Description of a New Injurious Chloropid in Japan (Diptera, Chloropidae)¹

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A new Chloropid, *Chlorops mugivora*, injurious to wheat, rye, oats and barley in Japan was described and illustrated with some remarks.

In 1955, an unidentifiable stem maggot which caused damage to wheat, rye and oats in Akita Prefecture was discovered (HIRAO and HASEGAWA, 1958). The typical symptom which was manifested in young wheat included stunting and swelling of the attacked shoot together with moderate thickening and broadening of the leaves. This deformation very closely resembled those attributed to the gout fly, *Chlorops pumilionis* BJERKANDER in Europe (FREY, 1924; GOIDANICH, 1956). The adult was identified as a species belonging to the genus *Chlorops* MEIGEN, but a closer comparison with European specimens led to the conclusion that the Japanese species is altogether new. A detailed description is presented herein.

The holotype and some paratypes have been deposited in the National Institute of Agricultural Sciences in Tokyo.

Chlorops mugivora NISHIJIMA et KANMIYA, sp. nov.
[Wheat yellow fly=Mugi-ki-karabae (Jap. name)]

Head and thorax bright yellow. Frontal triangle small, aristate anteriorly, predominantly yellow but with black macula on ocellar tubercle and median anterior part of ocelli which terminates acutely at the middle of its own length of the triangle. Occiput largely blackened medially in a trapezoid form. Mesonotum yellow with five separated black stripes densely covered with grey-white pollinosity and without luster. Thoracic pleura bear only a black patch on mesopleuron. Legs mostly yellow except for each last tarsal segment which is blackened.

Frons bright yellow; face and gena pale yellow; frontal triangle largely yellow, but with blackened macula around ocellar tubercle, small and triangular on anterior part of ocelli; occiput and postgena medially blackened generally in a trapezoid form

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unattached to eye. Antennae with 1st and 2nd segments short and entirely yellow, with 3rd segment nearly orbicular, depth slightly greater than length, largely yellow but narrowly infuscated with brown on antero-dorsal margin; arisal segments narrow, brown and weakly plumose; clypeus yellow; palpus entirely yellow, short, slightly club-shaped with prominent ventral broadening. Head as wide as thorax, nearly trapezoid in profile, depth about $1.38 \times$ length, not produced beyond anterior level of eye; frons very broad, a little broader than long, and wider than half the width of the head. Frontal triangle small, flat and gently rising, but without strong marginal surci along lateral side, about $2/3 \times$ the width of frons, distinctly aristate along the anterior extremity which extends linearly to anterior margin of frons. Gena as deep as 3rd antennal segment; vibrissal angle nearly right-angled. Head bristles black; orbital bristles short, slightly longer than frontal ones, not always standing in a line; ocellar- and postvertical bristles nearly equal in length; outervertical bristles longer than inner-verticals; eye bare and diagonal in its long axis.

Mesonotum yellow in ground colour, clothed with short black hairs, with 3 entirely black longitudinal stripes located medially and with 1 oblong black patch on each supraalar area, stripes and patches separated, and densely covered with grey-white pollinosity as to mask luster. Thoracic pleura largely yellow and lustrous, but with a small oblong black patch at the middle of the lower margin on the mesopleuron; reddish or brownish patches also on lower half of sternopleuron and hypopleuron, of which the reddish area of sternopleuron sometimes varies in colour to black on its dorsal side; humeral callus entirely yellow with one black bristle; notopleural bristles ordinarily 1+2; 2 postalar bristles and 1 well-developed, straight, prescutellar dorsocentral bristle, nearly as long as notopleural bristles. Scutellum entirely yellow, round marginally, convex dorsally, width about $1.66 \times$ length, with a pair of distinct apical and a pair of subapical bristles, the apical one about $2/3 \times$ as long as the scutellum and $1.5 \times$ as long as the subapical one; postscutellum black, with moderate luster, evenly covered with minute pollinosity.

Hyaline wing with pale brown veins; relative length of costal sections 2nd: 3rd: 4th = 17:13:7. R_{4+5} and M_{1+2} veins slightly divergent; r-m cross-vein slightly distad beyond the middle of the discal cell; penultimate section of M_{1+2} about $2/3 \times$ as long as ultimate one of M_{3+4} , about $0.2 \times$ as long as ultimate one of R_{4+5} , and about $0.27 \times$ as long as its own ultimate one. Relative length of costal sections vary with specimen to some degree. Haltere pale yellow.

Legs with all femora and tibiae entirely yellow; all tarsi also yellow except for each last tarsal segment which is blackened; in male with front tarsal segments, 1st one not shortened, length greater than $2 \times$ the 2nd one.

Abdominal tergites largely yellow, clothed with short black hairs, with an orbicular black patch on each lateral side between 1st and 2nd segments; anterior margin of each tergite of 2—5th segments transversely infuscated and brown; abdominal sternites yellow. 2—4th sternites indistinct, with several rows of bristles longitudinally; 5th sternite plate-like, nearly $2 \times$ as long as wide with many bristles marginally; 6—9th sternites broad, well-developed with many bristles and hairs; 6th sternite trapezoid; 7—9th sternites rectangular; 6—8 tergites pale and ill-developed; 6th tergite having a broad deep median emargination of proximal margin, and with many bristles on distal side.

♂ *genitalia*. Anal plate broad and conical, weakly concave at apex, with several

Fig. 1. *Chlorops mugivora* sp. nov., male adult.

pairs of long bristles marginally; epandrium bulging laterally and gradually narrow basally, on which posteroventral margin with deep sub-triangular emargination; surstylus flattened, but with large, strongly tapered process inward and ventrally, which is triangularly acuted; hypandrium rather ill-developed, each distal end of which is bifurcate and the inner process elongate and articulated to inner surstyllar plate; anterior paramere with a uncinat process laterobasally.

Length. Body ♂ 2.77 mm (2.5—3.1 mm), ♀ 3.73 mm (3.4—4.1 mm); wing ♂ 2.81 mm (2.5—3.1 mm), ♀ 3.38 mm (3.1—3.4 mm). (in dried specimen).

Distribution. Japan (Honshu).

Holotype: ♂, Lab. Akita Agr. E.S., Akita Pref., Honshu, 10. v. 1958, T. HASEGAWA leg.

Paratypes: 5 ♂♂, same date as holotype. Tenno, Akita Pref., Honshu (3 ♂♂, 30. iv. 1956, 2 ♀♀, 12. vii. 1956, 1 ♂, 30. iv. 1957, T. HASEGAWA leg.). Dedohama, Akita Pref., Honshu (4 ♂♂ 3 ♀♀, 8. v. 1957, 10 ♂♂ 3 ♀♀, 9. v. 1957, 6 ♂♂

Fig. 2. *Chlorops mugivora* sp. nov., male and female genitalia. A: male epandrium, dorsal aspect. B: male hypandrium, ventral aspect. C: female 8-10 abdominal segments, right ventral, left dorsal aspect.

7 ♀♀, 15. v. 1961, T. HASEGAWA leg.). Akita, Akita Pref., Honshu (1 ♂ & 1 Pupa, 10. vi. 1957, T. HASEGAWA leg.). Yasaka-cho, Takeno, Kyoto Pref., Honshu (8 ♂♂ 7 ♀♀ & 1 pupa, 22. iii. 1971, R. MORIOKA leg., bred from *Agropyron tsukushiense* (HONDA) OHWI var. *transiens* (HACK.) OHWI = "Kamojigusa").

Host plants. Wheat = *Triticum aestivum* L., rye = *Secale cereale* L., oats = *Avena sativa* L. (HIRAO & HASEGAWA, 1958). *Agropyron repens* (L.) P. BEAUV. (HIRAO & HASEGAWA, 1959). *Agropyron tsukushiense* OHWI var. *transiens* (HACK.) OHWI (MORIOKA, 1965). Barley = *Hordeum vulgare* L., *Agropyron ciliare* (TRIN.) FRANCH var. *minus* (MIC.) OHWI (HIRAO, 1972).

Remarks. *mugivora* sp. n. is easily distinguished from other *Chlorops* species by the mesonotal stripes which are entirely black, without luster, densely covered with grey-white pollinosity, 3rd antennal segment mostly yellow, sternopleuron with yellow to reddish spot, and very similar to Palearctic species *geminata*, *gracilis*, *interrupta* and *figurata* in the combination of these characters. Distinctly identified from these species by the smallness of the 3rd antennal segment, frontal triangle flat, with an aristately elongate black spot in front of ocelli which form a linear ridge anteriorly, occiput trapezoidal blackened, *et cetera*. In general, appearance of this new species is similar to well known Japanese injurious species, *Chlorops oryzae* M., but is distinguished from it in that *oryzae* has a whitish 3rd aristal segment, entirely black 3rd antenna, black spot in front of ocelli which mostly cover the anterior extremity of the triangle,

black mesonotal stripes covered with pollinosity but with moderate luster, mesostigmal tubercle blackened, abdominal tergites strongly infuscated and black transversely on its anterior half, and a different feature of the male genitalia. This new species is also similar in general appearance and ecological characteristics to *pumilionis* BJERK., a European species injurious to gramineous plants, but clearly distinguished by the 3rd antenna entirely blackened, 2nd antenna yellow to dark yellow with blackened part dorsally and distally, distal part of front tibia and 1st segment of front tarsus infuscated and black in addition to each last one and two tarsal segments, and frontal triangle with a distinct central black surcus in front of ocelli.

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