of the propodeum without striae, the postpetiole with a impunctate area and the lateral side of petiole which is indistinctly striate on the median portion.

***Barichneumon strymonidia* sp. nov.**

(Figs. 3, 6, 8, 11 & 14)

♀. Face subpolished, distinctly and densely punctate, with weak trans-striae on upper dorsal portion, 1.7–1.8 times as wide as high at level of lower margin of antennal socket; upper transverse ridge of face indistinct, with a weak median tubercle; clypeus 2.2–2.3 times as wide as high, almost entirely flat, slightly convex on the dorsomedian portion, strongly and rather sparsely punctate dorsally, strongly and very sparsely punctate ventrally, its apical margin blunt, slightly concave; malar space about 1.2 times as long as basal width of mandible; frons flat, distinctly and densely punctate, with blackish hairs; antennal scrobe large, polished, bare; distance between lateral ocelli and eyes 0.8–1.0 times as long as diameter of an ocellus; 2nd segment of maxillary palpus swollen, 2.1 times as long as wide and 5/6 as long as the 3rd (Fig. 8); 3rd and following segments of maxillary palpus slender. Flagellum 31-segmented; 1st flagellar segment 2.0–2.2 times as long as wide at apex and 1.2–1.3 times as long as the 2nd. Pronotum rather weakly and densely punctate almost entirely, without striae; mesonotum strongly and densely punctate, the punctures weaker and closer anteriorly and stronger and sparser posteriorly; scutellum short, weakly convex, weakly and sparsely punctate, the punctures denser posteriorly, without longitudinal striae on posterior portion, its lateral carina distinct, present on basal 1/2–3/5; mesopleurum strongly and rather densely punctate, striate-punctate on posteroventral corner; speculum polished, smooth, with a few punctures on dorsal portion; metapleurum coarsely and rather densely punctate, rugoso-punctate posteriorly; juxtacoxal area polished, with large and sparse punctures. Propodeum with areola polished, bare, 5/7–5/6 as long as wide at costula, receiving costula at apical 3/8–3/7 (Fig. 3); 1st and 2nd lateral areas strongly and rather densely punctate, bare along median longitudinal carina on 1st lateral area; petiolar area strongly and rather densely punctate, striate or reticulate on anterior portion; 1st pleural area strongly and densely punctate on anterior 1/2, vertically striate on posterior 1/2; 2nd pleural and 3rd lateral areas strongly and transversely striate; propodeal spiracle elliptic, 3.4–3.5 times as long as wide. Venation of wings as in Figs. 11 and 14; areolet not pointed at front side, receiving 2nd recurrent vein at basal 5/9–3/5; stigma 3.7 times as long as wide, with radius emitting from basal 1/2; nervellus rather strongly reclivous, weakly sinuate near the middle,

intercepted at lower  $1/5-2/7$ . Leg with hind femur about 3.6 times as long as wide in lateral view; longer spur of hind tibia 1.2–1.3 times as long as the shorter one; basitarsus of hind tibia 2.2–2.3 times as long as the 2nd one. Abdomen with 1st tergite 1.6–1.7 times as long as wide at apex; petiole polished, almost flat and shallowly and sparsely punctate with a median impunctate area on dorsal side, strongly and vertically striate on lateral side; postpetiole  $4/9$  as long as wide at apex, strongly and densely punctate (Fig. 6); median dorsal carinae of 1st tergite strong wholly (Fig. 6); 2nd tergite  $2/3-3/4$  as long as wide at apex and about 1.4 times as long as the 3rd, strongly and densely punctate, the punctures a little weaker posteriorly; thyridium wide, the space between the thyridia 1.2–1.3 times as long as a thyridium; 3rd tergite weakly and densely punctate, the punctures stronger anteriorly; 8th tergite not visible. Ovipositor sheath very short, about  $1/5$  as long as hind tibia.

Black. Clypeus slightly tinged with dark brown; palpi fuscous to infusate, paler apically, the 2nd segment of maxillary palpus with an apical large whitish marking on dorsal side (Fig. 8); frontal orbit with a narrow whitish marking on dorsal  $1/2$ . Flagellum dark brown to black, darker basally; 7th or 8th to 11th or 12th flagellar segments white dorsally and laterally. Tegula dark brown to blackish, paler apically. Legs blackish, the front tibia and tarsus and middle tarsus fuscous to infusate. Dorsal side of 6th and 7th tergite white. Wings hyaline; stigma infusate.

Length: Body 9.4–10.9 mm., forewing 7.1–7.7 mm.

♂. Unknown.

Holotype (♀): Umenokizuru, Mizukami-mura, Kumamoto-ken, 6–vi–1982, emerged from pupa of *Strymonidia w-album* Knoch on *Ulmus japonica* Sarg. by I. Ohtsuka. Paratype: 1 ♀, Ohara, Kusama, Niimi-shi, Okayama-ken, 19–vi–1985, emerged from pupa of *S. w-album* Knoch on *Prunus saliciana* Lindl. by K. Watanabe.

Host: *Strymonidia w-album* Knoch (Lycaenidae, Lep.).

Distribution: Japan (Honshu, Kyushu).

This species is similar to the preceding two species, but it is distinguished from the latter by the large white marking of the maxillary palpus, the incomplete white marking of the frontal orbit, the scutellum without longitudinal striae, and the areolet which are not pointed on the front side and receiving 2nd recurrent vein at the basal  $5/9-3/5$ .

### Summary

Three new species, *Barichneumon tanakai*, *B. parvulus*, *B. strymonidiae* are described from Japan. These three species are solitary internal parasites of pupae of *Celastrina argiolus* Linnaeus, *Strymonidia iyonis* Ota et Kusunoki, and *S. w-album* Knoch, respectively.

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