TAXONOMIC AND DISTRIBUTIONAL NOTES ON SOME FUNGUS-FEEDING NORTH AMERICAN DROSOPHILA (DIPTERA, DROSOPHILIDAE)\(^1\)

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ABSTRACT: Comparison of type specimens and examination of variation in natural populations indicates Drosophila ordinaria Coquillett, D. melanderi Sturtevant, and D. magnafumosa Stalker and Spencer to be synonomus species designations. Drosophila recens, previously known only from northern states, is reported to be present in the Great Smoky Mts., Tennessee. The known distribution of D. chagrinensis is also extended, with the report of a specimen collected in Ithaca, New York.

During recent studies of fungus-feeding Drosophilidae in eastern North America, it became apparent that three species names, Drosophila ordinaria, D. melanderi and D. magnafumosa, might be synonomus. Below are the formal synonomy, a discussion of the evidence which led to this taxonomic revision, and a more complete description of the species. Also given are notes extending the known distributions of Drosophila recens, and D. chagrinensis. Extensive lists of the host fungi of the mycophagous drosophilid fauna of eastern North America will be published later in papers dealing with the ecology of these flies.

Drosophila ordinaria


BASIS FOR THE SYNONOMY. The lack of characteristics for clearly distinguishing among flies of the melanderi group and the possible synonomy of the American species has been noted in the past by Marshall R. Wheeler (personal communication to Peter F. Brussard). The published differences are slight, and are fully encompassed by the range of variability within populations that I have sampled in Tompkins County, New York and the Great Smoky Mountains, Tennessee. A study was therefore undertaken to compare specimens of ordinaria, melanderi, and magnafumosa for all morphological characters commonly used in Drosophila taxonomy. The

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type specimen of *magnafumosa* was kindly loaned by Harrison Stalker; specimens of larval, pupal and adult *melanderi* from Trinidad, California were supplied by Herman Spieth; the type and other specimens of *melanderi* and the type of *ordinaria* were made available by Don Davis of the USNM. No consistent differences were noted among these flies or the collections I made in New York and Tennessee. Some eggs, larvae and pupae were obtained during attempts to establish stocks of New York and Tennessee flies. Comparison with the *melanderi* larvae and pupae from California revealed no differences in mouth hook structure, puparium color or size, or spiracle morphology. Egg filaments appeared identical in the Tennessee and New York populations.

*Drosophila ordinaria* was known previously only from female specimens, while *magnafumosa* was described from a male specimen. Perhaps this hindered earlier attempts to verify the synonymy. *Ordinaria*-like females and *magnafumosa*-like males have been reared in my lab from single wild-caught females. Breeding tests comparing *melanderi* with the other forms have not been possible due to a lack of success in maintaining, for more than one generation, cultures from flies collected in New York and Tennessee. Spieth (pers. comm. to Peter F. Brussard) was similarly unsuccessful in retaining a culture of *melanderi* from California.

Preparations of the external male genitalia have been made from specimens collected in Tennessee, from specimens collected in New York, and from Spieth’s specimens from California. The male genital region is found no differences in the genital morphology of flies from the different populations. Hsu (1949), however, illustrated differences in the male genitalia of *melanderi* and *magnafumosa*. *Melanderi* was shown as having two large teeth at the corner of the anal plate, while *magnafumosa* was stated as lacking these teeth. All specimens that I have examined, whether from Tennessee, New York or California, have the two larger bristles as shown in Hsu’s figure of *melanderi* and in Fig. 1 of this paper. Hsu also stated that *melanderi* has 10 teeth on the secondary clasper (the stalked structure with a row of short, closely spaced teeth in Fig. 1), while *magnafumosa* has only seven. Each specimen I examined clearly has 8 teeth in the row.

*Drosophila ordinaria*

**Female.** Arista with about 5 branches above and one below, in addition to the terminal fork. Head and antennae brownish yellow. Front over one-third width of head. Only one prominent oral bristle (the vibrissa). Cheeks brownish yellow, their greatest width one-fourth the greatest diameter of the eyes. Eyes with sparse blond pile. Second orbital one-third size of the other two.

Acrostichal hairs in six rows. Anterior dorsocentrals close to posterior dorsocentrals. Mesonotum, scutellum, pleurae and legs brownish yellow. Mesonotum with a median darker stripe. Anterior scutellars parallel to divergent. Apical and preapical bristles on first and second tibia, preapicals on third.
Abdomen brownish yellow. Each segment with a dark brown posterior band, widely interrupted medially. Banding widens to fill out lateral areas.

Wings clear. Only one large bristle at distal costal break. Costal index about 2.9; fourth vein index about 1.4; 5x index about 1.4; 4c index about 0.8. Heavy bristles on basal two-fifths of third costal section.

Length body 2.8 mm; wing 3.0 mm.

**Male.** Genital region dark brown and conspicuous. Thorax somewhat darker than in females. Abdominal banding darker and reaching closer to anterior edge of segments.

Egg. 0.6 mm long. Four filaments, each about 1/2 the length of the egg.

Puparium. Each anterior spiracle with about six branches, without definite stalk.

**Distribution.** Tacoma, Washington (A.L. Melander); Mt. Constitution, Washington (A.L. Melander); Trinidad, California (H.T. Spieth); Montana, Minnesota (these two states listed by Strickberger, 1962, as being in the known geographic range of *melanderi*); St. John's Co., Quebec (C.W. Johnson); White Mountains, New Hampshire (H.K. Morrison, type material); Chester, Massachusetts (C.W. Johnson); Ithaca, New York, elevation 1050 ft. (R.C. Lacy); Six-Mile Creek, Dryden-Caroline, New York, elev. 1370 ft. (R.C. Lacy); Great Smoky Mountains National Park, Tennessee, elev. 4000 ft. (W.P. Spencer); Great Smoky Mountains National Park, Tennessee: elev. 4500 ft., Cosby Creek; Clingman's Dome Road, elev. 6000 ft., Walker Prong, elev. 3150 ft., Husky Brook, elev. 2550 ft., Elkmont area, elev. 2100 ft., LeConte Creek, 1600 ft., Little Pigeon River, elev. 1550 ft. (R.C. Lacy). Specimens from New York and Tennessee have been deposited in the USNM and the Cornell University collections.

The species seems to be distributed across the northern United States, into southeastern Canada, and down the Appalachian Mountains. In the Smoky Mts. *ordinaria* is quite rare below 3000 feet, but common at the higher elevations where the climate and vegetation resemble that found in the more northerly part of its range. Other primarily northern *Drosophila*, *D. athenia* Sturtevant and Dobzhansky, *D. algonquin* Sturtevant and Dobzhansky (both in the *affinis* species group), and *D. recens* (see below) show similar patterns of distribution in the eastern United States.

The *melanderi* species group, which also contains several Palearctic species, *D. makinoi* Okada in Japan, and *D. cameraria* Haliday in Europe, Iran, Azores, Madeira and Canary Islands, should perhaps now be labelled as the *ordinaria* species group.

*Drosophila ordinaria* have been raised from 16 genera of Basidio-mycete fungi collected in New York and Tennessee, including all species of fleshy fungi that were reasonably well sampled.

**EXTENSION OF THE KNOWN RANGES OF DROSOPHILA RECENS AND D. CHAGRINENSIS**

*Drosophila recens* Wheeler has been reported to be a rare species of the *quinaria* species group, distributed from New England, across the northern United States and southern Canada, as far west as North Dakota. I here report that *recens* is a fairly common mycophasous fly in the Great Smoky Mountains, Tennessee. I collected many specimens in July and August of 1979 and 1980, at the sites listed above for *ordinaria*. Like *ordinaria*, *recens* is found primarily at the higher elevations, above 3000 feet.
Drosophila chagrinensis Stalker and Spencer is a quite rare species of the subgenus Hirtodrosophila, only a few specimens of which have been reported from Ohio, Wisconsin and Iowa (Strickberger, 1962). In September 1980 I reared a single female chagrinensis from a jelly fungus (Tremella sp.) that was collected along Six-Mile Creek, Dryden-Caroline, New York, elev. 1370 ft.

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