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Drosophila Survey of Hokkaido XXI. Description of a New Species, *Drosophila neokadai* sp. nov. (Diptera, Drosophilidae)[1)2)3)]

With 2 Text-figures

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(*Communicated by* S. MAKINO)

ABSTRACT The present paper describes a new species of the *robusta* group in the genus *Drosophila*. Two specimens of both sexes were first collected at Toya, Hokkaido, together with 18 different species, on the 17th to 19th, May, 1964. The new species closely resembles *Drosophila okadai* in several apparent characters, and it was named as *Drosophila neokadai*. *Drosophila neokadai* is the sixth member of *robusta* group in Japan.

The present paper describes a new species of the *robusta* group in the genus *Drosophila*.

Rather broad collections of drosophilid flies were undertaken at 14 different localities in Hokkaido and in Aomori prefecture, during a period from May to October, 1964, by Dr. Momma, Mr. Tokumitsu, Mr. Shima and the senior author. The collections were made mostly by using fermented banana as a bait, and partly by sweeping in a variety of vegetation. Two specimens of both sexes were first collected by Kaneko at a place near the shore of Lake Tōya; Tōya-Ko-Onsen, about 70 km southwest from Sapporo, on the 17th to 19th, May, 1964. A total of 1494 flies containing this species were obtained in this collection; they were represented by the following 19 species: *Amiota*

1) This paper is dedicated to Professor Sajiro Makino, Zoological Institute, Hokkaido University, Sapporo, Japan, in honor of his sixtieth birthday, June 21, 1966.

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variegata, Leucophenga maculata, Chymomyza caudatula, Scaptomyza monticola, Drosophila alboralis, D. histrioides, D. coracina, D. bifasciata, D. auraria race A, *D. auraria* race B, *D. brachynephros, D. nigromaculata, D. testacea, D. tenuicauda, D. ezoana, D. sordidula, D. lacertosa, D. moriwakii, D. okadai* and a species very allied to *akadai*. From then on, certain numbers of the latter species were secured in several localities; Toikanbetsu about 200 km north, Jōzankei about 20 km southwest, and Nopporo about 14 km east from Sapporo.

The new species of *Drosophila* to be described in the following closely resembles *Drosophila okadai* Takada in several apparent characters, but is distinguishable by certain definite bodily structures.

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Drosophila (*Drosophila*) *neokadai* sp. nov. (Figs. 1-2)

Japanese name: Tōya-shōjōbae.

External Characteristics of Imagines: Body large, dark brownish black, mat, about 4 mm in length. Antenna dark brown. Arista with about 7 branches including a fork, 2 below it. Palpus greyish brown, with about 2-5 longer and several shorter bristles. Eyes dark reddish brown, with brown piles. Middle orbital about 1/3 anterior orbital, 1/2 posterior orbital. Second oral bristle about 2/5-1/2 the size of vibrissa. Ocellar triangle large and black. Periorbits black. Carina brown and high. Cheeks dark brown, about 1/4 as broad as the greatest diameter of eyes. Clypeus dark brown. Front dark brown, about 2/5 as broad as head width. Proboscis brown.

Mesonotum dark brownish black with a black median longitudinal stripe but this stripe is very often indistinguishable in specimens collected from natural populations. Acrostichals in 6 rows, no prescutellars. Anterior scutellars slightly convergent. Scutellum dark browish black. Thoracic pleura dark brown. Sterno-index about 0.8. Humerals 2. Halteres white.

Abdominal tergite brownish black, and with a broad blackish band on each

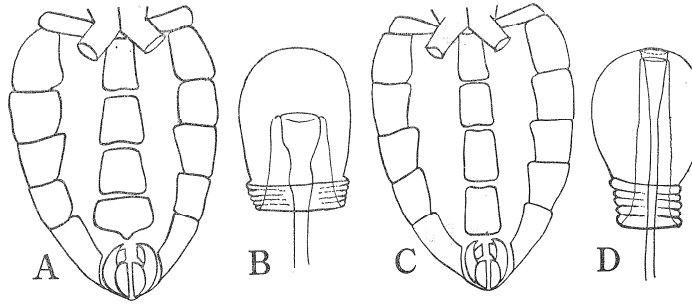

Fig. 1. Ventral views of abdomen in male, and spermathecae of female. A and B: *D. okadai*. C and D: *D. neokadai* n. sp.

tergite. Sternites dark brown, large and quadrate as shown in Figure 1, C. Legs dark brown, preapicals on all three tibiae; apicals on fore and middle.

Wings slightly fuscous, veins brown, with C-1 bristles 2 and equal in size. Cross-veins clear. C-index about 3.9; 4v-index about 1.6; 4c-index about 0.6; 5x-index about 1.3 but varies, ranging 1.1 to 1.4 in localities. Third costal section with heavy britles on basal 2/3.

Periphallic organs (Fig. 2, C): General arch black, broad below, upper half with about 9 hairs, lower half with about 17 hairs including 5-7 black long teeth-like bristles at lower tip. Lower half of anterior margin convex, and lower posterior margin slightly curved and somewhat paler. Toe and heel slightly present, bottom of arch roundish. Clasper dark brown, quadrate proximally narrowing, upper margin concave; primary teeth black, about 10, arranged in a concave row. Anal plate large, fusiform, brownish black and contiguous to genital arch at middle, and with about 50-55 hairs. Decasternum (Fig. 2, D) pale brown, broadened and anterior margin dark brown.

Phallic organs (Fig. 2, E): aedeagus brownish orange, large, elliptical in lateral view, broadened and ventrally curved, basally bilobed. Anterior parameres rather small, and without sensillum separated from novasternum. Novasternum brown, divided into paired lateral square pieces, medially pubescent.

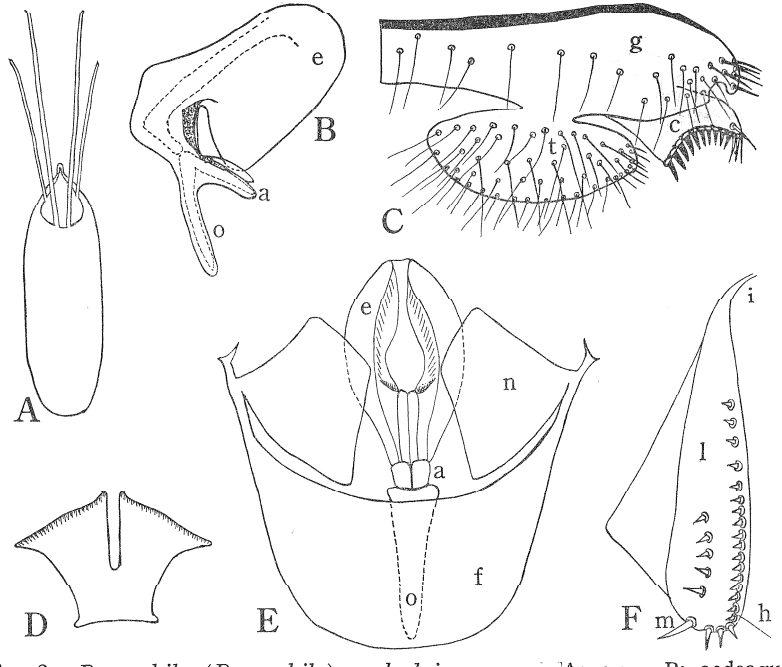

Fig. 2. *Drosophila* (*Drosophila*) *neokadai* sp. nov. A; egg. B; aedeagus and anterior paramere (lateral aspect). C; periphallic organs (lateral aspect). D; decasternum. E; phallic organs (ventral aspect). F; egg-guide. a, anterior paramere. c, clasper. e, aedeagus. f, ventral fragma. g, genital arch. h, subterminal hair. i, basal isthmus. l, egg-guide lobe. m, ultimate marginal tooth. n, novasternum. o, basal apodeme of aedeagus. t, anal plate.

Ventral fragma quadrate, dark brown. PI(Phallosomal index) about 2.0.

Egg-guides (Fig. 2, F): Lobe reddish brown, narrowly rounded at tip, and with about 19–22 marginal and 4–5 discal orange brown pointed teeth, ultimate marginal tooth being longer than the penultimate.

Other Characters: Spermatheca (Fig. 1, D) is oval, brown, markedly telescoped, without indentation at the apex, proximally narrowing, with fine transverse wrinkles basally, with a peculiar apical inner sheath attaching spermathecal duct to the apex of the spermatheca, deep introvert and strong basal constriction. Eggs (Fig. 2, A) with four slender filaments; two long and two about 7/10 long in length. Third instar larvae colorless. Puparium resembles that of *D. Pseudosordidula* shown in the paper by Kaneko *et al.* (1964), brown, anterior spiracles with about 12–14 branches, horn about 1/5–1/6 length of puparium and posterior spiracles convergent but sometimes slightly divergent.

Holotype: Male, Tōya-Ko-Onsen, Abuta-chō, Hokkaido, May 18, 1964, Kaneko.

Allotype: Female, Tōya-Ko-Onsen, Abuta-chō, Hokkaido, May 18, 1964, Kaneko.

Paratypes: Fifteen females and fourteen males, Toikanbetsu, northern part of Hokkaido, August 26–28, 1964, Momma; thirteen males, Nopporo, Hokkaido August 21, 1964, Tokumitsu; one female and two males, Tōya-Ko-Onsen, Hokkaido, September 15 and 18, 1964, Koneko; one male, Jōzankei, Hokkaido, September 23, 1964, Kaneko; thirty-eight females and fourty-three males, Nopporo, Hokkaido, October 20–21, 1964, Kaneko.

Holotype, allotype and most of paratypes are stored in the Zoological Institute, Faculty of Science, Hokkaido University. Four paratypes of both sexes are located in the Biological Laboratory, Kushiro Woman's Junior College and four in the Department of Biology, Tokyo Metropolitan University.

Distribution: Hokkaido, Japan.

Food: Fruit.

Relationship: The present species belongs to the *robusta* group of the subgenus *Drasophila*. It is closely allied to, but differs from *Drosophila okadai* Takada in several important characters. The male abdominal sternites (Fig. 1, C) are narrower than in *okadai* (Fig. 1, A). Posterior margin of the 5th sternite flattened (pointed in *okadai*). The genital arch is rounded and somewhat hooked below (pointed toe without teeth-like bristles in *okadai*, according to Takada, 1959), and spermatheca (Fig. 1, D) in cleared specimens is more weakly sclerotized, paler, more deeply telescoped, an basally more strongly constricted than *okadai* (Fig. 1, B). It has a peculiar apical inner sheath, while *okadai* has no such sheath. The spermathecal duct is narrower than that of *okadai*. The egg-guide teeth are orange brown, through black in *okadai*. The ultimate marginal tooth is not exceedingly long, though extremely long in *okadai*. The egg-filaments are in two pairs of unequal length, while in *okadai* they are equal in length.

The present species is also allied to *D. pseudosordidula* Kaneko, Tokumitsu and Takada, but the latter is clearly different from the former in the structure of genitalia, spermathecae, posterior crossveins of wings and mesonotal stripes.

It slightly resembles *D. lacertosa* Okada, but is easily distinguishable in the structure of genitalia, spemathecae, methonotal stripes, abdominal caudal

bands, certain wing characters, and so on.

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