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***Drosophila pavlovskiana*, a Race or a Species?¹**

ABSTRACT: *A new species, Drosophila pavlovskiana* *Kastritsis and Dobzhansky, is described. It was encountered in two localities in British Guiana and originally considered as a Guianan race of Drosophila paulistorum* *Dobzhansky and Pavan. A more detailed study has shown that it must be considered specifically distinct.*

Dobzhansky and Spassky (1959) found that *Drosophila paulistorum* Dobzhansky and Pavan is actually a superspecies consisting of six "races" or "incipient species." These six were named Centroamerican, Orinocan, Amazonian, Andean-South Brazilian, Transitional and Guianan. The "races" show a considerable reproductive isolation. Females of one race confined with males of another often produce no offspring at all because they do not mate. This ethological, or sexual, isolation is reinforced by hybrid sterility. For when mating does occur, the hybrids produced are fertile females but completely sterile males. Strains of the same race derived from ancestors collected in geographically remote localities may also show a slight preference for homogamic mating, which seldom reaches, however, degrees comparable with the ethological isolation of the different races (Carmody *et al.*, 1962). Each race occurs in a geographical area which may be very extensive (Andean-South Brazilian) or, as far as known, fairly small (Guianan). In many places the distribution areas of two, or even three races overlap, making them sympatric (Dobzhansky *et al.*, 1964). In the overlapping areas the ethological isolation is actually stronger than between the same races where these latter are allopatric (Malogolowkin *et al.*, 1965; Ehrman, 1965).

Sympatric coexistence of Mendelian populations is *prima facie* evidence that they have reached the status of biological species. The reasons why *Drosophila paulistorum* was considered a cluster of "races" or "incipient

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species," rather than of species, are chiefly two. First, the reproductive isolation, even between sympatric populations, is still incomplete. Because of the fertility of hybrid females there may conceivably be some gene exchange. Secondly, there exists the Transitional race and transitional strains (Malogolowkin, 1962). The Transitional race, which occurs in Colombia, is essentially a geographic extension of the Andean-South Brazilian race. Some of its strains (Santa Marta, see Dobzhansky *et al.*, 1964) give, however, fertile hybrids also with the Centroamerican race. Transitional strains occur occasionally, especially in the Andean-South Brazilian race, and also produce fertile hybrids with their own as well as other races (Malogolowkin *et al.*, 1965).

The indication that the Guianan "race" has actually diverged genetically from the others more than these latter have diverged from each other, came from cytological studies. Dobzhansky and Pavlovsky (1962) and Kastritsis (1966) found numerous chromosomal inversions in the populations of all races, as well as in hybrids between them. The Guianan "race" shows, in addition, a fairly distinctive cytological characteristic, namely a reconstruction of the distal end of the third chromosome (Fig. 1). Moreover, the hybrids between the Guianan and the others show little or no pairing of the salivary gland chromosomes. This condition is not found in the hybrids between other races of *D. paulistorum*, but it is quite characteristic of the hybrids between the sibling species of the *willistoni* group, to which the superspecies *D.*

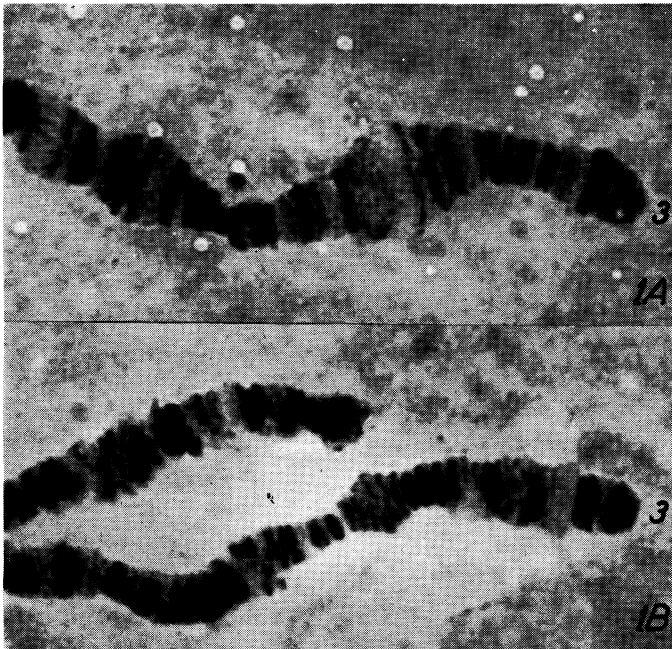


Fig. 1.—1A. The distal end of the 3rd chromosome of *Drosophila paulistorum*, and 1B, the distal end of the 3rd chromosome of *Drosophila pavlovskiana*.

paulistorum belongs (Dobzhansky, 1957). Whether or not there is less chromosome pairing at meiosis in the hybrids involving the Guianan than in the hybrids between other races is not known. The testes of the hybrids, one of the parents of which is Guianan, show, however, grave disturbances of the spermatogenesis, and contain nothing resembling normal spermatozoa. Another indication of the distinctiveness of Guianan was found by Kessler (1962), who studied the mating behavior of the superspecies *D. paulistorum*. The Guianan "race" proved to be the only one the mating behavior of which is both quantitatively and qualitatively different from the rest.

The above evidence seems to us sufficient to show that the Guianan form has completed the process of speciation. It must no longer be considered a race, or even an "incipient species." It is a full species, which together with the superspecies *D. paulistorum*, is a member of the *willistoni* complex of sibling species. Its formal description is as follows:

***Drosophila pavlovskiana* Kastritsis and Dobzhansky, n. sp.**

Collection records.—Two locations of British Guiana, Georgetown and Apoteri. Type locality, Apoteri, British Guiana. Collector, Theodosius Dobzhansky, February 1963.

Body length.—10 ♂♂ and 10 ♀♀ individuals were measured. Mean body length of ♂♂ is 2.04 mm, ranging from 2.0 to 2.1 mm. Mean body length of ♀♀ is 2.48 mm, ranging from 2.0 to 2.7 mm.

Wings.—Clear. Mean length of the wings of ♂♂ is 1.75 mm, ranging from 1.7 to 1.8 mm. Mean length of the wings of ♀♀ is 2.02 mm, ranging from 1.7 to 2.2 mm.

Wing indices.—a) mean costal index of ♂♂ is 1.57, ranging from 1.52 to 1.72; mean costal index of ♀♀ is 1.71, ranging from 1.56 to 1.81.

b) mean fourth vein index of ♂♂ is 1.78, ranging from 1.68 to 1.94; mean fourth vein index of ♀♀ is 1.83, ranging from 1.69 to 1.95.

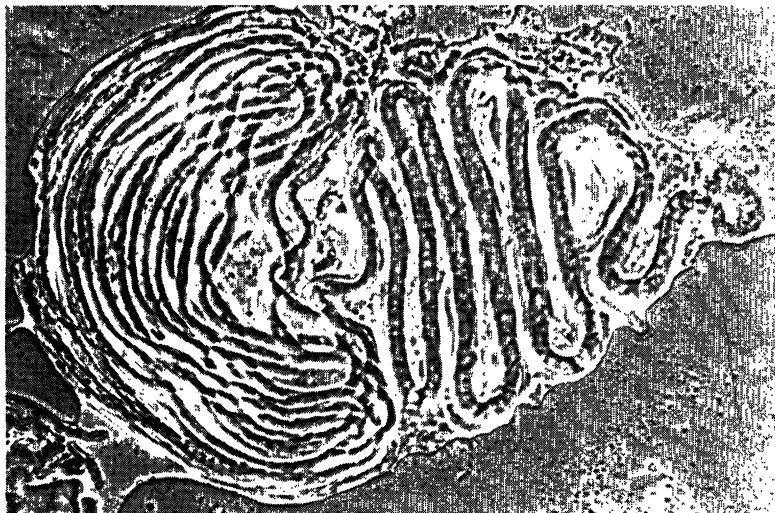


Fig. 2.—A microphotograph of the ventral receptacle of *Drosophila pavlovskiana*.

c) mean 5x index of ♂ is 1.73, ranging from 1.57 to 2.00; mean 5x index of ♀ is 1.80, ranging from 1.52 to 2.00.

Head.—Arista with 10-11 branches. 10 is most frequent. Anterior orbital bristles shorter than posterior, middle orbital 1/3 of the anterior. Face brownish. Carina more like *willistoni* than *paulistorum* (see Burla *et al.*, 1949). Maxillar palpi like *willistoni* and *paulistorum* (Burla *et al.*, 1949).

Thorax.—Brownish. Achrostical hairs in 6 rows, slightly irregular. Prescutellars absent. Anterior scutellars parallel to slightly convergent. Posterior scutellars convergent. Anterior sternopleural about 1/2 the length of the posterior and much thinner; middle sternopleural slightly longer than the anterior and as thin.

Legs.—Pale yellow. Apical bristles on first and second tibiae, preapicals on all three.

Abdomen.—Pale yellow with diffuse brownish marginal bands not interrupted in the middle, and fading out laterally.

Internal characters.—Testes pale yellow with about five coils. Spermatothecae spherical, similar to those of *paulistorum* (see Burla *et al.*, 1949), partially chitinized. Ventral receptacle a long tube, shown in Fig. 2.

Eggs.—Two filaments flattened distally.

Puparia.—Brownish yellow.

Chromosomes.—Metaphase plates contain two pairs of V's, and a pair of rods. Salivary gland smears show 5 long arms. The banding pattern of the distal end of the third chromosome is different from that of *D. paulistorum*, as shown in Figure 1.

Holotype ♂, allotype ♀, paratypes 10♂♂ and 10♀♀ deposited in the American Museum of Natural History, New York City.

The fly is named in honor of Mrs. Olga Pavlovsky of the Rockefeller University, New York City.

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Cyprinotus newmexicoensis, a New Cyprid Ostracod¹

ABSTRACT: A new species of the ostracod genus *Cyprinotus* is recorded from Torrance Co., New Mexico. A key to the 18 species that have been reported from North America is included. Representatives of the genus are widespread in North America, having been recorded from 17 states, Canada, Greenland, Newfoundland, and Yucatan.

Dr. Vernon Proctor, professor of biology at Texas Technological College, Lubbock, and his students have been conducting a series of experiments on the dispersal of disseminules by way of the digestive tract of birds. Dr. Proctor asked me to identify the freshwater ostracods being used in his studies, and among these were representatives of the new species described in this paper.

Genus *Cyprinotus* Brady 1885

Valves variable in shape, generally reniform or subtriangular, maximum height equal to or greater than one-half the length; valves unequal, either right or left may be the longer. One valve bearing tubercles along either one or all margins, except dorsally; margins of other valve smooth. Furca moderately developed; dorsal seta usually longer than the terminal seta and located close to the subterminal claw.

KEY TO THE KNOWN SPECIES OF *CYPRINOTUS* FROM NORTH AMERICA

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|---|---|
| 1. Length of valves 0.99-1.5 mm | 2 |
| Length of valves greater than 1.5 mm | 3 |
| 2. Furca almost straight, length at least 20X least width | 16 |
| Furca length less than 20X least width | 5 |
| 3. Surface of valves with very minute grooves; yellow in color | |
| <i>C. incongruens</i> (Ramdohr, 1808) | |
| Surface of valves without such grooves | 4 |
| 4. Height of valves greater than one-half length | <i>C. aureus</i> Sars 1895 |
| Height of valves less than one-half length; prominent posterior spine | <i>C. unispinifera</i> Furtos 1936 |
| 5. Length of valves 0.99-1.09 mm | <i>C. ohanopecohensis</i> Ferguson 1966 |
| Length of valves between 1.15 mm and 1.40 mm | 6 |
| 6. Right valve tuberculated | 7 |
| Left valve tuberculated | <i>C. scytoda</i> Dobbin 1941 |
| 7. Surface of valves reticulated | 8 |
| Surface of valves smooth | 9 |
| 8. Color yellowish-green; length of furca 18X least width | |
| <i>C. crenatus</i> Turner 1893 | |

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