

A New Species of the *Drosophila montium* Species  
Subgroup (Diptera, Drosophilidae) from  
Amami-oshima Island

Bong Ki KIM and Toyohi OKADA

Synopsis

KIM, B. K. and OKADA, T. 1988—A new species of the *Drosophila montium* species subgroup (Diptera, Drosophilidae) from Amami-oshima Island. *Proc. Japn. Soc. syst. Zool., Tokyo*, No. 38: 57-61.

A new species, *Drosophila yuwanensis*, is described from Amami-oshima Island. This species is closely related to *D. asahinai*, but the former differs from the latter in the shape of decaesternum, median process of novasternum and aedeagus, the length of submedian spine, and so on. Metaphase karyotype of the new species is also described and is shown in photograph.

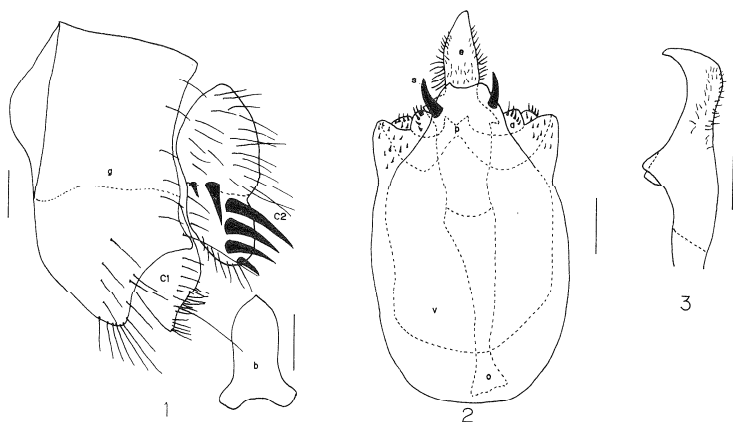
*Drosophila asahinai* OKADA, 1964, is a member of the *D. montium* species subgroup. It has narrow distribution range in Japan, restricted to two islands, Tokunoshima and Amami-oshima. In the *Drosophila* specimens collected in Amami-oshima, 1987, was found a new species having morphological characters slightly different from *D. asahinai*. In the present paper this new species is described.

*Drosophila (Sophophora) yuwanensis* sp. nov.

(Figs. 1-3)

♂, ♀. Body slender, 3.7-3.9 mm in length, yellowish brown with abdomen paler. Eye bright red, with piles. Antenna with second joint dark yellowish brown, third anteriorly darker, more than twice as long as broad. Arista with four upper and three lower moderate branches and a small fork. Palpus pale yellowish grey, club-shaped, with one prominent terminal bristle half as long as palpus. Ocellar triangle somewhat fuscous and convex. Periorbits somewhat grey, pollinose, not reaching anterior margin of front. Frons yellowish brown, anterior border pale, with a few frontal hairs. Clypeus pale yellowish brown. Carina high, narrow and long. Cheek pale at corner, about one-eighth as broad as the greatest diameter of eye. Proclinate orbital about one-third length of posterior upper reclinate, inserted outside and near to proclinate. Two long orals, third half length of vibrissa.

Mesoscutum and scutellum deep yellowish brown, glossy. Thoracic



Figs. 1-3. *Drosophila (Sophophora) yuwanensis* sp. nov. 1. Periphallallic organs. —2. Phallic organs (ventral aspect).—3. Aedeagus (lateral aspect, left hand dorsal). Scale, 0.1 mm.  
 a. anterior paramere, b. decasternum, c1. primary clasper, c2. secondary clasper, e. aedeagus, g. genital arch, o. apodeme of aedeagus, p. posterior paramere, s. submedian spine, v. ventral fragma.

pleura with a dark longitudinal patch obscurely demarcated. Humerals two, long and subequal. Acrostichal hairs in six rows. Cross distance of dorsocentrals about twice the length distance; anterior dorsocentrals about half the length of posteriors. Sterno-index about 0.8; median sternopleural about one third as long as anterior.

Legs yellow, metatarsus subequal to the three succeeding tarsal joints taken together. Fore metatarsus with a longitudinal sex-comb of about 24 black teeth, covering entire length of the joint except proximal end; second tarsal joint of fore leg with similar comb of about 14 teeth, extending to entire length. Preapicals on all tibiae, apicals on second. Wing hyaline, slightly fuscous, crossveins clear,  $r_{2+3}$  slightly curved apically to costa,  $r_{4+5}$  and  $m$  slightly divergent distally. C-index about 2.3 (♂) to 2.6 (♀); 4V-index about 2.4 (♀) to 2.7 (♂); 4C-index about 1.2 (♀) to 1.4 (♂); 5X-index about 2.5; C1-bristles two, subequal; C3-fringe on proximal half or slightly more. Halteres dark yellow.

Abdominal tergites yellow, somewhat glossy, with black, rather broad laterally tapering non-interrupted caudal bands: sixth to ninth tergites in male nearly entirely black. Abdominal sternites pale.

Periphallallic organs (Fig. 1): Epandrium broad, black and bare above, pale on lower half; heel high, obscure, toe projected below, triangular; upper caudal margin with about eight long setae; lower portion with about 15 setae, especially dense at lower tip; caudal margin

with a triangular process above primary clasper, a long hair is inserted on the process. Primary clasper conical, dark, projected downward slightly below tip of genital arch, with about 15 black long pointed teeth in two rows on nearly entire caudal margin, and with a very long hair and several short recurved setae inside teeth rows. Cercus separated from genital arch, black, oval, anteriorly rounded, ventrally with a strong black pointed tooth, with about 20 long macrotrichia, without microtrichia. Secondary clasper pale, conical, fused to the lower end of anal plate, medially with a vertical row of about four black strong ventrally curved teeth, lower teeth smaller; anteroventral margin fringed with short curved hairs. Decasternum oblong, black, proximally concaved and distantly blunt.

Phallic organs (Figs. 2 and 3): Aedeagus yellowish brown, pubescent, apically slightly tapering and curved dorsally, subbasally with a pair of ventrolateral dilated hook-like processes. Apodeme of aedeagus dark brown, straight. PI about 1.2. Anterior parameres hemispherical, dark brown, inserted on hypandria, each with a row of about five sensilla. Posterior parameres dark brown, like cross bows, concaved posteriorly, fused to each other on median line, leaving apical triangular incision, laterally narrowing to reach outer corners of hypandria. Hypandria yellowish brown, pubescent; median process slightly concave at apex, with a pair of short black spines inserted on the margin of median process at its lateral corners. Ventral fragma pale, quadrate, marginally darker.

Ovipositor: Lobe narrow, fusiform, well sclerotized, yellowish brown, with about 14 marginal black pointed teeth mostly on ventral margin; ultimate tooth largest, somewhat apart from penultimate. Basal isthmus dark brown, straight, narrow, rather short, about one-sixth as long as lobe.

Internal structures: Mid-intestine coiled twice or two and half times. Rectal papillae conical, pointed, about two-thirds as broad as long. Testis pale yellow, with one inner and four outer coils, distal end of inner coil much swollen. Paragonia white, twice folded. Ejaculatory bulb hyaline, without caeca. Ejaculatory apodeme T-shaped in lateral aspect. Ovary with about eight ovarioles. Spermatheca hyaline; head quadrate, inbedded in thick fat sheath. Parovaria with stem longer than that of spermatheca, head smaller than spermatheca. Ventral receptacle with about six folds, discoidal in total appearance.

Egg with two thick apically tapering filaments.

Holotype: ♂, Yuwan, Amami-oshima, 4. viii. 1987, at fruit trap (KIM and SHINO).

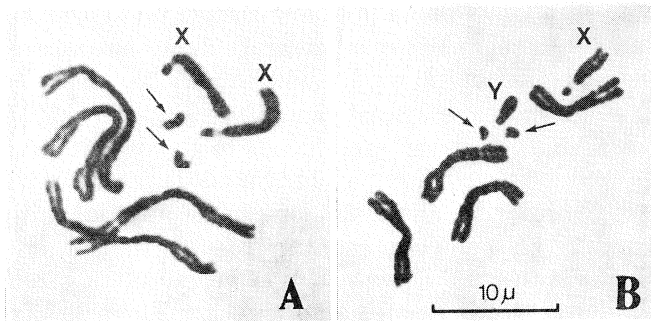


Fig. 4. Female (A) and male (B) metaphase karyotypes of *Drosophila (Sophophora) yuwanensis* sp. nov.

*Other specimens examined.* 3♀, 15♂, Yuwan, Amami-oshima, 3-5. viii. 1987; 3♀, 7♂, Mt. Yuwan, Amami-oshima, 5. viii. 1987; 3♀, 2♂, Nase, Amami-oshima, 6-7. viii. 1987; 1♀, 3♂, Sumiyô, Amami-oshima, 6. viii. 1987; 2♀, 1♂, Sinogawa, Amami-oshima, 6. viii. 1987; 1♀, 1♂, Yamato, Amami-oshima, 6. viii. 1987 (KIM and SHIINO).

*Relationships.* This species is closely allied to *D. asahinai* OKADA, but the decasternum is proximally concaved (dilated in *D. asahinai*); the median process of novasternum is slightly concaved at apex (apically rounded in *D. asahinai*); the length of submedian spine is shorter than in *D. asahinai*; the apical portion of aedeagus is slightly longer than in *D. asahinai*; acrostichal hairs is in only six rows (eight rows in *D. asahinai*). The number of teeth of a longitudinal sex comb also differs between *D. asahinai* and *D. yuwanensis*, 20 and 24, respectively.

### Metaphase karyotype

The metaphase karyotype of *D. yuwanensis* was also investigated by the junior author. Cerebral ganglion of third instar larvae were used to make metaphase karyotype preparations according to the technique of MATSUDA *et al.* (1983).

Female and male metaphase karyotypes of *D. yuwanensis* are presented in Fig. 4. This species showed the basic pattern of metaphase karyotype of the *melanogaster* species group, one pair of sex chromosomes, two pairs of large V-shaped autosomes and one pair of dot-like 4th chromosomes. The X chromosome (J) is acrocentric with short arm heterochromatic. The Y chromosome (R) is acrocentric and almost entirely heterochromatic. The fourth chromosome (D) is the normal dot-shape (1J, 1R, 2V, 1D).

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### 摘 要

金臻基・岡田豊日（東京都立大学理学部生物学教室）——奄美大島産トラフショウジョウバエ亜群の1新種（双翅目，ショウジョウバエ科）。

1987年に奄美大島で採集したショウジョウバエの1系統は、*Drosophila asahinai* に類似しているが、OKADAの記載とは次の諸点で違いがみられたので、別種であると考えられ *D. yuwanensis* と命名記載した。この種は *D. asahinai* と比較して、1) 第9腹節腹板の中央突起の中央部が凹型である (*D. asahinai* では凸型)、2) 中央突起の両側の剛毛が短い、3) 陰茎の先端部が長い、4) 中胸背毛の数が6列 (*D. asahinai* では8列)、5) 縦走性櫛の歯数が20本 (*D. asahinai* では24本)、などの違いがある。

また、*D. yuwanensis* の分裂中期染色体から核型を調査した結果、 $2n=10$  (1J, 1R, 2V, 1D) で、XおよびY染色体は亜末端動原体性、第4染色体は粒状であった。

### References

- MATSUDA, M., H. T. IMAI and Y. N. TOBARI 1983. Cytogenetic analysis of recombination in males of *Drosophila ananassae*. *Chromosoma*, 88: 286-292.  
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*Authors' address:* Bong Ki KIM and Toyohi OKADA,  
 Department of Biology, Faculty  
 of Science, Tokyo Metropolitan  
 University, Fukazawa 2-1-1, Seta-  
 gaya-ku, Tokyo 158, Japan.