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Descriptions of Japanese Coleophoridae II

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In the first part of this series of studies (BALDIZZONE and OKU, 1988), we have described four new *Coleophora* species from Japan. We take this occasion to add further four new species of the genus to the Japanese fauna. Judging from the fact that the valva is directly set on the sacculus in the male genitalia, these new forms may be included in the 30th species group of *Coleophora* defined by TOLL (1952). The type specimens will be deposited in the collections of the Entomological Institute, Hokkaido University, Sapporo, Japan (EHU), the Smithsonian Institution, U.S. National Museum, Washington D.C., USA (USNM), and the senior author (BLDZ).

We thank Drs. Donald R. DAVIS and R. W. HODGES for their kindness in provision of material from the ISSIKI collection, Smithsonian Institution.

Coleophora enkomiella n. sp.

(Figs. 1–7 & 27)

Expanse, about 11 mm. Male. Antenna simple, brownish-ochreous, paler towards tip; darker annulation of flagellum often indistinct in apical portion. Labial palpus ochreous-brown, strongly tinged with grey; median joint edged with ochreous-white above and beneath, about 1.5 times as long as diameter of eye, with a very short ventro-apical tuft; terminal joint slightly longer than a half of median joint. Head and thorax brownish-ochreous. Fore wing moderate, ochreous-brown in ground, more or less darker towards base, occasionally with irregular mottlings of lighter colour, and without darker dots and whitish streaks; cilia brownish-grey. Hind wing and its cilia brownish-grey. Legs ochreous-brown, with greyish-brown median streak along hind tibia externally. Abdomen light greyish-ochreous.

Female. General colour much paler than in male; antennal annulation almost faded away; median joint of labial palpus about 2 times as long as diameter of eye.

Male genitalia (Figs. 1, 2 & 7) : Gnathos large and globular; tegumen rather wide, 8-shaped with characteristically sinuate lateral margins; transtilla strong, and inverted V-shaped; valva rather small and narrow, somewhat dilated apically; valvula

merely indicated by a slight thickening at base of valva; sacculus large, elongate subtriangular, heavily sclerotized, with a semicircular dorso-basal concavation and a ventral thickening not reaching blunt terminal angle; aedoeagus (Fig. 2) strong, asymmetrical, one of the prongs being longer, curved apically, and set with a small subapical tooth, and the other much shorter and conic at top; cornutus (Fig. 7) of a stout thorn.

Female genitalia (Figs. 4–6): Papilla analis membranous, densely covered with fine spicules (Fig. 6); apophysis posterioris somewhat more than 2 times as long as apophysis anterioris; subgenital plate large, suboblong, much wider than long, with a row of strong setae along its caudal margin; another transverse row of strong setae present in membranous part just behind subgenital plate; ostium bursae of kidney-shape dividing caudal edge of subgenital plate at middle; infundibulum tubular, long and wide, weakly sclerotized, followed by an isolated sclerite at its distal end; ductus bursae narrow, convoluted initially and again at middle, broadened towards globular bursa copulatrix, and transparent except for a crescent chitinization at median convolution; signum small, short horn-like, dilated at base in a cotyledonous shape.

Abdominal tergites (Fig. 3): Caudal rib of the 1st tergite having a proximal fold weakened at middle and a distal fold separated into widely remote lateral lobes; paired patches of spinelets narrow and elongate, composed of about 10 setae in the 1st tergite and about 20 or more in the following tergites.

Larval case (Fig. 27): Slender tubular-type with trilobed anal end, light brownish-ochreous, longitudinally striped with brownish-grey to beyond middle; mouth 3.

Holotype: ♂, Mt. Sodeyama, Iwate Pref., Honshu (larva, 20 IX, 1981; emerg., 1 VI, 1982), T. OKU, from *Artemisia princeps* (EHU).

Paratypes: Honshu; Iwate Pref. — 1♀ (emerg., 5 VI, 1979) (EHU) and 5♂ 1♀ (larva, 20 IX, 1981; emerg., 31 V – 1 VI, 1982) (1♀, BLDZ; others, EHU) same locality and host as holotype, T. OKU; 1♂ (emerg., 14 VI, 1971) Sotoyama, T. OKU, from *A. montana* (EHU); 1♂ (emerg., 1 VI, 1967) (BLDZ) and 2♀ (larva, X, 1974; emerg., 2 VI, 1975) (EHU) Morioka, T. OKU, from *A. princeps*; Tochigi Pref. — 1♂ (6 VIII, 1934) Honshu-Yumoto, S. ISSIKI (USNM).

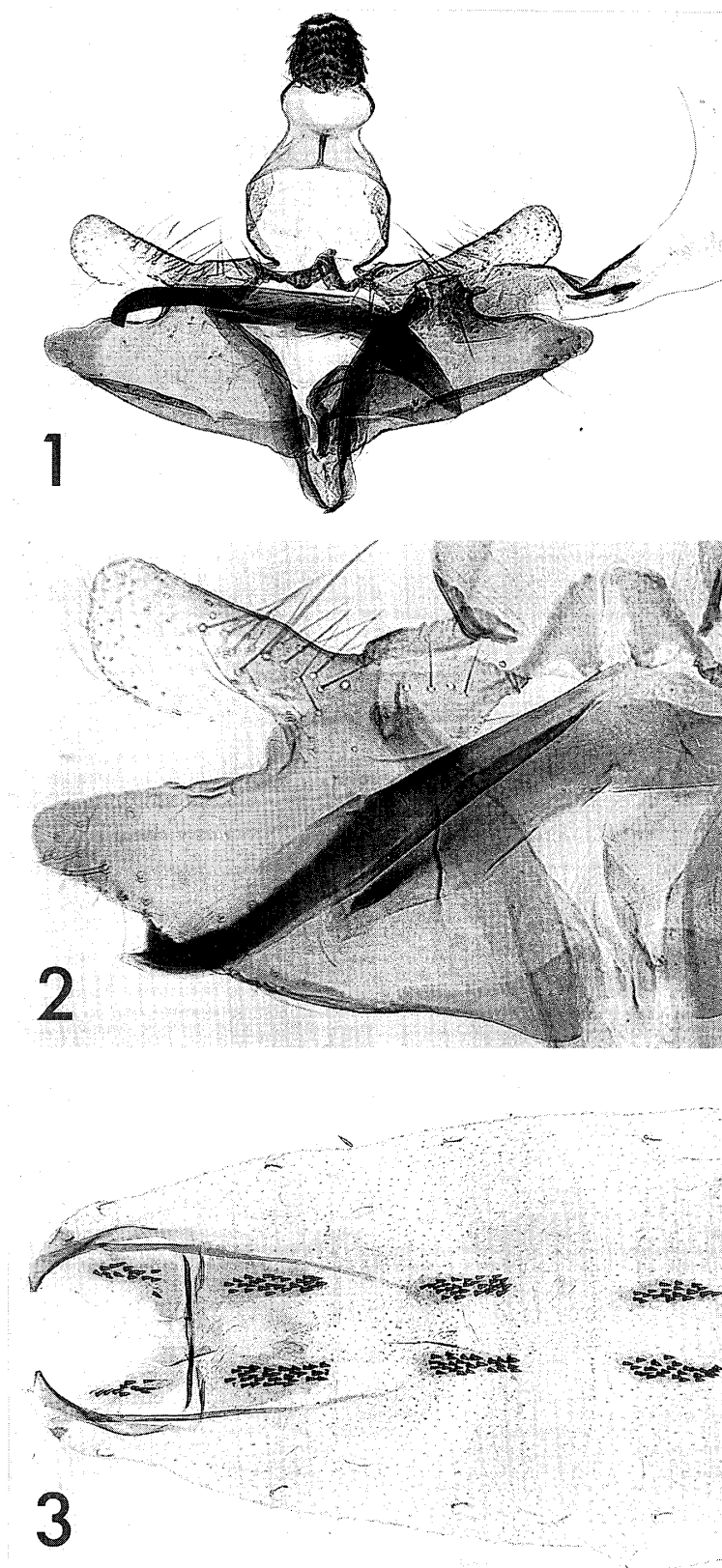
Larval cases were also obtained at Bibai and Sapporo, Hokkaido, from *A. montana*, and at Nagoya, Nachi and Tottori, Honshu, from *A. princeps*.

Host plant: *Artemisia princeps* and *A. montana*.

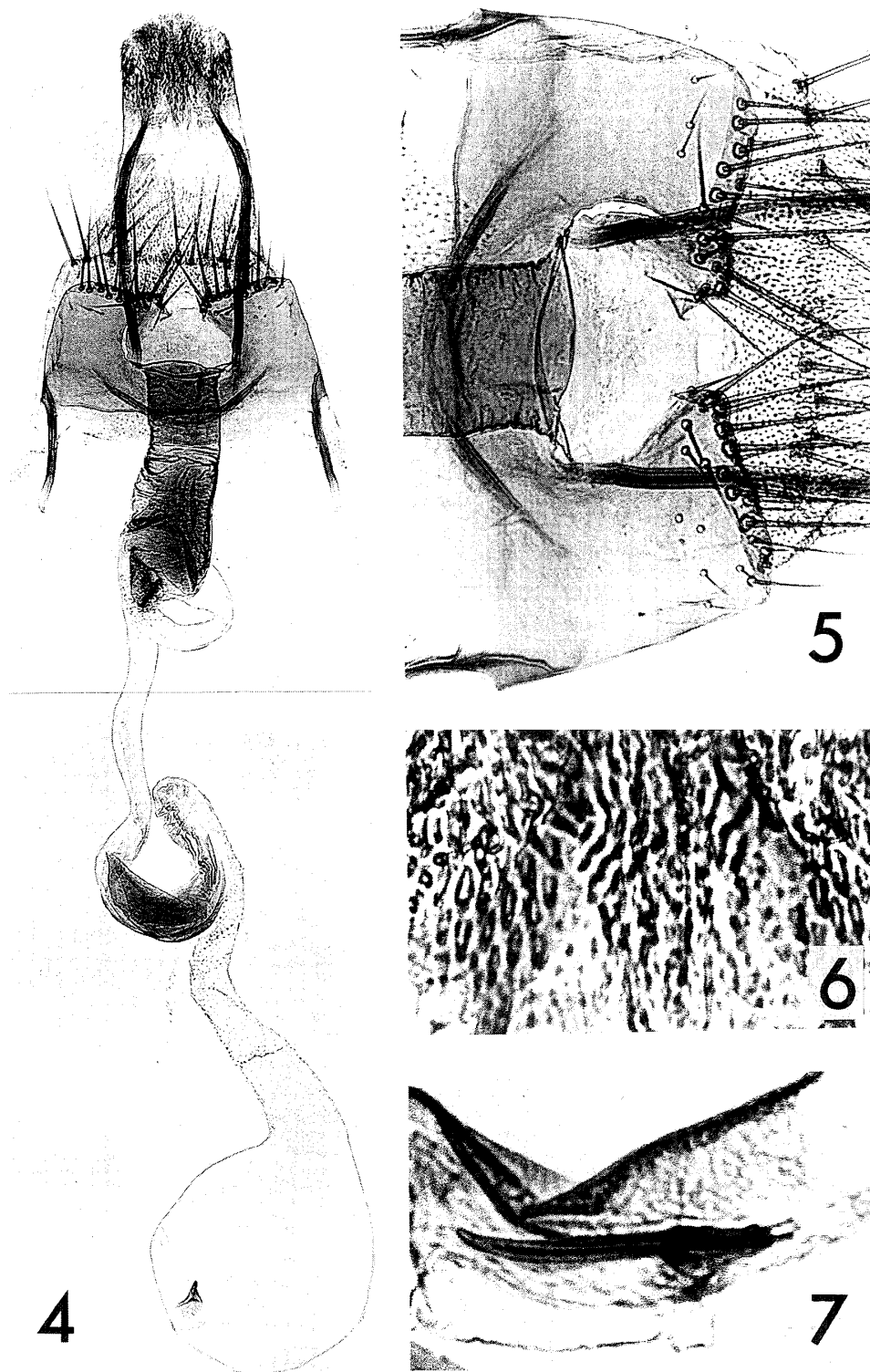
Distribution: Hokkaido and Honshu.

Remarks. The present species is a peculiar form in the genus in having characteristic papilla analis of female genitalia, which is covered with fine spicules instead of ordinary thin setae. The 8-shaped tegumen of male genitalia is also helpful for its distinction from other known species of the same genus.

Larvae make blotch mines on *Artemisia*-leaves in autumn, and overwinter at the full-grown stage. They give rise to adults during highsummer in the field. Although the larval case of *C. enkomiella* n. sp. is similar to those of *C. yomogiella* OKU and *C. kurokoi* OKU, most common *Artemisia*-feeders in Japan (OKU, 1974), the former is distinguished from the latter two by the more slender shape and the absence of basal coverage with felt.



Figs. 1-3. *Coleophora enkomiella* n. sp. 1. Male, genitalia in caudal view (PG-Bldz 8342) ; 2. *Ditto*, clasper and aedeagus enlarged (PG-Bldz 6858) ; 3. *Ditto*, anterior segments of abdomen (PG-Bldz 8342).



Figs. 4-7. *Coleophora enkomiella* n. sp. 4. Female, genitalia in ventral view (PG-Bldz 8343) ; 5. *Ditto*, subgenital plate enlarged. 6. *Ditto*, surface of papilla analis enlarged ; 7. Male, cornutus enlarged (PG-Bldz 8342).

Coleophora elodella n. sp.

(figs. 8–13)

Expanse, 9.5–10.5 mm. Antenna simple, ochreous-white, without darker annulation. Labial palpus ochreous-white; median joint faintly streaked with ochreous-brown externally, about 1.5 times as long as diameter of eye, its ventro-apical tuft long extending forward beyond middle of terminal joint, which is slightly shorter than median joint. Head and thorax brownish-ochreous, tinged with white on sides. Fore wing moderate; costa arched towards apex more strongly in male; colour brownish-ochreous in ground more or less scattered with deep brown or dark reddish-brown scales, which constitute isolated dots or irregular strigae especially in costo-apical area; creamy-white streaks along wing margin and veins, sharp and rather wide; cilia light cinereous-brown. Hind wing brownish-grey; cilia cinereous-brown. Legs ochreous-white, with dark reddish-brown median streak along hind tibia externally.

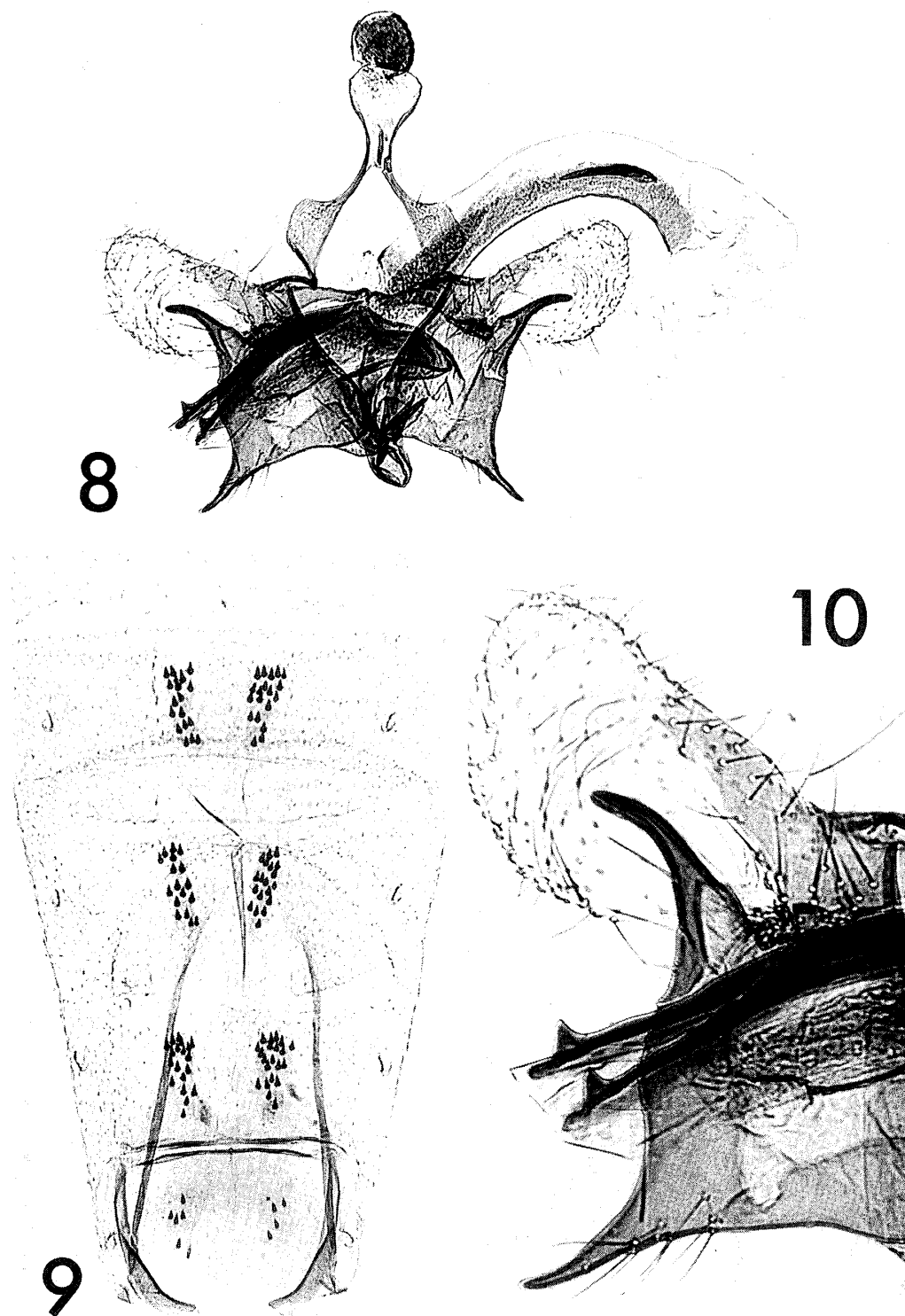
Male genitalia (Figs. 8, 10 & 13): Gnathos globular; tegumen strongly constricted just above middle, the ventral arms being extremely expanded out in lower half; transtilla rather narrow, nearly horizontal; valva large, dilated apically with rounded ventro-terminal margin; valvula small but strong, subtriangular, and bristled; sacculus wide, suboblong, with a pair of horn-like terminal projections, of which upper one is subascending from dorso-terminal angle of sacculus and lower one obliquely declining from ventro-terminal angle; aedoeagus strong, slender and arcuate, its prongs being identical in length and shape with one another, set with an upper subapical tooth on each of them (Fig. 10); cornuti (Fig. 13) 4 or 5 in number, different in length, and forming a compact bundle.

Female genitalia (Figs. 11 & 12): Papilla analis very narrow and elongate; apophysis posterioris about 1.5 times as long as apophysis anterioris; subgenital plate semi-trapezoidal, slightly wider than long, with a caudal concavity at middle, around which short setae are scattered; ostium bursae situated at middle of subgenital plate, semi-square in shape, with a pair of small internal knobs close by its caudal angle; infundibulum (Fig. 12) heavily sclerotized, wide tubular, about 2 times as long as wide; ductus bursae spiculate at its initial 2/5, and then transparent apart from a convolution at middle, where it is densely dotted with darkened spinelets; bursa copulatrix ovate; signum short horn-like, with very wide basal dilation.

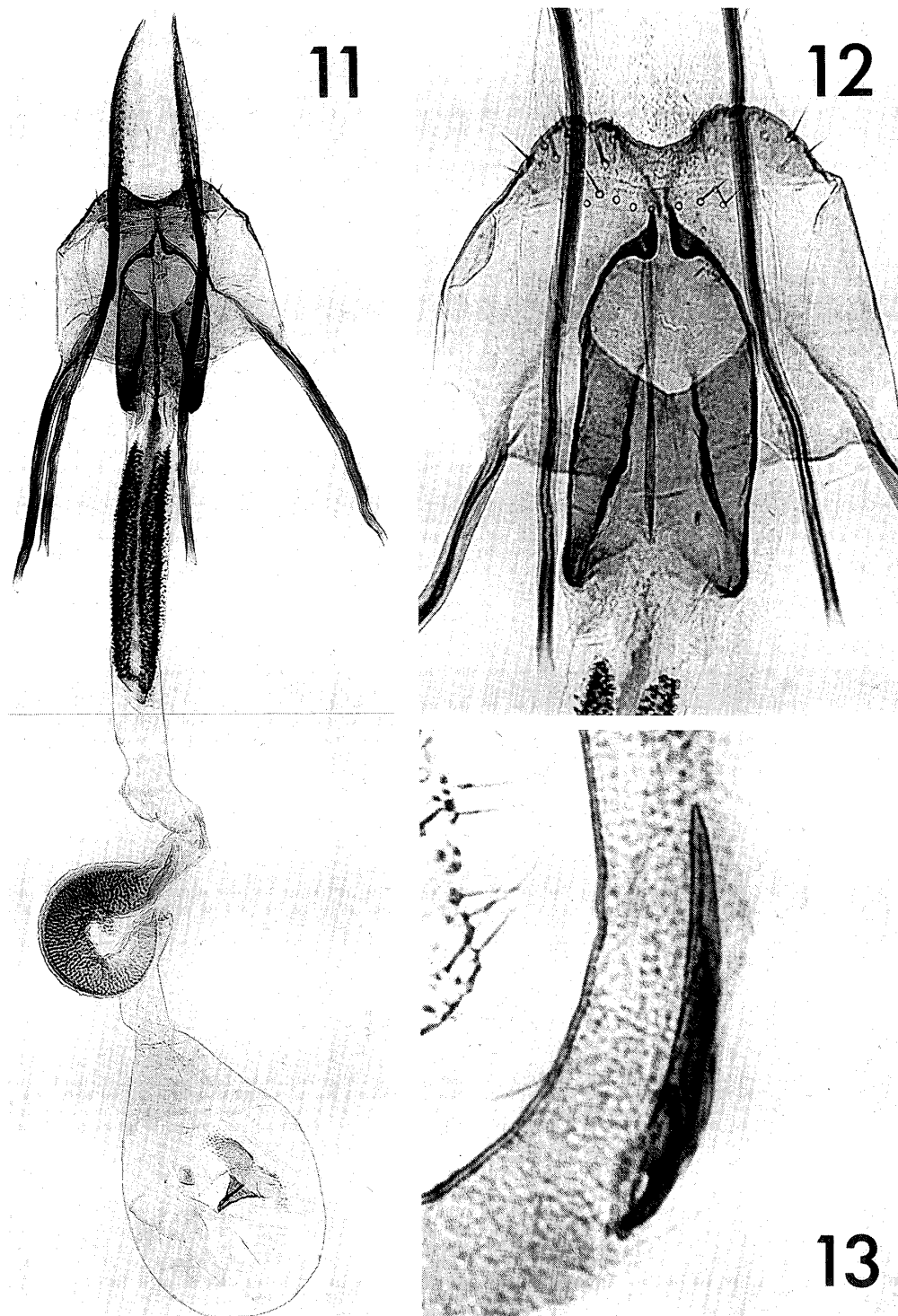
Abdominal tergites (Fig. 9): Caudal rib of the 1st tergite having narrow folds, of which distal one is weakened at middle; paired patches of spinelets longer than wide, rather irregular in shape, composed of several setae in the 1st tergite and of about 20 setae in the following tergites.

Holotype: ♂, Sapporo, Hokkaido (15 VI, 1961), T. OKU (EHU).

Paratypes: Honshu; Aomori Pref. — 1♂ (31 VII, 1970) Sukayu, Hakkodasan, 1♀ (30 VIII, 1966) Yakeyama, Towada, and 1♀ (23 VIII, 1963) Ohanabe, Towada, T. OKU (EHU); Iwate Pref. — 1♂ (24 VI, 1965), 1♀ (20 VIII, 1965) 1♀ (31 VII, 1966), 1♂1♀ (10 VII, 1967), and 1♀ (20 VI, 1968) Kuriyagawa, Morioka, T. OKU (EHU); 1♂ (20 VI, 1965) and 2♂1♀ (4 VIII, 1966) Dake, Mt. Hayachine, T. OKU (EHU); 4♂3♀ (4 VII, 1965) (1♂,



Figs. 8 – 10. *Coleophora elodella* n. sp. 8. Male, genitalia in caudal view (PG-Bldz 8340) ;
9. *Ditto*, clasper and aedeagus enlarged ; 10. *Ditto*, anterior segments of
abdomen.



Figs. 11 – 13. *Coleophora elodella* n. sp. 11. Female, genitalia in ventral view (PG-Bldz 8341) ; 12. *Ditto*, subgenital plate and infundibulum enlarged (PG-Bldz 6965) ; 13. Male, cornuti enlarged (PG-Bldz 8340).

BLDZ ; others, EHU) and 5♂3♀ (11 VIII, 1965) (1♂1♀, BLDZ ; others, EHU) Kuzakai, T. OKU ; Osaka Pref. — 2♀ (early VIII, 1932) Osaka, S. ISSIKI (BLDZ & USNM).

Host plant : Unknown.

Distribution : Hokkaido and Honshu.

Remarks. This new species belongs to the *sylvaticella*-section of the 30th species group. It can be separated from *C. sylvaticella* WOOD by the following characters : in male, ventro-terminal projection of sacculus more slender and declining, and dorso-terminal projection shorter and not so vertical ; in female, anterior end of infundibulum not long bilobed.

Adults of *C. elodella* n. sp. are widely found in humid places where *Juncus* and *Carex* predominate. They are found from June to September without interruption. This form might be a *Juncus*-feeder, as is the case of *C. sylvaticella* in Europe.

Coleophora kudrosella n. sp.

(Figs. 14 – 19)

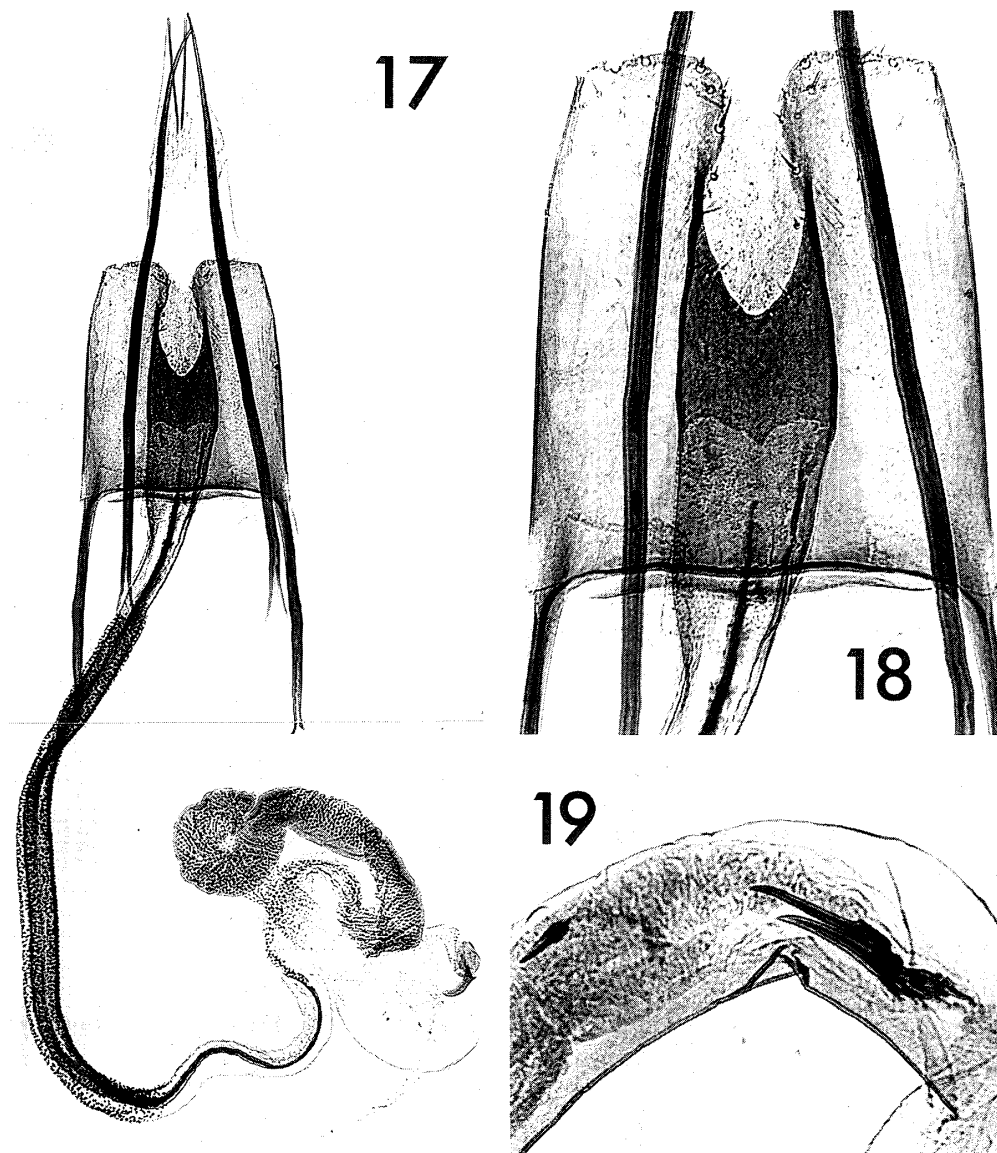
Expanse, 9.5 – 10 mm. Antenna simple, cinereous-white, tinged with ochreous colour ; flagellum distinctly annulated with greyish-brown. Labial palpus cinereous-white ; median joint widely but indistinctly streaked with greyish-brown externally, about 1.5 times as long as diameter of eye, with a short ventro-apical tuft ; terminal joint somewhat shorter than median joint. Head and thorax light greyish-ochreous. Fore wing moderate, ochreous-brown in ground, more or less tinged with grey ; streaks along wing margin and veins distinct, the costal and median ones being broader ; dark greyish-brown scales scattered over whitish spaces except for costal area, and some of them confluent to form an irregular stigma at distal end of discal cell ; density of these darker scales variable, but discal stigma always distinct ; cilia pale ochreous-grey. Hind wing and its cilia light brownish-grey. Legs cinereous-white, tinged with ochreous colour and streaked with dark brownish-grey along tibia and tarsi externally. Abdomen ochreous-white.

Male genitalia (Figs. 14, 15 & 19) : Gnathos globular ; tegumen rather narrow, slightly constricted above middle, with ventral arms slightly dilated towards middle ; transtilla narrow, sinuate ; valva large, semi-ovate ; valvula indicated by a bristled thickening at base of valva ; sacculus narrowed towards an obtuse horn-like process at terminal end, with articulate and distally denticulate ventral margin, and with larger subcostal and smaller subventral teeth inwards to terminal process ; aedoeagus long and slender, its prongs being identical in length and shape with one another, gradually narrowed towards their thin and upturned tips (Fig. 15) ; one of thorn-like cornuti smaller, remote ahead from the other two, which are joined at base.

Female genitalia (Figs. 17 & 18) : Papilla analis small, little sclerotized apart from very thin chitization along its inner edge ; apophysis posterioris about 2.5 times as long as apophysis anterioris ; subgenital plate elongate suboblong, deeply cleft by ostium bursae of a spoon-head shape at caudal end ; a sparse row of short setae along caudal edge of subgenital plate and periphery of ostium bursae (Fig. 18) ; infundibulum as long as subgenital plate, gradually narrowed towards both ends ; ductus bursae very



Figs. 14 – 16. *Coleophora kudrosella* n. sp. 14. Male, genitalia in caudal view. (PG-Bldz 8317) ; 15. *Ditto*, clasper and aedeagus enlarged ; 16. *Ditto*, anterior segments of abdomen.



Figs. 17 – 19. *Coleophora kudrosella* n. sp. 17. Female, genitalia in ventral view (PG-Bldz 8318) ; 18. *Ditto*, subgenital plate and infundibulum enlarged; 19. Male, cornuti enlarged (PG-Bldz 8317).

long, its narrower initial 2/3 being passed through by an internal strand and spiculate in most part, while wider terminal 1/3 convoluted in a much complicated manner and heavily dotted with darkened spinelets; bursa copulatrix small, globular; signum curved horn-like, with semi-ovate basal dilation.

Abdominal tergites (Fig. 16) : Caudal rib of the 1st tergite having a simple proximal fold and a distal fold conspicuously thickened on sides; paired patches of spinelets rather wide, composed of more than 30 setae, largest in the 1st tergite.

Holotype : ♂, Ninohe, Iwate Pref., Honshu (3 VIII, 1958), T. OKU (EHU).

Paratypes : Honshu ; Iwate Pref. — 7 ♂ 4 ♀, same data as holotype (1 ♂ 1 ♀, BLDZ ; others, EHU) ; 1 ♂ (28 VII, 1964) Kuriyagawa, Morioka, T. OKU (EHU).

Host plant : Unknown.

Distribution : Honshu.

Remarks. *C. kudrosella* n. sp. belongs to the *absinthii*-section of the 30th species group of *Coleophora*, which has been represented by four species (TOLL, 1952). In addition, *C. moronella* FALKOVITSH (1975), *C. amarchana* FALKOVITSH (1975), *C. inermis* FALKOVITSH (1977), *C. mediocris* FALKOVITSH (1977). *C. occatella* TOLL (1944) and *C. lessinica* BALDIZZONE (1980) would be included in this section. Despite the close resemblance in genitalic structure among all these species mentioned above, *C. kudrosella* is separated from the other related forms by the following characters: in male, one of cornuti remote from joined other two; in female, ductus bursae with long spiculation and much complicated convolution.

***Coleophora molothrella* n. sp.**

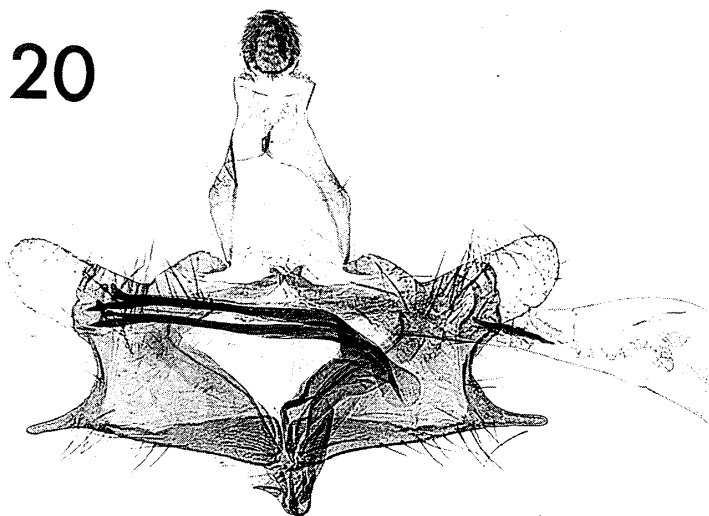
(Figs. 20 – 26 & 28)

Expanse, 10 – 12 mm. Antenna simple, brownish-grey, becoming paler towards whitish apical 1/3; dark greyish annulation of flagellum also paler apically. Labial palpus light ochreous; median joint streaked with grey externally, 1.5 times as long as diameter of eye, its ventro-apical tuft extending to middle of terminal joint, which is slightly shorter than median joint. Head and thorax dark brownish-or ochreous-grey. Fore wing moderate, dark grey, somewhat tinged with brownish-cinereous tone; cilia same coloured as wing surface. Hind wing and its cilia brownish-grey. Legs grey, faintly annulated with dull white at ends of hind tibia and tarsi. Abdomen whitish-grey.

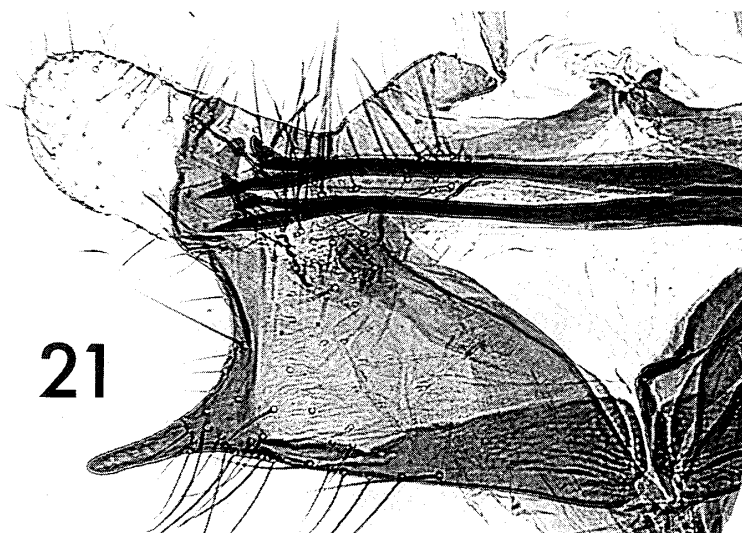
Male genitalia (Figs. 20, 21, 25 & 26) : Gnathos small, globular; tegumen slightly constricted below its top, supported by rather elongate ventral arms; transtilla sinuate, with paired central teeth above; valva rather large, little narrowed towards base; valvula with distinct terminal edge, bristled; sacculus strong and wide; ventral margin of sacculus almost straight and ending in a long horizontal terminal projection; an upright protuberance with bilobed top arising from upper end of semicircularly concave terminal margin of sacculus (Fig. 21); aedoeagus very long and slender, its prongs being identical in length and shape with one another, straightened, set with an upper tooth nearby acute tip on each of them (Fig. 25); two thorn-like cornuti (Fig. 26) joined at base.

Female genitalia (Figs. 23 & 24) : Papilla analis small, rather narrow; apophysis posterioris about 2.5 times as long as apophysis anterioris; subgenital plate semi-trapezoidal with arcuate lateral keels, spined on both sides of shallow caudal concavity, where truncate ostium bursae opens; infundibulum (Fig. 24) large, elongate sack-like with sinuate lateral edges, composed of smooth posterior and minutely wrinkled anterior parts, latter of which is edged with obscurely bordered sclerotization; ductus bursae narrow, transparent except for its weakly spiculate entrance and heavily sclerotized twisted part at middle; bursa copulatrix small, ovate; signum minute and conic.

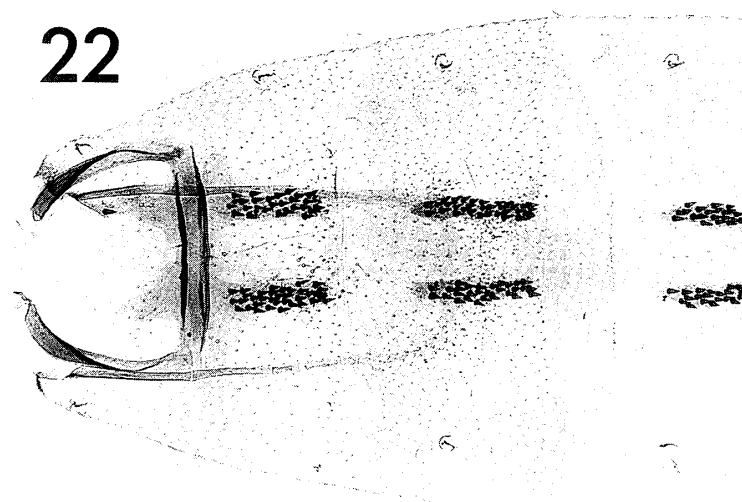
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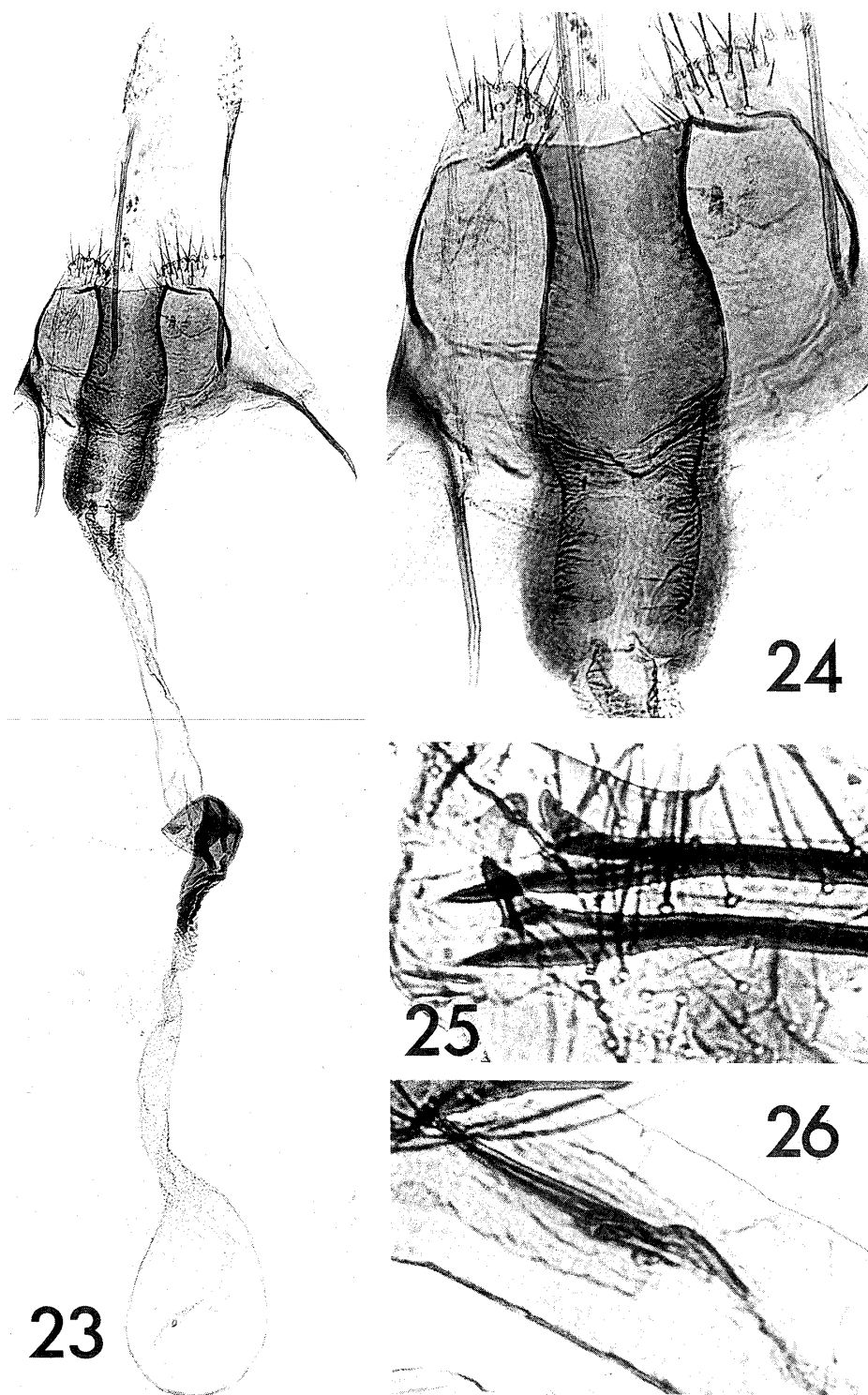
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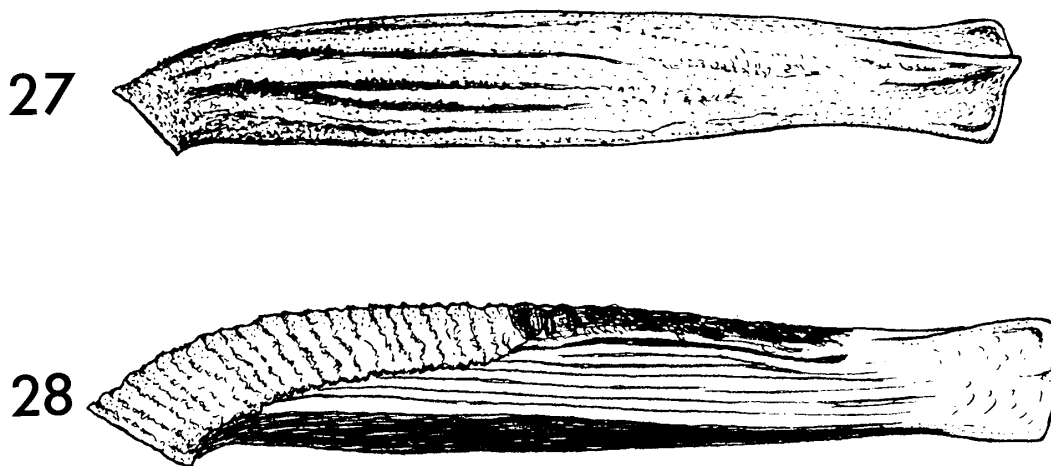
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Figs. 20 – 22. *Coleophora molothrella* n. sp. 20. Male, genitalia in caudal view (PG-Bldz 8325) ; 21. *Ditto*, clasper and aedeagus enlarged ; 22. *Ditto*, anterior segments of abdomen.



Figs. 23–26. *Coleophora molothrella* n. sp. 23. Female, genitalia in ventral view (PG-Bldz 6915) ; 24. *Ditto*, subgenital plate and infundibulum enlarged (PG-Bldz 8325) ; 25. Male, apical portion of aedoeagus enlarged (PG-Bldz 8325) ; 26. *Ditto*, cornuti enlarged (PG-Bldz 8326).



Figs. 27–28. Larval cases of *Coleophora* n. spp. 27. *C. enkomiella* n. sp.; 28. *C. molothrella* n. sp.

Abdominal tergites (Fig. 22) : The first tergite without or with spinelets in very few number, its caudal rib having narrow but strong folds ; in the following tergites, paired patches of spinelets narrow and elongate, and composed of more than 30 setae.

Larval case (Fig. 28) : Slender tubular-type with trilobed anal end, wrinkled transversely in dorsal part and longitudinally in ventral part ; light ochreous-brown, except for dark greyish ventral surface and a dark greyish-brown dorsal patch from middle to anal $1/5$; mouth 3.

Holotype : ♂, Sotoyama, Iwate Pref., Honshu (23 VII, 1971), T. OKU, from *Aster Glehni* var. *hondoensis* (EHU).

Paratypes : Honshu ; Iwate Pref. — 2♀ (26 VIII, 1970) Sotoyama, T. OKU (EHU) ; 1 ♂ 1♀ (24 VII–1 VIII, 1965) Kuzakai, T. OKU, from *Kalimeris pinnatifida* (♂, EHU ; ♀, BLDZ) ; 1 ♂ (1 VII, 1969) and 1 ♂ (24 VII, 1972) Morioka, T. OKU, from *A. ageratoides* var. *ovatus* (EHU) ; 1 ♀ (2 VII, 1979) Tsunagi, Morioka, T. OKU, from *A. ageratoides* var. *ovatus* (EHU) ; 1 ♂ (28 VII, 1970) Mt. Hayachine, and 1 ♀ (3 VIII, 1987) Higashihachimantai, T. OKU, from *A. Glehni* var. *hondoensis* (EHU).

Host plant : *Aster Glehni* var. *hondoensis*, *A. ageratoides* var. *ovatus*, and *Kalimeris pinnatifida*.

Distribution : Honshu.

Remarks. This species is a specialized form in the 30th species group of *Coleophora* in its monotonously greyish appearance, in which it is similar to some representatives of the 2nd species group. *C. molothrella* n. sp. may presumably be included in the *lineariella*-section in sense of TOLL (1952), which has been represented by a European *Aster*-feeder, *C. amellivora* BALDIZZONE (1979) (= *C. lineariella* : TOLL nec ZELLER). This presumption is mainly based on the following characters common to these two species : aedoeagus in male very long and slender with straightened prongs, and elongate sack-like infundibulum in female composed of different two parts. However, *C. molothrella* is clearly separated from *C. amellivora* by the horn-like ventro-terminal

projection of sacculus and the more heavily sclerotized infundibulum.

Larvae make blotch mines on host leaves during June in shaded places or humid swards. Adults occur in late July and August.

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摘 要

日本産ツツミノガ科の記載II (G. BALDIZZONE・奥 俊夫)

下記のツツミノガ科4種を新種として記載した。

Coleophora enkomiella BALDIZZONE et OKU ヨモギホソツツミノガ (新称)

幼虫は秋にヨモギ、エゾヨモギの葉に潜り、筒状巢は細長く淡灰褐色、暗色の縦条を有する。基部の被毛を欠く点でヨモギに寄生する近似種から区別できる。成虫は盛夏期に出現し、前翅はやや暗い黄土褐色(雌では雄より淡色)、斑紋を欠く。北海道、本州で採集。

Coleophora elodella BALDIZZONE et OKU ヤチツツミノガ (新称)

幼虫未発見であるが、成虫が6～9月に湿地で多く見られるので、イグサ類に寄生している可能性がある。前翅は褐黄土色、鮮明な白条を有し、濃褐、または暗赤褐色の鱗片を散らす。下唇鬚中節先端の毛束は長く突出して末端節の半分を越える。北海道、本州で採集。

Coleophora kudrosella BALDIZZONE et OKU ゴマフツツミノガ (新称)

幼虫未発見。成虫は盛夏期に灯火に飛来。前翅は灰色をおびた黄土褐色、灰白色の縦条を有し、翅前縁を除き暗灰褐色の鱗片を散らす。この鱗片は中室外端にやや目立つ点紋を形成する。岩手県で採集。

Coleophora molothrella BALDIZZONE et OKU ノギクロツツミノガ (新称)

幼虫は初夏にゴマナ、ノコンギク、ユウガギクの葉に潜り、筒状巢は長く淡黄土褐色、腹面は黒色、背面後半に黒褐斑がある。成虫は成夏期に出現、全体は暗灰色、触角の先端約1/3のみ白色。下唇鬚中節先端の手束はかなり長く、末端節の半分に達する。岩手県で採集。