Jpn. J. Ent., **64**(2): 245–254. June 25, 1996

Notes on Japanese Species of the Genus *Monochroa* with Descriptions of Two New Species (Lepidoptera, Gelechiidae)

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Abstract Two new species, *Monochroa subcostipunctella* and *M. japonica* are described from Japan. At the same time, *M. suffusella* is recorded from Japan for the first time.

Key words: Gelechiidae; *Monochroa*; new species; new record; Japan.

About 40 species of the genus *Monochroa* HEINEMANN have been recorded all over the Holarctic region; *e.g.* 17 species recorded from Denmark (KARSHOLT *et al.*, 1985, BUHL *et al.*, 1990), 11 from North America (HODGES, 1983) and more than 18 from Russia (PISKUNOV, 1981). In Japan, in contrast, only three species, *M. cytisella* (CURTIS) (=*Paltodora cytisella*), *M. cleodora* (MEYRICK) and *M. cleodoroides* SAKAMAKI, have been reported up to the present (SAKAMAKI 1993, 1994). In this paper, three species of the genus added to the Japanese fauna. Two species of them, *M. subcostipunctella* related to *M. suffusella* and *M. japonica* related to *M. cleodora* and *M. cleodoroides* are described as new species.

Monochroa suffusella (DOUGLAS, 1850)

Gelechia suffusella DOUGLAS, 1850, Trans. Ent. Soc. Lond., (2)1: 64.
Doryphora suffusella: HEINEMANN, 1870, Schmett. Dtl. Schweiz., 2(1): 308.
Aristotelia suffusella: MEYRICK, 1895, Handb. Br. Lep.: 577.
Xystophora suffusella: MÜLLER-RUTZ, 1909, Mitt. Schweiz. Ent. Ges., 11: 345.
Monochroa suffusella: PIERCE & METCALFE, 1935, Genit. Tinein.: 3, pl. 1.; SVENSSON, 1980, Ent. Tidskr., 101: 76–77, fig. 9.; BUHL *et al.*, 1992, Ent. Meddr., 60: 5, figs. 4, 7.

♂♀. Expanse of wings: 7.8–11.3 mm. Length of fore wing: 3.6–5.4 mm.

Face and head brilliantly pale ochre. Labial palpus (Fig. 1-B) white; 2nd segment fuscous except on base and apex, becoming pale towards inner surface; terminal segment with a broad fuscous band occupying apical 1/3. Antenna filiform, a little shorter than fore wing, pale fuscous, ringed with yellowish ochre except for scape and apical 4th, 8th, 11th, 12th and 13th segments, these segments being wholly fuscous. Thorax smooth, pale ochre; metathorax pale

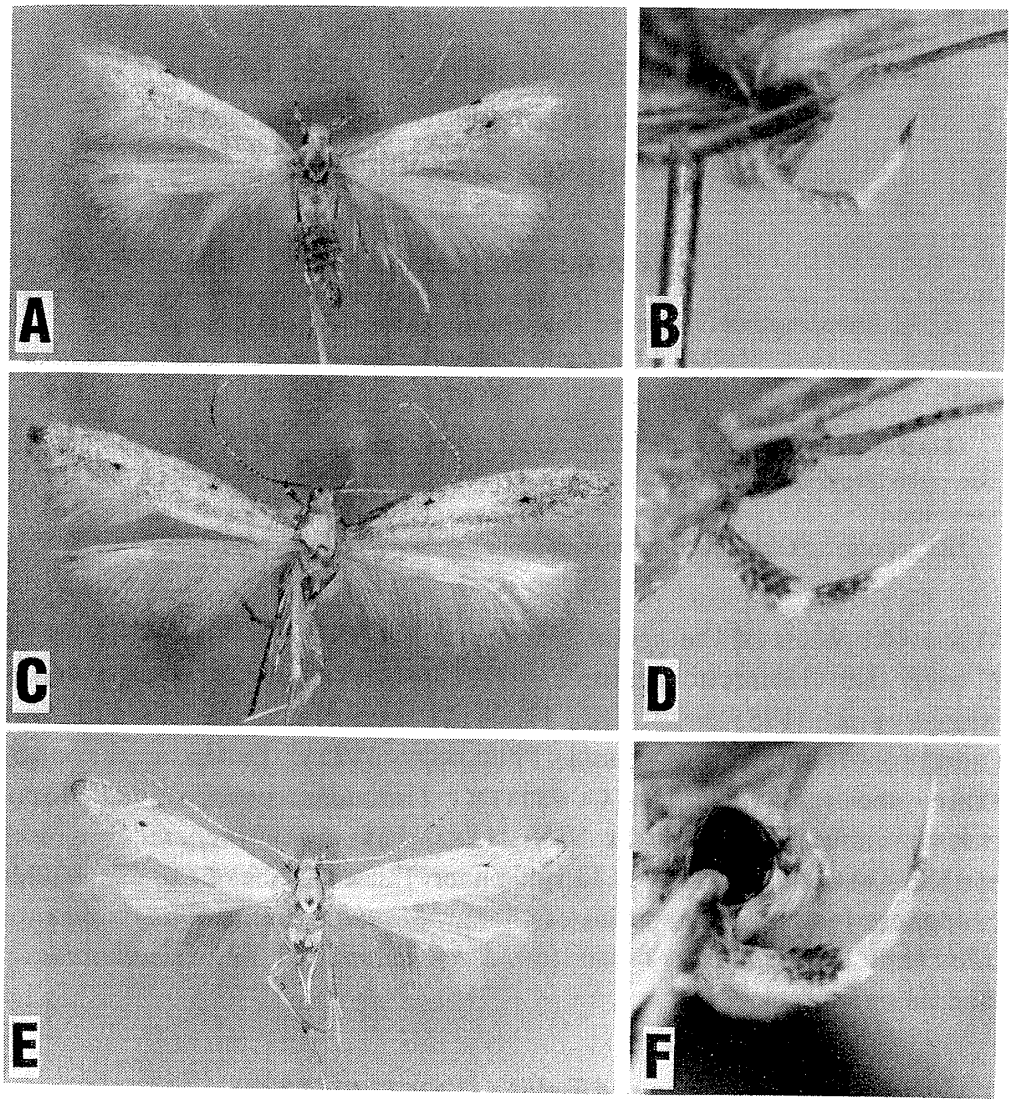

Fig. 1. Dorsal aspect and labial palpus of adult specimen. A & B: *Monochroa suffusella* (DOUGLAS). C & D: *M. subcostipunctella* n. sp. (holotype). E & F: *M. japonica* n. sp. (holotype).

brownish ochre. Legs fuscous, apex of each segment of tibiae and tarsi yellowish ochre; hind tibia with a yellowish ochre band at middle, with short, rough, bristly and ochre scales occurring on dorsal surface. Abdomen fuscous dorsally, creamy white ventrally.

Fore wing (Fig. 1-A) pale greyish ochre; a black stigma on costa at apical 1/3 and also on disc; cilia whitish ochre, with a fuscous subbasal line. Hind wing whitish grey; cilia creamy white.

Male genitalia (Fig. 2-A, B): Valva elongated, with a broad harpe and a digitate sacculus; the cucullus with a triangular sclerotized process dorsally, the harpe with numerous long setae, the sacculus with many short setae ventrally.

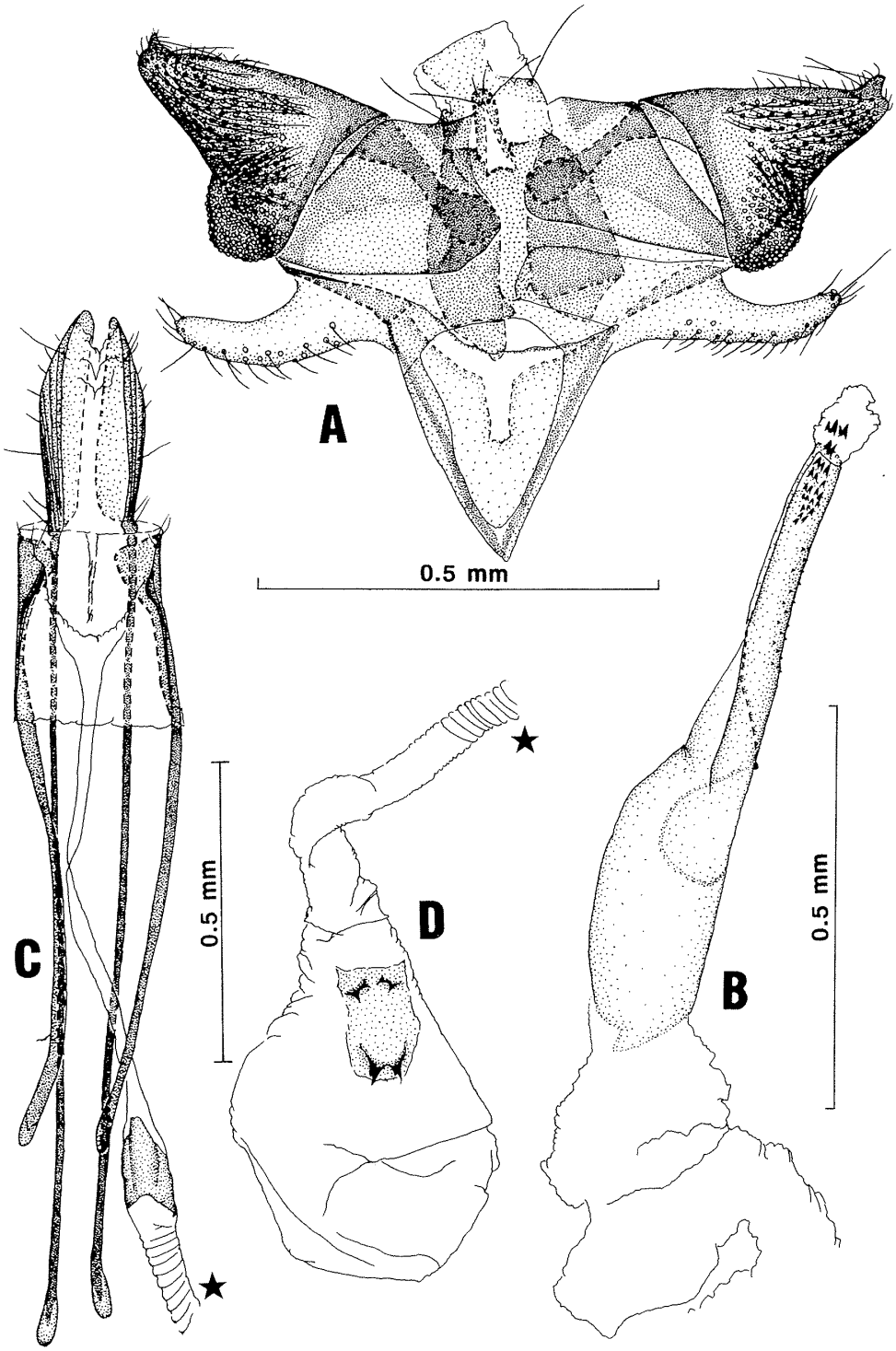

Fig. 2. *Monochroa suffusella* (DOUGLAS). A: Male genitalia in caudal view, aedeagus omitted [Gen. sl. no. Gel-93040, Isikari Town, Hokkaido, 17. vi. 1993, Y. SAKAMAKI leg.]. B: Aedeagus [ditto]. C: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Gel-92042, Sapporo City, Hokkaido, em. 19. v. 1983, ex. *Carex* sp. T. IMAI leg.]. D: Apical part of bursa copulatrix [ditto].

Uncus narrow, elongated, weakly sclerotized, with 2 long and 2 short setae. Gnathos absent. Saccus pointed, large, weakly sclerotized. Aedeagus more than twice as long as saccus, slender, somewhat broadened on basal half; apical half strongly sclerotized, cylindrical, with some minute processes on the surface; numerous and minute cornuti arranged in some rows.

Female genitalia (Fig. 2-C, D): Papilla analis weakly sclerotized, rather long, with some long and short setae occurring on almost whole surface; apophysis posterioris very long, slender. Eighth abdominal segment sclerotized laterally; apophysis anterioris becoming a little wider at base, shorter than 3/4 length of apophysis posterioris. Ostium bursae membranous, long; sclerotized cestum present at middle of ductus bursae, short, arrowhead-shaped; ductus bursae long, with some coil-like plicae at just cephalic 1/10 from cestum; corpus bursae pyriform, membranous, with an oblong signum, which has 1 or 2 pairs of minute processes on the caudal corners, and a pair of large and 1 or 2 pairs of rudimentary processes on the cephalic corners.

Specimens examined. JAPAN [Hokkaidô]: 8♂, Otiisi, Nemuro City, 21. vii. 1994, K. SUGISIMA leg.; 4♂ & 8♀, Isikari Coast, Isikari Town, 17. vi. 1993, Y. SAKAMAKI leg.; 5♂ & 15♀, ditto, 3–11. vii. 1993; 3♀, Sapporo City, em. 19–24. v. 1983, ex. *Carex* sp., T. IMAI leg. DENMARK: 2♂ & 2♀. Holmegårdsmose, 28. vi. 1970, E. TRAUGOTT-OLSEN leg.

Distribution. Palaearctic region from Europe to Japan (Hokkaidô).

Host plants. *Eriophorum angustifolium* and *Carex* sp. (Cyperaceae) in Europe, *Carex* sp. in Japan.

Remarks. This species is new to the fauna of Japan. The redescription given above is based on the Japanese specimens. *M. suffusella* is distinguished from other members of the genus by the following combination of characters:— the position of costal stigma in the forewing, the triangular process on cucullus in the male genitalia and the uniquely positioned processes of the signum in the female genitalia.

In the colour pattern of antenna, the Japanese specimens are a little different from the European ones. The scape and the apical 4th, 8th, 11th, 12th and 13th segments (counted from the apex) are wholly ochre in the Japanese specimens, whereas some basal segments and the apical 4th and 8th segments are wholly ochre in the European ones.

Monochroa subcostipunctella n. sp.

♂♀. Expanse of wings: 9.8–10.2 mm. Length of fore wings: 4.0–4.7 mm.

Face and head brilliantly whitish ochre. Labial palpus (Fig. 1-D) white; outside of 2nd segment fuscous with a whitish apex, terminal segment with a broad fuscous band occupying basal half. Antenna filiform, a little shorter than

fore wing, creamy white, ringed with dark fuscous except for apical 1st, 3rd, 5th, 7th, 9th and 11th segments, these segments being wholly yellowish ochre. Thorax smooth, brilliantly whitish ochre; tegula scattered with a few fuscous scales. Legs brilliantly whitish ochre; fore tibia and tarsus fuscous; mid and hind legs scattered with fuscous scales wholly, with apex of each segment whitish. Abdomen fuscous dorsally and creamy white ventrally, with lateral areas dark fuscous narrowly.

Fore wing (Fig. 1-C) greyish ochre, darkened towards apical margin; a black stigma on subcostal vein at basal 1/2 and also on disc; 3 or 4 white minute dots on apical 1/3 of costa, and similar dots on termen; cilia whitish ochre, with an obscure fuscous subbasal line. Hind wing pale ochre, cilia creamy white.

Male genitalia (Fig. 3-A, B): Similar to that of *M. suffusella*, but differ from it in the form of uncus, valva and aedeagus as follows: uncus broad and spatulate; triangular process on cucullus small and indistinct; aedeagus pyriform, with more minute processes on cylindrical part of apical half.

Female genitalia (Fig. 3-C, D): Papilla analis weakly sclerotized, rather long, with some longitudinal plicae and some short setae occurring on almost whole surface; apophysis posterioris very long, slender. Eighth abdominal segment weakly sclerotized, apophysis anterioris 2/3 as long as apophysis posterioris. Ostium bursae membranous, opened mesally at middle of 8th abdominal segment; ductus bursae long; cestum blunt triangular or trapezoidal, short; corpus bursae pyriform, membranous, with a long ellipsoidal signum, which has 2 large processes, one on the caudal margin and the other on the cephalic margin.

Specimens examined.

Holotype: ♂, Siriuti Town, Hokkaidô, 10. viii. 1976, T. KUMATA leg., Gen. sl. no. Gel-95001, deposited in Hokkaido University.

Paratypes: JAPAN [Hokkaidô]: 1♂ & 2♀, Kuroisidaira, Kamisihoro Town, 23. vii. 1994, K. SUGISIMA leg.; 1♂, Okusiri Is., Hiyama, 14. vii. 1958, T. KUMATA leg.; 8♂ & 9♀, Siriuti Town, 10. viii. 1976, T. KUMATA leg., depodited in Hokkaido University. [Honsyû]: 1♂, Mt. Mikusayama, Nose Town, Osaka Pref., 27. vi. 1993, T. UEDA leg., deposited in University of Osaka Pref.

Distribution. Japan (Hokkaidô, Honsyû).

Host plant. Unknown.

Remarks. This new species is related to *M. suffusella,* but is clearly discriminated from it by the position of the costal stigma on the fore wing, by the color patterns of the labial palpus (Fig. 1-B, D) and by the ellipsoidal signum having only a pair of processes in the female genitalia.

Host plant of this species is unknown. Prof. KUMATA who collected most of the type specimens points out that this species occurs in dry open meadow.

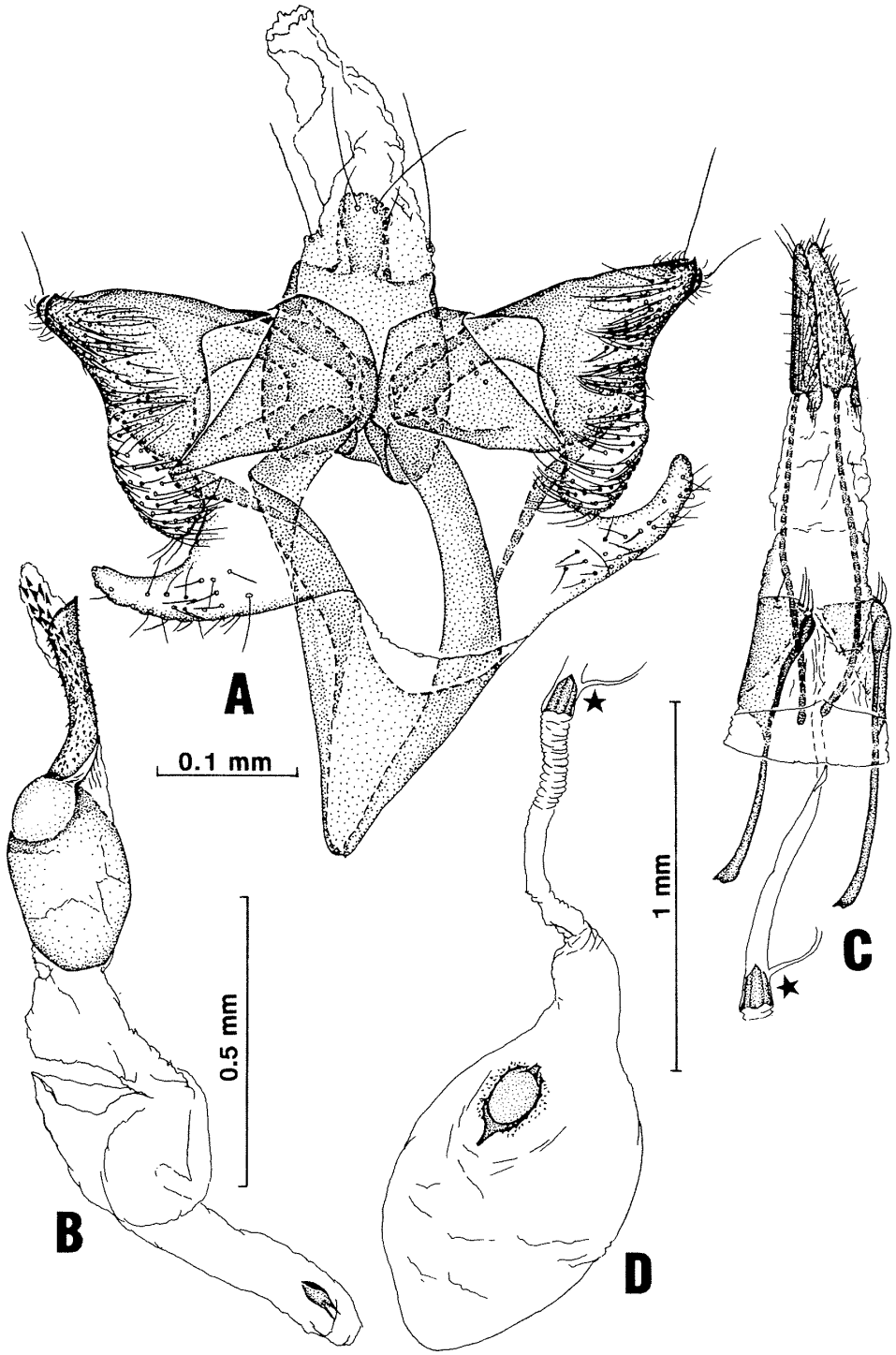

Fig. 3. *Monochroa subcostipunctella* n. sp. A: Male genitalia in caudal view, aedeagus omitted [Gen. sl. no. Gel-95001, holotype]. B: Aedeagus [ditto]. C: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Gel-95002, paratype, same data to holotype]. D: Apical part of bursa copulatrix [ditto].

Monochroa japonica n. sp.

♂♀. Expanse of wings: 10.8–14.6 mm. Length of fore wing: 5.2–6.6 mm.

Face and head whitish ochre. Labial palpus (Fig. 1-F) fuscous; 2nd segment pale ventrally, with whitish apex; terminal segment whitish ochre, with a dark fuscous band at apical 1/4. Antenna filiform, 3/4 as long as fore wing, creamy white, ringed with dark fuscous except for scape and apical 3rd, 5th, 7th, 9th and 11th segments, these segments being wholly fuscous. Thorax smooth; patagium yellowish ochre; mesothorax light yellowish ochre, with tegula yellowish ochre; metathorax brilliantly dark fuscous. Legs brilliant fuscous, with apices of all segments whitish except for wholly whitish ochre hind femur; hind tibia with brilliantly yellowish ochreous, long bristly scales above. Abdomen dark fuscous, with a creamy white longitudinal line laterally, and with caudal margin of each segment creamy white in ventral side.

Fore wing (Fig. 1-E) variable in ground colour, whitish, yellowish, or brownish ochre, but always becoming paler dorsally on basal 1/4; 2 very obscure, oblique, paler fasciae running in parallel to each other, the first from costa at basal 1/5 to middle of dorsum, with plical stigma missing or rudimentary, the second from costa beyond middle to a small black discal stigma; an oblique white narrow fascia running in parallel to preceding 2 fasciae from costa at basal 2/3 to middle of termen; a similar narrow strigula from disc to tornus; 3 white minute dots on costa from apical 3/4 to apex of wing, 3 similar dots on termen; cilia whitish ochre, with a grey subbasal line, apical half of cilia pale greyish ochre. Hind wing greyish fuscous; cilia pale greyish fuscous.

Male genitalia (Fig. 4-A, B): Valva rather elongated, with a somewhat broad harpe and a narrow digitate sacculus; triangular process on cucullus small and indistinct; the harpe with numerous long setae and the sacculus with some short setae ventrally. Uncus slightly elongated, weakly sclerotized, with 4 long and 2 minute setae apically. Gnathos absent. Saccus pointed, moderate in size. Aedeagus about 4 times as long as saccus, sigmoid, with a strongly sclerotized, triangular plate on apical half, which has numerous minute processes on the basal margin; numerous minute cornuti regularly arranged in some rows.

Female genitalia (Fig. 4-C, D): Papilla analis weakly sclerotized, with many longitudinal plicae and some long and short setae occurring on almost whole surface; apophysis posterioris short, slender. Eighth abdominal segment sclerotized, with a pair of shallow hollows on ventral margin; apophysis anterioris slender, shorter than apophysis posterioris. Vaginal plate separated into paired lobes, emarginated on cephalic margins. Ostium bursae membranous; ductus bursae moderate in length; cestum short, square, a little rolled; corpus bursae pyriform, membranous, with a long oval signum, which has 2 pairs of minute processes on its cephalic margin.

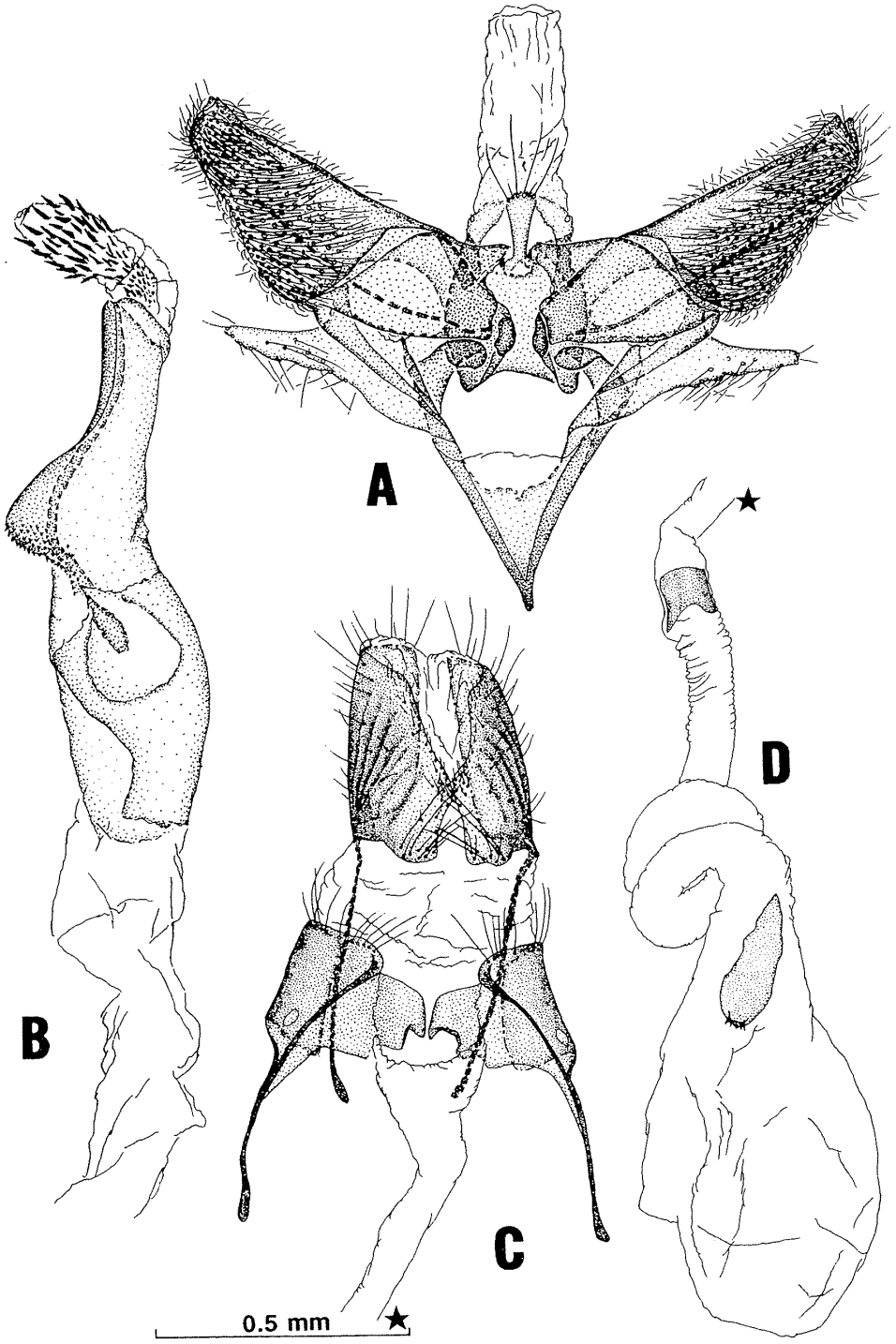

Fig. 4. *Monochroa japonica* n. sp. A: Male genitalia in caudal view, aedeagus omitted [Gen. sl. no. Gel-95009, holotype]. B: Aedeagus [ditto]. C: Female genitalia in ventral view, apical part of bursa copulatrix omitted [Gel-92024, paratype, Tomamai, Hokkaido, 30. vii. 1959, T. KUMATA leg.]. D: Apical part of bursa copulatrix [ditto].

Specimens examined.

Holotype: ♂, Bibi, Titose City, Hokkaidô, 6. vii. 1993, Y. SAKAMAKI leg., Gen. sl. no. Gel-95009, deposited in Hokkaido University.

Paratypes: JAPAN [Hokkaidô]: 1♀, Horonobe Town, 22. vii. 1993, Y. SAKAMAKI leg.; 1♂ & 1♀, Tomamae Town, 30. vii. 1959, T. KUMATA leg.; 1♂ & 1♀, Siretoko, 10–17. vii. 1965, T. KUMATA leg.; 3♂ & 4♀, Kenebetu, Nakasibetu Town, 10. viii. 1993, Y. SAKAMAKI leg.; 5♂ & 5♀, Atuta Vill., 20. vii. 1993, Y. SAKAMAKI leg.; 10♂ & 5♀, Bibi, Titose City, 6. vii. 1993, Y. SAKAMAKI leg.; 1♂, Sapporo City, 23. vi. 1956, T. KUMATA leg.; 1♂, ditto, 6. vii. 1958.; 1♂, ditto, 5. vii. 1959.; 1♂, ditto, 27. vi. 1962.; 2♂, ditto, 3. vii. 1964.; 2♂, Teine, Sapporo City, 12. vii. 1967, T. KUMATA leg.; 1♂, Mt. Soranuma, Sapporo City, 9. viii. 1962, T. KUMATA leg.; ♂ & 6♀, Misumai, Sapporo City, 2–16. vii. 1993, Y. SAKAMAKI leg.; 2♂ & 2♀, ditto, em. 3–29. i. 1995, (larva 19. x. 1994, vernalized to 10. xii. 1994, ex. *Polygonum thunbergii*) Y. SAKAMAKI leg.; 4♂, Zyôzankei, Sapporo City, 27. vii. 1993, Y. SAKAMAKI leg.; 2♂, Otaru City, 9–16. viii. 1991, Y. SAKAMAKI leg.; 1♂, Kuttyan Town, 17. viii. 1992, Y. SAKAMAKI leg.; 5♂, Gamusi, Atusabu Town, 12. vii. 1958, T. KUMATA leg. deposited in Hokkaido Unversity. [Honsyû]: 5♂ & 3♀, Mt. Taihakusan, Miyagi Pref., 20. vi. 1993, T. HIROWATARI leg.; 1♂, Kitayama, Suzu City, Isikawa Pref., 7. vii. 1993, T. UEDA leg.; 1♀, Mt. Daisen, Tottori Pref., 4. vii. 1965, H. KUROKO leg., deposited in University of Osaka Pref. [Kyûsyû]: 1♂, Mt. Hikosan, Soeta Town, Hukuoka Pref., 21. vi. 1965, T. KUMATA leg., deposited in Hokkaido University.

Distribution. Japan (Hokkaidô, Honsyû, Kyûsyû).

Host plant. *Polygonum thunbergii* SIEB. et ZUCC. (Polygonaceae)

Biology. Larvae enter stems of host plants from autumn to spring, pupate in the late spring therein. Adults emerge in the early summer and fly around basal parts of the host plant.

Remarks. This new species is closely related to *M. simplicella* (LIENIG and ZELLER), *M. cleodora* (MEYRICK) and *M. cleodoroides* SAKAMAKI. It is, however, clearly discriminated from these three species and other members of the genus by the following characters:—In the male genitalia the valva is more than twice as long as the saccus, and in the female genitalia the signum has 2 pairs of minute processes on its cephalic margin.

Acknowledgements

I wish to express my sincere thanks to Prof. T. KUMATA, Hokkaido University, for his offering specimens, giving advice and critically reading the manuscript, to Dr. O. KARSHOLT, Zoologisk Museum at Copenhagen for his important suggestion on identification, and to Dr. S. AKIMOTO, Hokkaido

University for his critically reading.

For the loan of specimens or helpful suggestions I am most grateful to Drs. T. YASUDA, S. MORIUTI, T. HIROWATARI and Mr. T. UEDA at the University of Osaka Prefecture, and to Mr. K. SUGISIMA at Hokkaido University.

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(Received April 10, 1995; Accepted September 3, 1995)