

## DROSOPHILA DOMINICANA, A NEW SIBLING SPECIES OF THE SERRATA GROUP

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*Abstract*: The new species *Drosophila dominicana* is described. It is a sibling species of *D. serrata* and *D. birchii*, but reproductively completely isolated from both.

*Drosophila serrata* is a species originally described by Malloch (1927) and redescribed by Mather (1955). Mather assigned *D. serrata* to the *Montium* species subgroup of the *Melanogaster* species group, subgenus *Sophophora*. Dobzhansky and Mather (1961) collected living specimens in eight localities of Australia, New Guinea and New Britain, and distinguished two subspecies, the southern one, *D. serrata serrata* in New South Wales and most of Queensland, and the northern *D. serrata birchii* from Cairns, Queensland, to New Guinea and New Britain. More recently 15 strains were collected by Drs H. L. Carson and M. Wesserman, and studied by Ayala (1965), who showed that the two subspecies described by Dobzhansky and Mather are, in fact, two reproductively completely isolated species, *D. serrata* and *D. birchii*, coexisting sympatrically in several localities. A strain collected in a locality of New Guinea by Carson belongs to a third sibling species, fully isolated from the other two, which is named *D. dominicana*. It is the purpose of this paper to present a description of this new species.

### REPRODUCTIVE ISOLATION

Sexual isolation between *D. dominicana* and all the available strains of *D. serrata* and *D. birchii* was studied using the following technique. Groups of 10 virgin females or males of *D. dominicana* were placed in ordinary 1/2-pint culture bottles with 10 males or virgin females of any of the strains of *D. serrata* or *D. birchii*, and kept at  $25 \pm 0.5^\circ\text{C}$ .

Table 1. Sexual isolation between the species *Drosophila dominicana*, *D. serrata* and *D. birchii*.

♀♀	♂♂	♀♀ tested	♀♀ inseminated	Per cent inseminated
<i>D. dominicana</i>	<i>D. dominicana</i>	43	40	93
<i>D. birchii</i>	<i>D. dominicana</i>	250	1	0.4
<i>D. dominicana</i>	<i>D. birchii</i>	537	20	4
<i>D. serrata</i>	<i>D. dominicana</i>	395	5	1
<i>D. dominicana</i>	<i>D. serrata</i>	164	0	0

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Five days later the females and males were transferred, without etherization, to fresh culture bottles. After 5 more days the surviving females were dissected, and their reproductive tracts examined for presence of sperm.

In all, 1389 females were tested. The results are summarized in Table 1 (see also Ayala 1965). There is a clear-cut sexual isolation between *D. dominicana* and the two other sibling species. Of the 24 strains of *D. serrata* and *D. birchii* tested with *D. dominicana* only six produced a few inseminated females. Progeny was obtained in only three of those crosses, namely *D. serrata* Mataranka ♀ × *D. dominicana* ♂; *D. serrata* Wau ♀ × *D. dominicana* ♂; *D. dominicana* ♀ × *D. birchii* Moresby ♂. F<sub>2</sub> progenies were obtained only in the last two crosses.

***Drosophila dominicana* Ayala, n. sp.**

*Culture source.* Madang, New Guinea, collected by H. L. Carson, November 1961.

*Body length.* Mean length of 10 laboratory-bred specimens in Spassky's cream of wheat-molasses medium at 25°C, ♀ 2.1 mm, ♂ 2.0 mm. Body and wing length were measured as in Mather (1955).

*Head* ♂ & ♀. Arista with 9-10 branches, the first number being more frequent. Front yellow. Anterior orbital bristles slightly shorter than posterior, middle orbital 1/3 of anterior. Two prominent oral bristles of about equal length. Face yellow. Carina ridged. Cheeks yellow, their greatest width about 1/10 greatest diameter of eye. Eye color red.

*Thorax* ♂ & ♀. Thorax brown; pleurae yellow with central areas of sternopleura, pteropleura, mesopleura and neck dark brown. Achrostical hairs in 8 rows. Prescutellars absent. All scutellars convergent. Anterior sternopleurals 2× as long as middle; posterior, 2× as long as anterior and much thicker. Legs brownish yellow. Sex comb in ♂ extending over tarsal segments I and II with about 38 and 26 teeth respectively.

*Wings* ♂ & ♀. Transparent. Mean length of 10 laboratory-bred specimens, ♀ 1.6 mm, ♂ 1.5 mm.

*Abdomen* ♂. Segment 1 yellowish brown. Second to 5th with posterior dark brown bands expanded in middle and fading out laterally. ♀. Segment 1 yellowish brown. Second to 7th with posterior dark brown bands expanding laterally towards anterolateral angles of tergites.

*External genitalia*, ♂. Genital arch broad above, about 10 bristles along posterior margin, about 7 bristles below, undermargin concave, toe rounded. Anal plate triangular, free, about 20 bristles evenly distributed, rounded rear angle. Primary clasper free, about 6 primary teeth in a straight line, about 5 secondary teeth. Secondary clasper circular, 2 very large bristles and 1 somewhat smaller on inner margin, about 6 small bristles on under margin. ♀. Ovipositor plate with about 14 bristles.

*Internal genitalia*, ♂. Testes yellow with 3 inner and 3 outer coils. ♀. Ventral receptacle with about 8 coils. Spermatheca spheroidal, not chitinized.

*Egg filaments.* 2, pointed.

*Larvae.* White, hooklets black, salivary glands equal.

*Pupae.* Anterior spiracles with about 10 branches. Posterior spiracles divergent.

MATERIAL EXAMINED: Holotype ♂, allotype ♀, paratypes 11 ♂♂ and 7 ♀♀. All depos-

ited in The American Museum of Natural History, New York City. Some 50 other individuals were also examined and used for the various measurements.

#### REFERENCES

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