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Drosophila tsukubaensis, a New Species of the *obscura* Group of the Genus *Drosophila* (Diptera, Drosophilidae) from Japan

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Synopsis A new species belonging to the *obscura* group of *Drosophila* (*Sophophora*) is described from Japan. The chromosome configuration is also determined.

In Japan have been known to occur 4 species of the *obscura* subgroup of the *obscura* group of *Drosophila*, namely *alpina* BURLA, 1948, *bifasciata* POMINI, 1940, *imaii* MORIWAKI et OKADA, 1967 and *eniwae* TAKADA, BEPPU et TODA, 1979 (MORIWAKI *et al.*, 1952; OHBA, 1954; OKADA, 1956; MORIWAKI *et al.*, 1967; TAKADA *et al.*, 1979).

Recently not a few flies of the 5th member in Japan of this subgroup were collected from Ibaraki, Tochigi and Nagano Prefectures, Honshu, Japan. These flies are concluded to belong to a new species.

This paper describes the new species with note on metaphase chromosome configuration.

Drosophila* (*Sophophora*) *tsukubaensis n. sp.

[Japanese name: Tsukuba-shôjôbae]
(Fig. 1)

Male and *female*. Body about 2.5 (1.8–2.8) mm in length, brownish black. Frons, dull black about half as broad as head width and with a few frontal hairs. Eye dark red, with short black pile. Cheek 1/3–1/4 as broad as the greatest diameter of eye. Anterior reclinate orbital about 1/3 as long as proclinate orbital. Antenna black, second joint paler. Arista with 4 upper and 2 lower branches besides a moderate fork. Palpus greyish brown, with 1 or 2 prominent setae. Carina low and broader below. Second orals 1/3 as long as vibrissa. Mesonotum brownish black. Acrostichal hairs in 8 rows. Length distance of dorsocentrals about half the corss distance. Humerals 2, subequal. Sterno-index about 0.5 (0.4–0.7). Legs dark brown, tibiae and tarsi paler. Preapicals on all tibiae, apicals on middle. Proximal

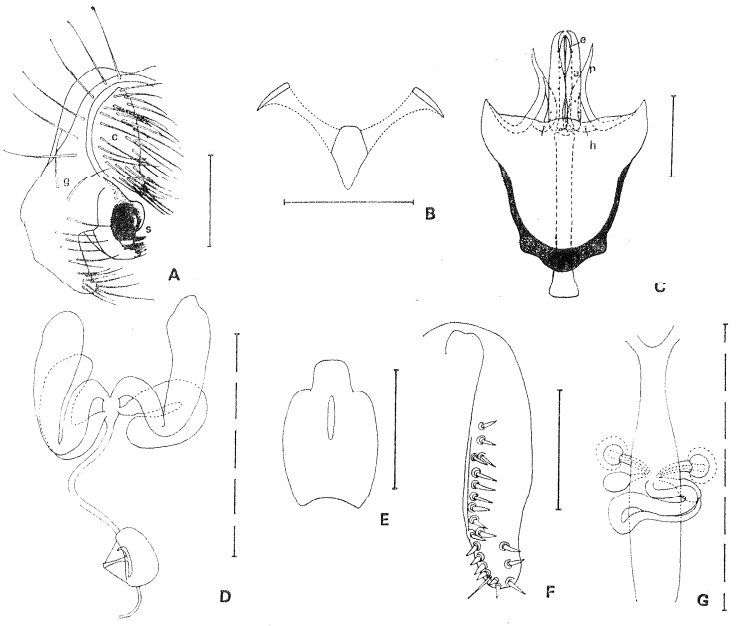

Fig. 1. *Drosophila tsukubaensis* n. sp. A, Periphallic organs; B, decasternum; C, phallic organs; D, male internal reproductive organs; E, ejacuratory apodeme; F, egg guide; G, female internal reproductive organs. a, Anterior paramere; c, cercus; e, aedeagus; g, epandrium; h, hypandrium; p, posterior paramere; s, surstylus. Scales: broken line, 1.0 mm; solid line, 0.1 mm.

2 tarsal joints of male fore legs provided with sex combs, composed of about 8 (5–10) and 8(6–11) teeth respectively. Wing hyaline, slightly fuscous along costa. C-index about 2.6(2.2–3.1); 4V-index about 2.1(1.8–2.4); 4C-index about 1.1(0.9–1.3); 5X-index about 2.1(1.5–2.6). C1-bristles 2; C3-fringe on basal 1/5–2/5. Halteres yellowish white. Abdominal tergites brownish black. Sternites greyish.

Periphallic organs (Fig. 1A). Epandrium brownish black, triangular below, lower portion with about 15 hairs, upper portion about 8. Surstylus with a dark brown hook-shaped projection at the upper portion of its caudal margin, a row of about 10(8–11) black teeth at middle, and about 20 brown stout setae distally. Cercus separated from epandrium, dark brown, elliptical and hairy. Decasternum dark brown, small and triangular (Fig. 1B).

Phallic organs (Fig. 1C). Aedeagus pale brown and bifid. Anterior paramere orange brown, curved, pointed at tip and with a row of about 7 sensilla. Posterior paramere orange brown, pointed at tip and bilobed below. Hypandrium with a pair of short submedian spines. Ventral fragma pale brown, fused to hypandrium and semielliptical. PI=0.6.

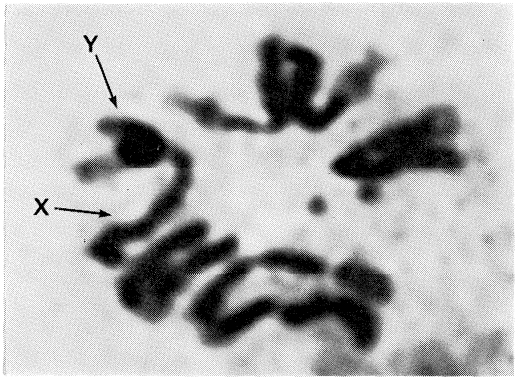

Fig. 2. Metaphase chromosomes of male larval brain cell of *D. tsukubaensis*.

Egg-guide (Fig. 1F). Lobe pale yellowish brown, rounded at tip, with about 16(13–22) black marginal and about 2(1–3) black discal teeth and a short subterminal hair. Basal isthmus short, broad and yellowish brown.

Internal structures. Mid intestine coilling about 2 times. Rectal papillae about 1.5 times as long as wide. Malpighian tubes with common stalks short and posterior branches ending free. Testis orange, elongate elliptical, apically rounded or slightly pointed and proximally narrowing. Seminal vesicle banana shaped. Accessory gland transparent and folded once (Fig. 1D). Ejaculatory bulb oval, cephallic and caudal margins weakly bilobed. Ejaculatory apodeme with plate rectangular, anterior margin strongly projected and posterior margin angularly concaved (Fig. 1E). Spermatheca hemispherical and black. Parovarium with head oval. Ventral receptacle short and transversely folded about 2 times (Fig. 1G).

Holotype: ♂, Sakura-mura, Ibaraki Pref., 1. VI. 1981, found in banana trap in the campus of the University of Tsukuba (TAKAMORI). Paratypes: 6 ♂, 28 ♀, Sakura-mura, 13. V. —6. VI. 1981; 3 ♂, 3 ♀, Mt. Tsukuba, Ibaraki Pref., 10. VI. 1981; 2 ♀, Meotobuchi, Tochigi Pref., 28. VIII. 1981 (all by TAKAMORI); 5 ♂, 1 ♀, Matsushiro, Nagano Pref., 4. VIII. 1982 (YABUSAKI). Holotype is deposited in the National Science Museum, Tokyo. Paratypes are deposited in the University of Tsukuba.

Relationships. This species undoubtedly belongs to the *obscura* subgroup in dark body color, having 8 rows of acrostichal hairs on mesonotum, low carina, elliptical and orange colored testis, not a few teeth of distal sex comb of the male and short ventral receptacle of the female, yet can be distinguished from any other known species of the subgroup by small and triangular decasternum of the male and exceptionally short basal isthmus of egg-guides of the female.

Among the Japanese species of the *obscura* subgroup, this species is closest to *D. bifasciata*, which was sometimes collected together with this species. This species can be easily distinguished, however, from *D. bifasciata* by paler tarsi.

Chromosomes. The metaphase chromosomes were identified by using strains originated from single fertilized females collected in the campus of the University of Tsukuba.

Giemsa stained preparations of the male larval brains show 2 pairs of rods, 2 pairs of V's and 1 pair of dots for autosomes and 1 pair of unequal V's for sex chromosomes (Fig. 2). V-shaped autosomes of one of the 2 pairs are sub-metacentric and have distinct secondary constrictions on the longer arms.

The X is the largest V and sub-metacentric. The Y is the smallest V and thickly stained.

Among the known members of the *obscura* subgroup, *D. subsilvestris* HARDY et KANESHIRO, 1968 (=*D. silvestris* BASDEN 1954, nec PERKINS, 1910) is most similar to *D. tsukubaensis* in chromosome configulation excepting the size of Y chromosome (KNIGHT 1956).

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