

## A New Species of the Subgenus *Scaptodrosophila* of the Genus *Drosophila* (Diptera, Drosophilidae) Visiting Flowers in Japan

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**Synopsis** Description of a new species of *Drosophila* (*Scaptodrosophila*) associated with the flowers of *Angelica* and *Camellia* in Japan is given.

The species of the subgenus *Scaptodrosophila* DUDA of the genus *Drosophila* FALLÉN have been occasionally reported as breeding in flowers: e.g., *D. scapto-myzoidea* DUDA in *Malvaviscus* in Singapore (OKADA, 1957), *D. hibisci* ~~COOK, PARSONS~~ ~~et~~ BOCK in *Hibiscus* in Australia (COOK, PARSONS & BOCK, 1977). CARSON observed that this subgenus has made a major adaptive radiation into the flower breeding niche in Papua New Guinea (OKADA & CARSON, 1980). Although breeding was not confirmed, *D. simplex* de MELJERE was observed to visit the flowers of *Ipomoea* in Singapore (OKADA, 1975) and *D. parapunctipennis* DUDA the flowers of *Phaeomeria* in Papua New Guinea (unpublished).

The junior author has found *D. puncticeps* OKADA coming to various kinds of flowers in Japan (NISHIHARU, 1978) and an aberrant species of the subgenus associated with the flowers of *Angelica* and *Camellia*. The latter species is to be described as a new species herein, with some ecological notes.

### *Drosophila* (*Scaptodrosophila*) *angelicae* n. sp.

(Fig. 1)

♂, ♀. Body about 1.5 mm in length, generally subshining black. Head (Fig. 1A, B) as broad as thorax. Eye dark red, with thick pile. Antenna with 2nd joint brownish black, with a long bristle; 3rd elongate, dark yellowish brown. Arista with 2 upper long and 2 lower long branches and a large fork. Mouthparts yellow. Palpus dark brown, conical, rounded at tip, with 2 long and a few shorter setae below. Frons glossy deep black, as broad as the length down middle; frontal shield large, reaching anterior margin of frons, somewhat convex, with a depressed line along lateral margin. Periorbit glossy black, anteriorly broadened. Carina high, long and flat above. Cheek very broad, 1/3 as broad as the greatest diameter

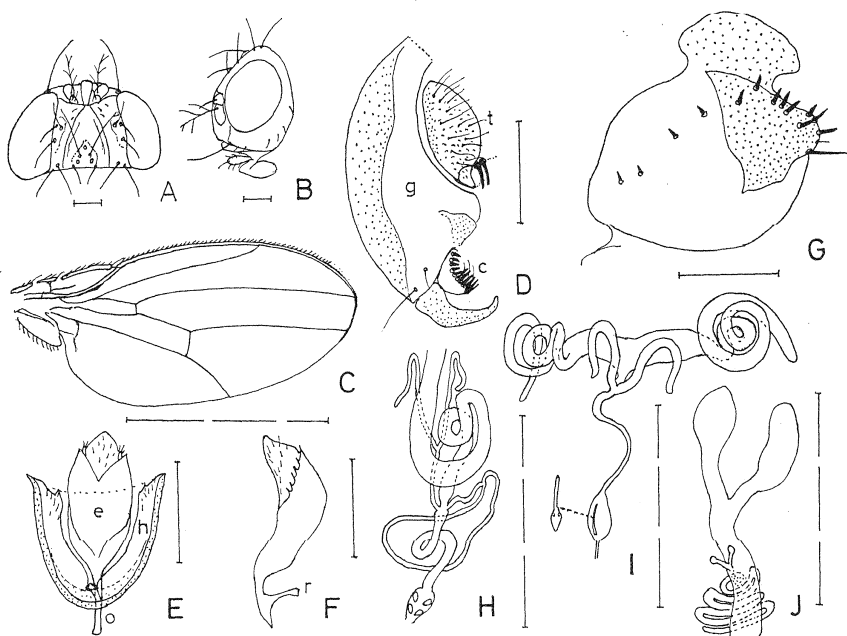


Fig. 1. *Drosophila (Scaptodrosophila) angelicae* n. sp. A, B, Head; C, wing; D, periphallallic organs; E, F, phallic organs; G, ovipositor; H, digestive system; I, male internal reproductive organs; J, female internal reproductive organs; c, surstylus; e, aedeagus; g, epanandrium; h, hypandrium; o, apodeme of aedeagus; r, vertical rod of aedeagus; t, cercus. Scales: broken line, 1.0 mm; solid line, 0.1 mm.

of eye. Ocellars inserted inside triangle. Anterior reclinate orbital slightly shorter than proclinate, just outside and before the latter; posterior reclinate as long as proclinate. Vibrissa very strong, 2nd oral 1/4 as long as vibrissa. Mesoscutum subshining black, scutellum deep black. Thoracic pleura deep black, whitish along sutures. Propleurals seemingly absent. Humerals 2 or 3, uppermost the longest. Acrostichal hairs in 8 rows. Prescutellars weakly developed. Anterior dorsocentrals slightly shorter than posteriors, their cross distance slightly more than length distance. Apical scutellars longer than laterals, slightly nearer to each other than to the laterals, which are convergent. Two long sternopleurals; sterno-index 0.7. Legs black, tarsi and lower tip of tibiae yellowish white. Preapical obscure on fore tibia. Wing (Fig. 1C) hyaline, comparatively broad; veins brown.  $R_{2+3}$  almost straight;  $R_{4+5}$  and M parallel, both convex anteriorly. C-index 1.3–1.7; 4V-index 3.0–3.4; 4C-index 1.7–2.2; 5X-index 3.5–4.0; Ac-index 2.6–3.2. C1-bristles 2, subequal; C3-fringe 5/9. Haltere dark yellow, apically black. Abdominal tergites black, with caudal margins narrowly white. Abdominal sternites quadrate; female 7th sternite separated into lateral flaps.

Periphallalic organs (Fig. 1D) brownish black; epandrium (g) narrowing above, ventrally with a curved process; surstylus (c) crescent, with about 9 black teeth in a concave row; cercus (t) fusiform, hairy, with a tuft of 2 stout black bristles below. Phallic organs (Fig. 1E, F) with aedeagus (e) gross, ellipsoidal. Pale and distally pubescent, laterally black, mediolaterally serrated; apodeme of aedeagus (o) short, 1/3 as long as aedeagus; vertical rod (r) as long as apodeme. Hypandrium (h) deeply notched, apically pubescent. Ovipositor (Fig. 1G) rounded fan-shaped, black, distally deep black, submarginally with about 14 stout teeth, subapically with a prominent spine. Mid-intestine (Fig. 1H) twice coiled. Posterior branches of Malpighian tubules fused to make a complete loop. Testis (Fig. 1I) orange, with about 3 outer coils, basally much thickened and fused to each other to make a large seminal vesicle; paragonia pale, slender, once folded; ejaculatory bulb small, simple; apodeme slender, spoon-like. Spermatheca (Fig. 1J) small, pale; ventral receptacle with 4 large loops; parovaria absent.

Holotype ♂, allotype ♀, Asakawa, Tokyo 22 X 1976, ex flowers of *Angelica polymorpha* MAXIM. (Umbelliferae), Paratypes 8 ♂, 1 ♀, same data as holotype; 2 ♂, same place, 11 X 1974, ex same flowers as above; 1 ♀, same place as above, 30 I 1975, ex flowers of *Camellia japonica* L. (Theaceae); 1 ♀, Tsubaki, Wakayama Pref., 12 X 1976, by sweeping; 1 ♀, Udo Jingu, Miyazaki Pref., 21 III 1977, swept over *Stellaria* (Caryophyllaceae) (all by NISHIHARU); 1 ♂, Mishima, Tamazawa, Shizuoka Pref., 8 XI 1975 (KAWANISHI). Types are deposited in the National Science Museum, Tokyo.

*Distribution.* Japan (Honshu, Kyushu).

*Relationships.* This species is an aberrant among the subgenera, especially in having the fan-shaped ovipositor as seen in some *Scaptomyza* (*Parascaptomyza*) species, and anterior reclinate orbital slightly before the proclinate as in "*Spuriostyloptera*" species, which have been included in *Scaptodrosophila* by BOCK and PARSONS (1978). Different, however, from the *Spuriostyloptera* species, the present species has unspotted mesoscutum.

*Remarks.* The early stages of this species are still unknown. The adult flies have been found in colder season, particularly in late autumn visiting the flowers of *Angelica* which bloom in that season. It is improbable that the larvae breed in the flowers which are very small.

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### Literature

- BOCK, I. R. & P. A. PARSONS, 1978. The subgenus *Scaptodrosophila* (Diptera: Drosophilidae). *Syst. Ent.*, 3: 91-102.

*Okada, T.*

- BOCK, L. R. & H. L. CARSON, 1980. Drosophilidae associated with flowers in Papua New Guinea II. *Alocasia* (Araceae). *Pacif. Ins.*, **22**: 217-236.
- COOK, R. M., P. A. PARSONS & L. R. BOCK, 1977. Australian endemic *Drosophila* II. A new *Hibiscus*-breeding species with its description. *Austral. J. Zool.*, **25**: 755-763.
- NISHIHARU, S., 1978. Food habits and evolution of *Drosophila* (in Japanese). *Iden (Genetics), Tokyo*, **32** (10): 12-20.
- OKADA, T., 1975. The Oriental drosophilids breeding in flowers. *Kontyû, Tokyo*, **43**: 356-363.

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