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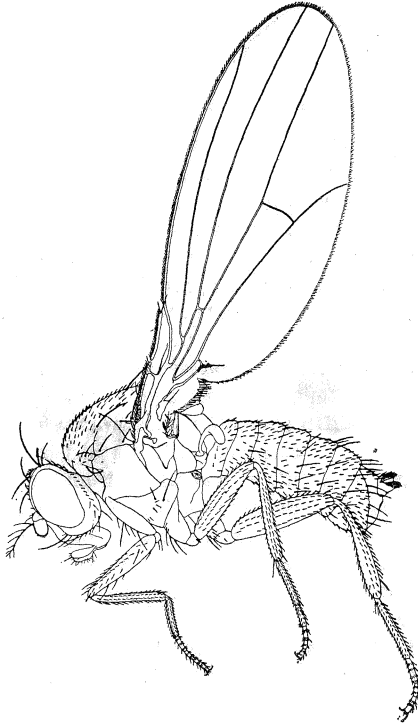


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Leaf-mining Species of Drosophilidae (Diptera)

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岡田豊日・笹川満広：潜葉性のシヨウジヨウバエについて

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There have been recorded the leaf-mining habits of *Scaptomyza adusta* (Loew), *S. apicalis* (Hardy), *S. graminum* (Fallén), *S. incana* (Meigen), *S. paravittata* Wheeler, etc. from Europe and North America. But, as far as the authors are aware, nothing has been known of the leaf-mining species of the genus *Drosophila*. Recently the junior author has observed the mining habits of two interesting *Drosophila*-species, one of which is cosmopolitan *Drosophila busckii* Coquillett and the other is new to science.

1. *Drosophila (Dorsilopha) busckii* Coquillett

1901 *Drosophila busckii* Coquillett, Ent. News, 12: 18.

This is widely distributed throughout Europe, North America, South America, Africa, Australia, Japan, Korea and China.

The authors have had an opportunity to study a specimen (♀, 3. VI. 1955, Wada-cho, Kyûshû) reared from a larva mining leaf of *Pisum sativum* L. But the larva of this species is never exclusively leaf-miner, as it has been known as the scavenger or feeder of the decaying fruits, potatoes, pine mushrooms, etc.

2. *Drosophila (Hirtodrosophila) denticeps* sp. nov.

♂, ♀. Head yellow; front twice as wide as the width of eye, lateral sides of eyes slightly converging ventrally; frontalia slightly shiny, having about ten setulae; parafrontals faintly brownish, about 1/5 width of frontalia, sides parallel. Ocellar triangle somewhat brownish, ocellar longer than first orbital. Second orbital about quarter as long as first. Dorsal half of occiput yellowish brown. In profile parafrontals slightly arisen above eye margin; cheek in middle part about 1/8 eye height; eyes reddish brown, with dense pile. Face pale brown; carina narrow between antennal bases but broadening below claviformly, its length 5/8 as high as face and its broadest part as broad as first antennal segment. First to second antennal segments yellow; third yellowish brown, with pile longer than length of fifth segment; arista brown, with about 8 branches including small fork, only 1 branch below it. Second oral about 1/3 length of vibrissa. Palpi and proboscis yellow; palpus with an apical bristle.

Thorax yellowish brown; mesonotum subshiny; length-distance of dorsocentrals about half the cross-distance; acrostichals in regular 6 rows at the level of anterior dorsocentrals; intraalar equal in length to acrostichals, about 20 setulae arranged regularly behind transverse suture; anterior supraalar weak, directed caudolaterally; humerus with 7 to 8 setulae plus 2 humerals; sterno-index 0.4. Wings hyaline, tinged with brown; relative lengths of second, third and fourth costal sections as 3.8:1:0.4; third costal section with heavy bristles on its basal half; 4V-index about 1.6; 4C-index about 1.6; 5X-index about 2; calypteres yellowish white, with margins and fringe brown; halteres yellowish brown. Legs pale yellow; preapicals prominent on middle and hind tibiae, apicals on middle tibiae.

Abdomen shiny, anterior two tergites yellowish brown, posterior four tergites brown. Periphallie organs: Genital arch triangularly pointed below, pale brown and paler below, with about 10 upper and 12 lower hairs; clasper broad but short, slightly projected beyond tip of genital arch, with about 10 black pointed teeth

arranged in a row, about 20 strong setae below, and a row of fine hairs on the upper half of distal margin. Anal plate pale yellow, oblong, with a row of about 10 strong black bristles on apical anterior margin, and about 20 hairs. Decasternum orange brown, broaden and truncate below. Phallic organs: Aedeagus pale brown, fusiform, apically with fine pubescence. Anterior paramere large, pale brown, separated from aedeagus, pointed at both ends; posterior paramere fused with each other to form a cross bar, medially swollen to a quadrate plate, surrounding dorsal surface of aedeagus. Novasternum with median notch deep and broad, with submedian slender dark paired processes. Ventral fragma quadrate. Apodeme of aedeagus slightly shorter than aedeagus itself. Egg-guides: Lobes dark brown, obliquely truncate at tip, with about 25 marginal and about 25 discal black teeth. Basal isthmus thick and short.

Internal structures: Malpighian tubes with common stalks moderate in length; posterior branches closely apposed apically. Testis pale yellow, with about 2.5 inner and 4.5 outer coils, terminal two coils being smaller than the others. Paragonia once folded. Ejaculatory bulb apically bilobed; ejaculatory apodeme with oval plate and proximally broaden stem. Spermatheca oval and pale brown. Parovaria large and elliptical. Ventral receptacle slender, with about 30 loose folds.

Length: Body about 3 mm., wing $3\frac{1}{2}$ mm.

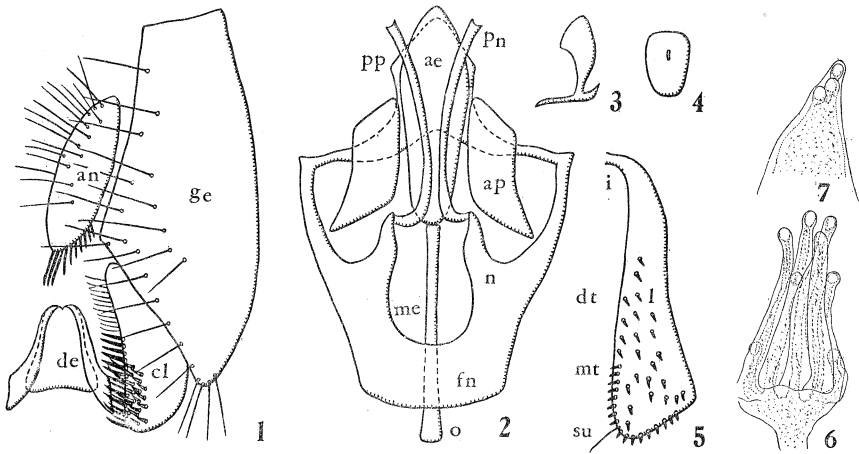


Fig. 1. Peripheral phallic organs, lateral aspect: an, anal plate; cl, clasper; de, decasternum; ge, genital arch. Fig. 2. Phallic organs, ventral aspect: ae, aedeagus; ap, anterior paramere; fn, ventral fragma of novasternum; mc, median notch of novasternum; n, novasternum; o, basal apodeme of aedeagus; pn, process of novasternum; pp, posterior paramere. Fig. 3. Ejaculatory apodeme, lateral aspect. Fig. 4. Ejaculatory apodeme, dorsal aspect. Fig. 5. Egg-guide, lateral aspect: dt, discal teeth; i, basal isthmus; l, lobe; mt, marginal teeth; su, subapical hair. Fig. 6. Anterior spiracle of larva, dorsal aspect. Fig. 7. Posterior spiracle of larva, lateral aspect.

Larva: Larva milky white; body subcylindrical, ventral side somewhat flattened. Antennae and palpi pale brown; cephalopharyngeal sclerites black, right mandible with a small tooth between 2 large teeth, left mandible with 2 small teeth between them, dorsal horn of paraclypeal phragma bifurcated distally, as long as ventral horn. Anterior spiracles located on caudolateral margin of prothorax, each 8 to 10-branched in various lengths but opposite pairs equal to each other, apical bulb of each branch pale brown; posterior spiracles conical with bases black but distal part dark brown, somewhat curved dorsally, each with three bulbs. Thoracic cuticular processes in 2 to 3 rows on dorsal side, 3 to 4 rows on lateral and ventral sides; abdominal processes absent on dorsal side excepting 3 to 4 rows before bases of posterior spiracles, in 3 to 4 rows on lateral sides of only anterior three segments, in 5 to 6 rows on ventral side of first segment, in 6 to 7 rows on those of second to fifth, and in 7 to 8 rows on those of sixth to ninth; processes on dorsal part of head, before bases of posterior spiracles and on ventral side black and distinct, others pale brown and minute. Posterior end with two pairs of tubercles on cephalolateral part before posterior spiracles and below them; each tubercle with sensilla basiconica at tip. Body length of full grown larva about 5 mm.

Puparium: Brown; subcylindrical, converging anteriorly and posteriorly, ventral side more or less flattened. Anterior spiracles distinctly projected, each stalk divergent, relative lengths of its stalk and body length 1:18. Posterior spiracles evidently curved dorsally, extremely divergent. Dorsal processes on abdominal posterior end directed laterally and ventral processes ventrally. Body about 3.5 mm. in long and 1 mm. in broad.

Habitat: Japan (Honshu).

Holotype: ♂, 20. V. 1951, Asakawa, Tokyo; allotype: ♀, same date as holotype, Okada leg., (in coll. Okada). Paratypes: 5 ♂♂, 8 ♀♀, V-VI. and XI. 1951-52, Tokyo, Okada leg.; 1 ♀, 15. VII. 1953, Senjodake, Nagano Pref., Kitagawa & Ono leg.; 2 ♀♀, 14. VII. 1954, Azumayama, Fukushima Pref., Kotake leg. (i. c. Okada); 3 ♀♀, 2. V. 1955, Hatano, Kanagawa Pref., reared from larvae mining leaves of *Chloranthus* by junior author (i. c. Sasakawa).

Japanese name: Hitorishizuka-shôjôbae.

Relationships: Different from ordinary members of the subgenus *Hirtodrosophila*, in having well developed preapical bristles on the middle tibiae, and a pair of slender submedian processes of the novasternum, as are found in some species of the genus *Scaptomyza*.

Ecological notes: Host-plant: *Chloranthus japonicus* Sieb. (Chloranthaceae). Mine: Pale green; ophistigmatonome, first narrow mine near leaf-margin about 1 cm. in length, later blotch mine slightly swollen in blister-form, upper surface type; grains of frass scattered irregularly. Many larvae mining a single leaf, moving in different directions and forming again new mines in fresh leaves. The full-grown larva breaks through the mine and falls to the ground. Occasionally puparium found below the surface of leaf.