



HOKKAIDO UNIVERSITY

Title	Drosophila Survey of Hokkaido, XX. : Description of a New Species, <i>Drosophila pseudosordidula</i> sp. nov. (Diptera, Drosophilidae) (With 14 Text-figures)
Author(s)	KANEKO, Akasi; TOKUMITSU, Takashi; TAKADA, Haruo
Citation	北海道大學理學部紀要, 15(3), 374-377
Issue Date	1964-12
Doc URL	https://hdl.handle.net/2115/27383
Type	departmental bulletin paper
File Information	15(3)_P374-377.pdf



**Drosophila Survey of Hokkaido, XX. Description of
a New Species, *Drosophila pseudosordidula* sp. nov.
(Diptera, Drosophilidae)¹⁾**

By

Akasi Kaneko, Takashi Tokumitsu and Haruo Takada

Zoological Institute, Hokkaido University
(With 14 Text-figures)

The present paper deals with the description of a new species found in the *robusta* group of the genus *Drosophila*.

Before going further the authors wish to express their gratitude to Professor Sajiro Makino, Hokkaido University, for this keen interest in this study, and to Dr. Eizi Momma for his kind guidance and encouragement throughout this work. We wish to thank Dr. Toyohi Okada, Tokyo Metropolitan University, for his helpful suggestions. Our thanks are also due to Dr. Kenya Kawamura, Department of Biology, College of Dairy Agriculture, for cooperation in collecting flies.

A collection of drosophilid flies was carried out by using fermented banana as a bait in the Nopporo forest zone near City of Sapporo during a period from May to October, 1962. The results were reported by Kaneko and Tokumitsu in 1963. From then on, the investigations have been continued, further data was obtained from both field and laboratory observations, and it became evident that among the specimens collected in Nopporo, there were many flies allied to *D. sordidula* obtained from the University Botanical Garden, but different in certain characters such as pattern of brownish stripes on mesonotum, ratio of heavy bristles on the third costal section and shapes of spermathecae and penis. On the basis of the differential characters revealed by observations in the past two years, the conclusion was reached that the species reported as *D. sordidula* by the authors (1963) should be separated as a new species, and that a new name, *Drosophila (Drosophila) pseudosordidula*, was offered to this species.

This species was first collected in Nopporo on the 26th May, 1962, by Kaneko and Tokumitsu. Since it resembled very much *D. sordidula* Kikkawa and Peng in the structure of genitalia, the authors could not separate it from *D. sordidula* at that time. A strain of this species has carefully been cultured since Autumn of 1962. On the other hand, several strains of *D. sordidula* from the University

1) Contribution No. 611 from the Zoological Institute, Faculty of Science, Hokkaido University, Sapporo, Japan.

Jour. Fac. Sci. Hokkaido Univ. Ser. VI, Zool., 15, 1964.

Botanical Garden have been cultured since August 1963. Further, one female of this new species was collected from a small island in the Lake Dōya on the 20th May, 1964. Since then on, its offsprings have been cultured in the laboratory. Courtship and copulation behaviors were observed between the two species, but no larvae hatched from the eggs laid. *Drosophila pseudosordidula* and *D. sordidula* are completely distinguishable in living flies under the binocular on the bases of several differential characters.

The description of this species is given as below: —

Japanese name: Nise-Ōkuro-shōjobae.

External Characters of Imagines: Body large, dark brown, about 3.3 mm in length. Head; Antenna black, segment 3 darker. Arista with about nine branches including a fork, 2 below it. Palpus grayish dark brown, with 2–3 long black setae. Eyes dark reddish brown, with brown piles. Middle orbital about 1/3 size of other two. Only one prominent oral bristles. Ocellar triangle, large and black. Periorbits blackish brown. Carina dark brown, broad and flat. Checks dark brown, about 1/5 as broad as the greatest diameter of eyes. Clypeus black. Front dark brown, about 2/5 as broad as head width. Proboscis blackish brown.

Mesonotum dark brown, with five brownish stripes but median rather more obscure than other parallel four; one at mid-dorsal line, marginal, longitudinal, reaching to sculoscutellar suture, two inside dorsocentral lines, two outside dorsocentral lines interrupted at their anterior. These stripes became more obscure in old imago than in young one, but they were slightly confirmable yet. Acrostichals in 6 row, somewhat irregular, no prescutellars. Anterior scutellars slightly convergent. Scutellum dark blackish brown, paler on side. Thoracic pleura dark brown. Humeral 2, sometimes 3. Sterno-index about 0.75. Halteres pale brown.

Abdominal tergites dark brown and with a broad blackish band on each tergites but sometimes slightly interrupted at middle on 2nd and 3rd tergites. Sternites dark brown, large and quadrate. Legs dark brown; femora and coxae darker; with preapicals on all three tibiae; apicals prominent on middle.

Wings about 3.4 mm, somewhat dusky, veins brown, with C 1-bristles 2, large and subequal in size. Posterior crossveins slightly clouded. C-index about 3.5; 4C-index about 0.7; 4V-index about 1.5; 5x-index about 0.9. Third costal section with heavy bristles on basal 1/2–3/5.

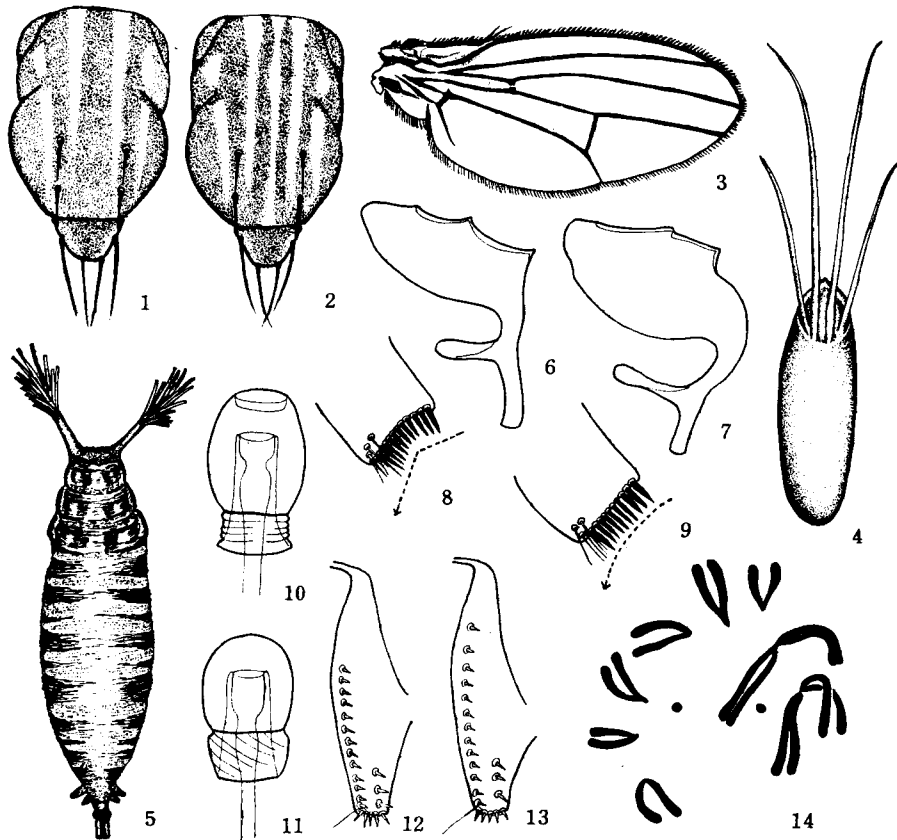
Periphallial organs: Genital arch dark brown, long and narrow, lower half with about 25 bristles, upper half about 3; heel nearly absent; toe pointed downwards. Anal plate fusiform, fused with arch at the lower portion; tip with slightly denser bristles. Clasper quadrate, brown, and with about 10 black long teeth arranged in a slightly concave row.

Phallic organs: Penis yellowish grey, tapering to base and rectangular shaped in lateral aspect; lack of sensillum at anterior gonapophyses. Paramedian spine of hypandrium absent.

Egg-guides: Lobe narrow, long, yellowish orange, rather rounded at tip, and with about 21 marginal teeth which are widely distributed. Discal teeth 3.

Other Characters: Eggs four slender filaments; two long and two about 2/3 of long ones in length. Thrid larvae colorless. Pupae; brown, anterior spiracles with about 14-16 branches, horn about 1/4 length puparium and posterior spiracles convergent. Chromosomes: five pairs; one pair of V's, two pairs of rods and one pair of dots. Salivary gland chromosomes; four long and one short arms.

Holotype: Male, Nopporo, Hokkaido, July 21, 1962, Kaneko and



Figs. 1-2. Brownish stripes on mesonotum: 1, *D. sordidula*. 2, *D. pseudosordidula*.

Figs. 3-5. *D. pseudosordidula*: 3, wing. 4, egg. 5, puparium.

Figs. 6-13. Comparative features of various organs between *D. sordidula* and *D. pseudosordidula*: 6-7, aedeagus; 8-9, claspers of male; 10-11, spermathecae; 12-13, egg guides of female. (6, 8, 10 and 12 from *D. sordidula*, and 7, 9, 11 and 13 from *D. pseudosordidula*).

Fig. 14. Ganglion chromosomes of *D. pseudosordidula*.

Tokumitsu.

Allotype: Female, Nopporo, Hokkaido, May 26, 1962, Kaneko and Tokumitsu.

Paratypes: A few hundreds, May-Oct., 1962, 1963 and 1964, Kaneko and Tokumitsu; one female, Nakanoshima Island, Dōya, Hokkaido, May 20, 1964, Kaneko; four female, Dōya-Kohan-Onsen, Hokkaido, Sept. 17, 1964, Kaneko; one male and five females, Okuyagen, Aomori prefecture, July 9-11, 1964, Kaneko; three males and five females, Imabetsu, Aomori prefecture, July 22-23, 1964, Momma.

Holotype, allotype and paratypes are being placed in the Zoological Institute, Faculty of Science, Hokkaido University.

Distribution: Honshu (Aomori prefecture) and Hokkaido, Japan.

Relationship

Drosophila pseudosordidula belongs to the *robusta* group of the subgenus *Drosophila*. It is closely allied to, but differs from, *Drosophila sordidula* Kikkawa and Peng. *Drosophila sordidula* has mesonotum with 4 brownish stripes and wing with 3C-bristles on the bases about 1/3-2/5. In both species, the spermatheca is oval in shape and brown in color. *Drosophila sordidula* has an apical indentation, while *D. pseudosordidula* carries a conspicuous flange arrounded the base, but no apical indentation. The karyotype of *D. pseudosordidula* as described in the foregoing page is apparently different from that of *D. sordidula* which consists of two pairs of V's, one pair of rods and one pair of dots. The salivary chromosomes are also different from those of *D. sordidula* which has 6 arms including short one.

Further, *D. pseudosordidula* also closely resembles *Drosophila cheda* Tan, Hsu and Sheng, in having pleurae with greyish patches, palpus with one large and numerous fine bristles and second oral 1/2 first. The karyotype of *D. cheda* consists of one pair of large V's, one pair of smaller V's, one pair of rods and one pair of dots.

References

- Hsu, T.C. 1949. The external genital apparatus of male Drosophilidae in relation to systematics. Univ. Tex. Publ., 4920: 80-142.
- Kaneko, A. 1964. Differences in the shape of spermatheca of *robusta* group species in Japan. D.I.S., 40 (in press).
- Kaneko, A. and Tokumitsu, T. 1963. Seasonal fluctuations of *Drosophila* populations in two adjacent localities of Hokkaido. Zool. Mag., 72: 123-127.
- Makino, S., Momma, E., Kaneko, A., Tokumitsu, T., and Shima, T. 1964. Drosophilidae from seven localities in Hokkaido and Aomori prefecture, summer in 1964. D.I.S., 40 (in press).
- Okada, T. 1956. Systematic study of Drosophilidae and allied families of Japan. Gihodo Co., Tokyo: 1-183.
- Tan, C.C., Hsu, T.C. and Sheng, T.C. 1949. Known *Drosophila* species in China with descriptions of twelve new species. Univ. Tex. Publ., 4920: 196-206.