

FOUR NEW SPECIES OF DROSOPHILIDAE FROM JAPAN (DIPTERA)

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*Paramycodrosophila nakamurai* sp. n. (Fig. 1) [Jap. name: Yamato-sarasa-shôjôbae]

♂. Body about 2.2 mm in length. Head (Fig. 1 A, B) as broad as thorax. Eyes oval, dark red, with fine piles. Antenna orange, third joint black except basally and twice as long as broad. Arista with three dorsal and two ventral long branches in addition to a small fork. Palpi black, broad, with a rather fine terminal seta. Ocellar triangle black; periorbits orange grey, black and slightly convex at the insertion of two anterior orbital bristles. Front much broader than long, orange grey, with X-shaped large black patch. Carina very short, narrow, but high, located between antennal bases. Cheek broad, one-fourth as broad as the largest diameter of eye, orange yellow, with black patches above postgena and at the insertion of vibrissae. Anterior reclinate orbital slightly shorter than other orbitals, situated before proclinate; posterior reclinate nearer to inner vertical than to proclinate. Vibrissa strong, other orals undeveloped.

Mesonotum (Fig. 1 C) orange yellow, with scattered black patches of generic character. Scutellum mat black, marginally pale. Thoracic pleura black, with yellow areas along sutures. Humerals two, subequal. Acrostichal hairs in eight rows. Dorsocentrals in two pairs, anterior pair two-thirds as long as posteriors, nearly equally apart from each other and from posteriors. Anterior scutellars divergent, posteriors as long as anteriors, nearer

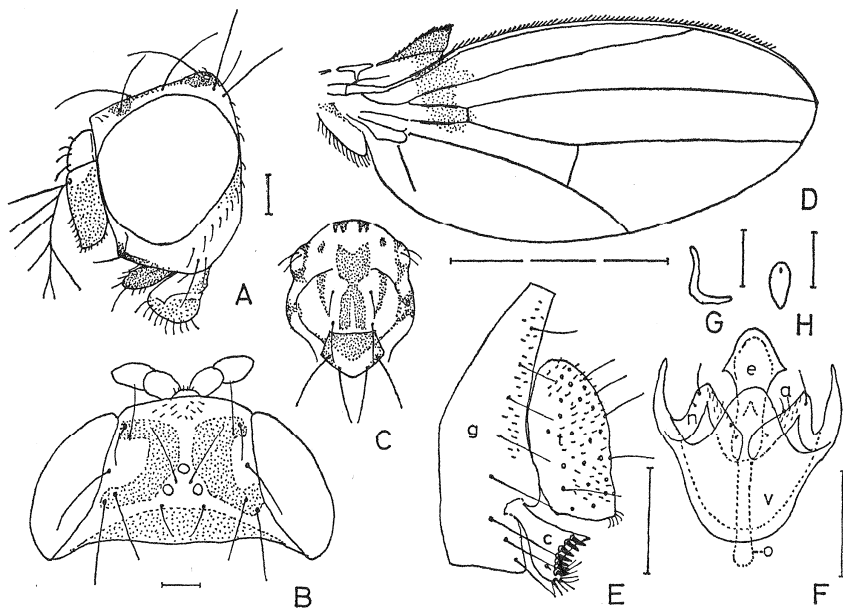


Fig. 1. *Paramycodrosophila nakamurai* sp. n. ♂. A, B. Head, C. Mesonotum, D. Wing, E. Periphallal organ, F. Phallic organ (ventral aspect), G, H. Ejaculatory apodeme, a, anterior paramere; c, clasper; e, aedeagus; g, genital arch; n, novasternum or hypandrium; o, apodeme of aedeagus; t, anal plate. Scales 1.0 mm in wing, 0.1 mm in other figs.

to anteriors than to each other. Sterno-index 0.4. Legs yellow, with black annules as follows: two each on fore femur and fore tibia, one median each on mid and hind femora, one subbasal each on mid and hind tibiae. Fore metatarsus as long as two succeeding tarsal joints taken together, mid and hind metatarsi as long as three succeeding. Preapicals prominent on hind tibiae, apicals on mid. Wing (Fig. 1 D) hyaline, crossveins clear. C much swollen and black before subcostal break; faint black patch below the swelling reaching M.  $R_{2+3}$  gently curved to C at apex,  $R_{4+5}$  and M slightly convergent. C-index 1.7; 4V-index 2.0; 4C-index 1.4; 5x-index 2.0. C3-fringe on basal half. Halteres white. Abdominal tergites yellow, with medially incised and laterally concaved caudal broad black bands. 6T to abdominal tip yellow.

Periphallic organs (Fig. 1 E) yellow, clasper fuscous. Genital arch broadly truncate below, clasper as long as broad, distally with a somewhat concaved row of about seven black teeth. Anal plate large, truncate below. Phallic organs (Fig. 1 F) pale yellow. Aedeagus rod-shaped, apically much swollen laterally, subapically pointed laterally. Anterior paramere small, fused to hypandrium, with a few scattered sensilla. Ejaculatory apodeme (Fig. 1 G, H) brownish, plate elliptical, stalk as long as plate.

Holotype: ♂, Rinsaiji, Shizuoka, 12 II 1972 (Nakamura). Paratype: 1 ♂, Rinsaiji, Shizuoka, 27 V 1972 (Nakamura).

Relationships: Resembles *P. parapictula* Wheeler and Takada from Caroline Is. in the shape of aedeagus and in having a black spot at the insertion of vibrissa, but differs from it in having broader cheek, face black above and below (pale in *parapictula*), acrostichal hairs in eight rows (six in *p.*), and genital arch more distinctly truncate below. This genus is newly recorded from Honshu, Japan.

***Scaptomyza (Scaptomyza) clavata* sp. n.** (Fig. 2) [Jap. name: Kanzashi-hime-shôjôbae]

♂, ♀. Body about 2.5 mm in length, slender and generally black. Head as broad as thorax. Eyes red, with piles. Antenna with second joint orange and black inside, third greyish orange. Arista with three dorsal and a small fork, without ventral branches. Palpus orange, slender, apically rounded, with two stout black apical setae. Ocellar triangle grey with bluish pollinosity. Periorbits grey with bluish pollinosity. Clypeus black. Front grey with bluish pollinosity, anterior one-third orange, black at the margin of ocellar triangle. Face yellowish grey. Carina black, long but low. Cheek broad, yellow, caudally black, one-fourth as broad as the greatest diameter of eye. Anterior reclinate orbital one-third as long as posterior reclinate, just outside proclinate, which is slightly shorter than posterior reclinate. Postverticals upright, as long as proclinate orbital. Vibrissa long, second oral half as long as vibrissa.

Mesonotum and scutellum black, pollinose in bluish grey, with three narrow longitudinal black stripes, reaching end of scutellum. Thoracic pleura mat black. Humerals two, upper longer. Acrostichal hairs in four rows. Anterior dorsocentrals five-sevenths as long as posteriors, distance between anterior and posterior pairs two-thirds distance between posterior pair. Anterior scutellars divergent, very long, posteriors twice as apart from anteriors as from each other. Sterno-index 0.5. Legs yellow, distal tarsal joints fuscous. Preapicals on all tibiae, apicals prominent on mid. Wings hyaline, long, crossveins clear.  $R_{2+3}$  gently curved to C at apex,  $R_{4+5}$  and M parallel. C-index 3.5; 4V-index 1.4; 4C-index 0.6; 5x-index 1.3; Ac-index 3.0. C1-bristles two, subequal; C3-fringe on basal half. Halteres yellowish white. Abdominal tergites mat black.

Periphallic organs (Fig. 2 A) black. Genital arch broad, gently tapering below. Clasper robust, much broader than long, distally somewhat concaved, with a convexed row of about ten black pointed teeth on upper half, and numerous stout setae on lower half.

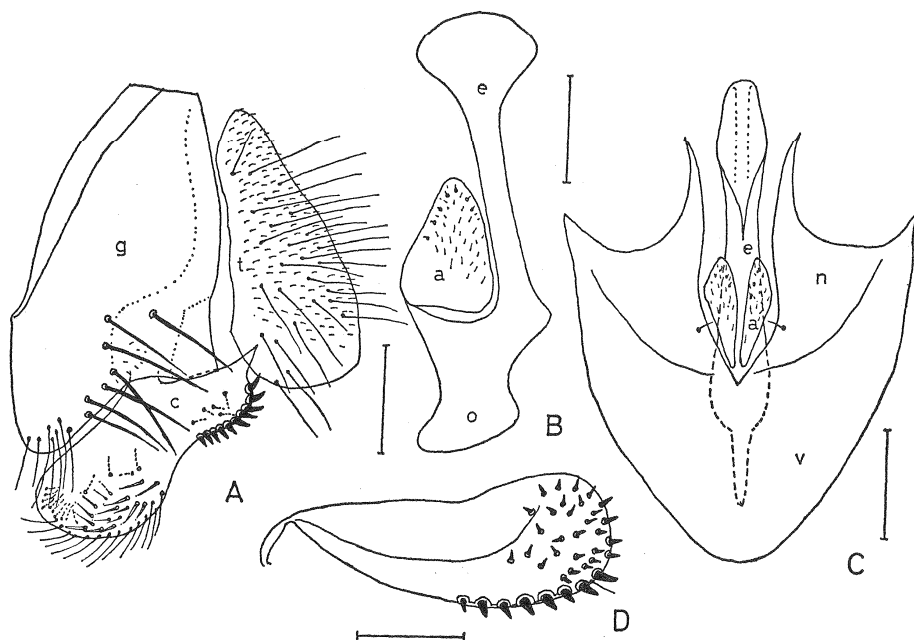


Fig. 2. *Scaptomyza (Scaptomyza) clavata* sp. n. ♂, ♀. A.Periphallic organs. B: Aedeagus and anterior paramere (lateral aspect), C. Phallic organs (ventral aspect), D. Egg-guide. Scales and signs as in Fig. 1.

Anal plate truncate below, setigerous and pubescent. Phallic organs (Fig. 2 B, C) black. Aedeagus elongate, club-shaped in lateral aspect, apodeme short but thick. Anterior paramere triangular, half as long as aedeagus, pubescent and with a few sensilla. Hypandrium with a long caudal process and a short submedian spine. Egg-guide (Fig. 2 D) brownish black, robust, apically broadly rounded, with about twelve marginal and twenty discal stout black teeth.

Holotype: ♂, Mt. Fuji, 2100 m, 8 VIII 1972 (Choo). Paratypes: 1 ♂, 2 ♀, collected together with the holotype (Choo), 1 ♂, Minoge, Mt. Ooyama, Kanagawa Pref., 2 V 1955 (Okada).

Relationships: Resembles *S. grahami* Hackman from China in the shape of clasper and egg-guide and in having no ventral branches of arista, but differs from it in much fewer clasper teeth, about ten (about twenty in *grahami*).

***Drosophila (Scaptodrosophila) throcmortoni* sp. n.** (Fig. 3). [Jap. name: Ginsuji-shōjōbae]

*Drosophila (Paradrosophila) rufifrons*: Okada, 1965. Syst. Study Drosophilidae Jap.: 93 (not *rufifrons* Loew, 1873; misidentified).

♂, ♀. Body 2.0 mm, glossy black. Arista with about three dorsal and two ventral long branches in addition to a small fork. Front dark reddish brown, laterally black, anteriorly much narrower than length down middle. Periorbits with silvery longitudinal stripes. Anterior reclinate orbitals one-sixth as long as posterior reclinate. Palpus grey brown. Carina black, high, broad below. Acrostichal hairs in six rows. Metatarsus of fore leg as long as two succeeding tarsal joints taken together. Wings hyaline. C-index

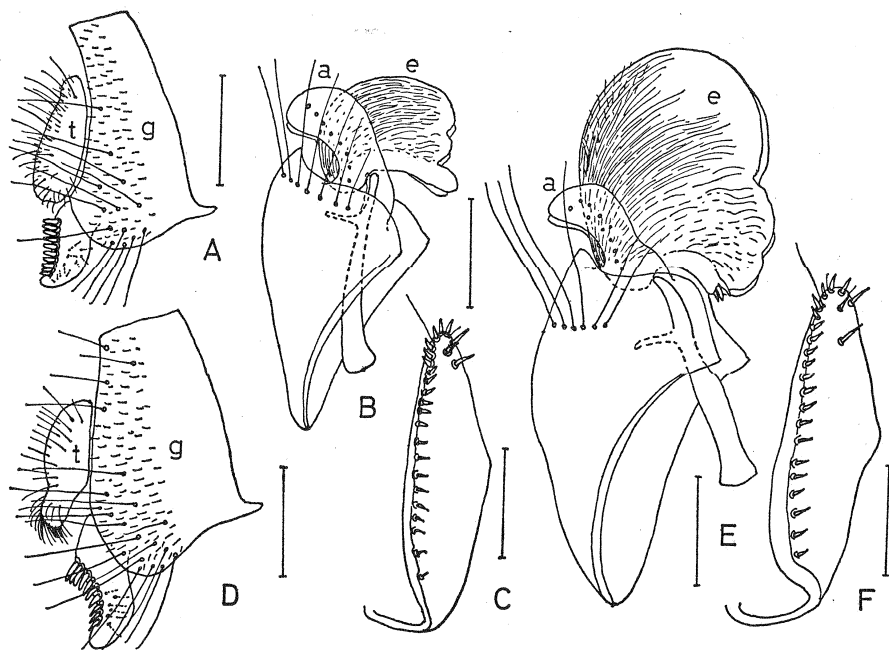


Fig. 3. *Drosophila* (*Scaptodrosophila*) *throckmortoni* sp. n. (A-C) and *D. (S.) rufifrons* Loew, from Italy (D-F). A, D. Periphallitic organs, B, E. Phallic organs (lateral aspect), C, F. Egg-guide. Scales and signs as in Fig. 1.

1.6-2.0; 4V-index 2.4; 5x-index 2.0, C3-fringe on basal two-thirds to four-fifths.

Other features as described and figured by Okada, 1965 (*loc. cit.*)

Holotype: ♂, Suginami, Tokyo, 30 VII 1951 (Ohnishi). Paratypes; 1♂, *ibid.* 30 VII 1951, 1♂, *ibid.* 8 V 1952 (Ohnishi); 3♂, 1♀, Tokorozawa, Saitama Pref., 9 VIII 1958 (Okada), 14♂, 8♀, Kinuta, Setagaya, Tokyo (Okada); 2♂, 1♀, Takanosu, Niigata Pref., 28 VIII 1963 (Okada).

Relationships: Closely similar to *D. rufifrons* Loew from Europe in male and female genitalia (Fig. 3). It differs from *rufifrons* in having smaller and darker body, silvery longitudinal stripes on periorbits (without such stripes in *rufifrons*), aedeagus only slightly longer than anterior parameres (much longer in *r.*; compare Fig. 3 B and E), and anal plate ventrally not narrowing and without thick hair tuft (compare Fig. 3 A and D).

***Drosophila* (*Hirtodrosophila*) *elliptica* sp. n.** (Fig. 4) [Jap. name: Hanemon-fushôjôbae]

♂. Body about 2.2 mm in length. Head (Fig. 4 A, B) somewhat broader than thorax. Eyes with piles, elliptical, and much oblique to body axis. Antenna with second joint orange, third greyish brown, large, twice as long as broad, gently narrowing distally. Arista with three dorsal and two ventral branches in addition to a large fork. Ocellar triangle black; periorbits grey, pollinose in white. Clypeus grey. Face black above, white below. Carina short but very acute, with ridge black. Cheek yellow, very broad, one-fourth as broad as the greatest diameter of eye. Orbitals widely apart from each other; anterior reclinate half as long as others, nearer to proclinate than to posterior reclinate. Vibrissa weak.

Mesonotum mat brown, with obscure pale longitudinal stripes along dorsocentral lines and caudal half of mid-dorsal region. Scutellum yellowish. Thoracic pleura yellow, with a narrow longitudinal black stripe above; sternopleura mostly black. Humerals two, subequal. Anterior dorsocentrals two-thirds as long as posteriors, distance between anterior and posterior pairs two-fifths distance between posterior pair. Acrostichal hairs in four rows. Sterno-index 0.5. Anterior scutellars divergent, slightly shorter than posteriors, which are equally apart from each other and from anteriors. Wings (Fig. 4 C) hyaline and long, with a large diffuse elliptical black spot near distal end of cell  $R_{2+3}$ . Crossveins clear.  $R_{2+3}$  nearly straight,  $R_{4+5}$  and M parallel. C-index 2.0; 4V-index 2.0; 4C-index 1.2; 5x-index 2.2; Ac-index 3.5. C1-bristles one, C3-fringe on basal half. Halteres yellow, apically black. Abdominal tergites mostly black, anterior margins narrowly yellow.

Periphallial organs (Fig. 4 E): Genital arch yellow, broadly truncate below, mid-dorsally broadest, pubescent and caudally hairy. Clasper small, pale brown, basally narrowing, distally with a straight row of about seven long black teeth. Anal plate black, elliptical, hairy and pubescent. Phallic organs (Fig. 4 D) mostly pale yellow. Aedeagus robust, apically with six fingerlike large recurved processes. Anterior parameres black, oblong, half as long as aedeagus, apically with a few sensilla, basally contiguous to the apodeme of aedeagus. Apodeme slender, as long as aedeagus. Ventral fragma oblong. Novasternum quadrate, with a long submedian spine. Ejaculatory apodeme yellowish brown, with oval plate and slender stem.

Holotype: ♂, Rinsaiji, Shizuoka, 10 I 1972 (Nakamura). Paratype: 1 ♂, Meguro Natural Garden, Tokyo, XI 1972 (Kino).

Relationships: Belonging to the *quadrivittata* species subgroup of the *quadrivittata* species group. Somewhat related to *D. hiharai* Okada from Japan, in having oblique eyes,

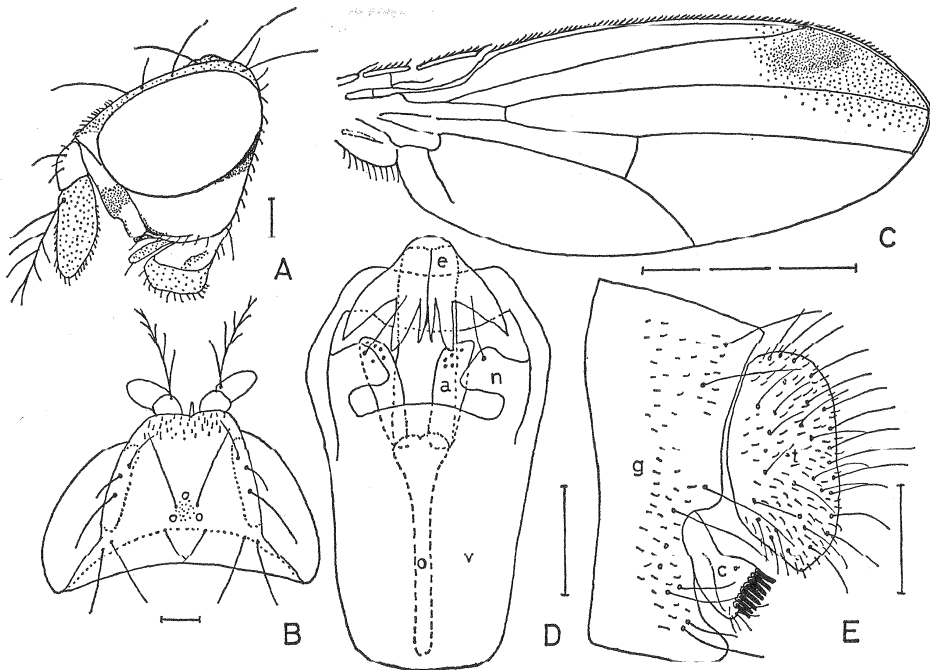


Fig. 4. *Drosophila (Hirtodrosophila) elliptica* sp. n. ♂. A, B. Head, C. Wing. D. Phallic organs (ventral aspect), E.Periphallial organs. Scales and signs as in Fig. 1.

broad cheek, striped mesonotum and only four rows of acrostichal hairs. But clearly distinguished by wing venation, wing pattern, and male genitalia.

I am much obliged to Messrs. Kôzô Nakamura of Shizuoka High School, Choo Jong-Kil of National Institute of Genetics, Mishima, and Hideto Kino of Tokyo Metropolitan University, for their providing me with precious material. My hearty thanks are also due to Dr. A. A. Buzzati-Traverso, Laboratorio Internazionale di Genetica e Biofisica, Napoli, for his presenting me European specimens in alcohol of *D. rufifrons* Loew, 1873. *D. throckmortoni*, a new species closely related to *rufifrons*, is dedicated to Dr. L. H. Throckmorton of University of Chicago, memorizing a hundred year of development in drosophilid phylogeny. The differences between these two species were first awared by me when I saw in the University of Texas, Austin, 1968, some dried specimens of European *rufifrons*, preserved in the collection of Dr. M. R. Wheeler. I thank him here sincerely for having given me that best occasion.