

Article XIV.—A SYNOPSIS OF THE NEARCTIC SPECIES OF
THE GENUS *DROSOPHILA* (*SENSU LATO*)

BY A. H. STURTEVANT, COLUMBIA UNIVERSITY

This paper contains a tabulation of the Nearctic species of the genus *Drosophila*, as understood by the earlier authors. It includes those forms that will run to *Drosophila* by the keys given in Williston's 'Manual' (1908 edition). In addition to the Nearctic species, I have included four Neotropical species that are known to occur in southern Florida, so that the list is complete for the species known to me from the United States, Canada, and Alaska. All locality records for species are based on specimens that I have examined, unless they are placed in parentheses and followed by the name of the author concerned.

There are six genera in the group here under consideration, as follows:

1. Lower reclinate orbital large, situated nearer to upper reclinate than to proclinate; prescutellars well developed.....2.
Lower reclinate orbital nearer to proclinate than to upper reclinate; prescutellars usually not differentiated.....3.
2. Front thickly covered with stout hairs; costa reaches fourth vein.
Pseudophortica.
Front with at most a few fine hairs; costa very weak or absent beyond third vein.
Leucophenga.
3. Lower reclinate orbital large, placed below proclinate; postverticals usually small; eyes bare or nearly so.....*Chymomyza*.
Lower reclinate orbital usually small, placed above proclinate or, rarely, a trifle below it.....4.
4. One large pair of dorsocentrals; mesonotum and scutellum unusually convex above; shining black, marked with yellow.....*Mycodrosophila*.
Two large pairs of dorsocentrals (in our species).....5.
5. Acrostichal hairs in not more than four rows in front of anterior dorsocentrals, not more than two between the dorsocentrals.....*Scaptomyza*.
Acrostichal hairs in six or more rows in front, four or more behind.. *Drosophila*.

PSEUDOPHORTICA Sturtevant, 1918, Jour. N. Y. Ent. Soc., XXVI, p. 37.

A single known species:

Three mm. long; yellowish. Va., Tenn., Fla., Ga., Ala., Tex..... *obesa* Loew.

LEUCOPHENGIA Mik, 1886, Wien. ent. Zeit., V, p. 317.

Recorded from the Palæarctic, Ethiopian, Oriental, and Neotropical regions. *Drosophila bellula* Bergroth (1894, Ent. Zeit. Stett., p. 45), from Queensland, Australia, evidently belongs here.

1. Palpi broad and flat; both crossveins and tips of first and second (sometimes also third) veins clouded. N. Y., Md., D. C., Ind., N. Car., Fla., Ala., Tex., Cuba, Hayti, Peru, (Pa., Ill., Kans.—Kahl) *maculosa* Coquillett.
Palpi clavate; tips of first and second veins with large dark spots. Mass., N. J., Pa., Md., D. C., Ind., Ill., Tenn., N. Car., Ga., Ala., La., (N. Y., W. Va., Kans.—Kahl) *varia* Walker.

CHYMOMYZA Czerny, 1903, Zeits. Hymenopt., III, p. 199.

Recorded from the Palæarctic and Neotropical regions, and from the Seychelles.

1. Wings much spotted; front legs yellow. N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Ind., Ill., Mo., Md., D. C., Va., N. Car., S. Car., Ala., Tex., (Pa.—Kahl; Mich., Kans.—Aldrich; Ga., La.—Melander, *in litt.*) . . . *amæna* Loew.
Wings clear, or blackish along anterior margin, or with a white tip; front femora, tibiæ, and first tarsal joints blackish 2.
2. Front yellow or reddish yellow. N. H., N. Y., Ill., Va., Fla., Ala., Cuba, Trinidad, Panama, (Pa., Kans., Brazil — Kahl; St. Vincent — Williston).
procnemis Williston.
Front dark opaque brown 3.
3. Wings clear; face whitish. Wash., (Hungary — Oldenberg).
caudatula Oldenberg.
Costal cell brown; face brown. Idaho *aldrichii* Sturtevant.

MYCODROSOPHILA Oldenberg, 1914, Arch. Naturgesch., LXXX, Abth. A, Heft 2, p. 4.

Recorded from the Palæarctic and Neotropical regions. *Drosophila gratiosa* de Meijere, from Java, and *D. fracticosta* Lamb, *D. nigerrima* Lamb, and *D. nigrobrunnea* Lamb, all three from the Seychelles, also belong here. There is a single Nearctic species:

- Two mm. long; found on fungi. N. H., Mass., N. J., Pa., Ind., Ill., Md., D. C., N. Car., Ga., Ala. *dimidiata* Loew.

SCAPTOMYZA Hardy, 1849, Proc. Berwickshire Nat. Club, II, p. 361.

Recorded from the Palæarctic, Oriental, and Neotropical regions.

1. Four acrostichal rows in front of the suture; usually a spot at tip of third vein 2.
Two acrostichal rows in front; wings not spotted 3.

2. Two large humeral bristles. Alaska, Wash., Idaho, Calif., Brit. Col., Colo., Quebec, Me., N. H., Mass., N. Y. *terminalis* Loew.
 One large humeral. N. H., Vt., Mass., N. Y., N. J., Ind., Ill., Kans., Colo., Md., D. C., Va., S. Car., Fla., Ala., La., Tex., (Bermuda — Johnson).
adusta Loew.
3. Dark brownish, pollinose on mesonotum; palpi yellow. Europe; N. H., Vt., Mass., N. Y., N. J., Md., D. C., Va., W. Va., Ind., Ill., S. Car., Ala., La., Tex., Kans., Idaho, Wash., Brit. Col. *graminum* Fallén.
 Yellowish, not pollinose; palpi dark. Fla., Cuba, Costa Rica, (Porto Rico — Coquillett) *vittata* Coquillett.

DROSOPHILA Fallén, 1823, Dipt. Sveciæ Geomyzides, II, p. 4.

The genus comprises over 200 recognized species, occurring in practically all parts of the world, but especially common in tropical regions.

The "number of rows of acrostichal hairs" is to be counted just in front of the anterior pair of dorsocentral macrochætæ. The "costal index" is the number obtained by dividing the length of the second section of the costa by that of the third section; the "4th vein index" is obtained by dividing the length of the ultimate section of the fourth vein by that of the penultimate section; the "5x index" is obtained by dividing the length of the last section of the fifth vein by the length of the posterior cross-vein; the "4c index" is obtained by dividing the length of the third section of the costa by that of the penultimate section of the fourth vein.

1. Acrostichal hairs, just in front of anterior dorsocentral bristles, in six rows 2.
 Acrostichal hairs in eight rows 20.
2. Facial carina very small, absent or very narrow below; second oral bristle not over half length of first 3.
 Carina broad below 5.
3. Yellow; third antennal joint large, with long yellow hairs; fourth vein index under 2.0. Ill. *duncani*, new species.
 Blackish; third antennal joint as usual; fourth vein index over 2.0 4.
4. Costal index 3.0 or over; a comb of stout black bristles on inner side of basitarsal joint of first leg of male. N. H., Mass., Conn., N. Y., N. J., Pa., Ind., Ill., Mo., Md., D. C., Va., N. Car., S. Car., Ga., Ala., Tex., Okla., Kans.
affinis Sturtevant.
 Costal index under 2.5; no tarsal comb. Ala. *alabamensis* Sturtevant.
5. Wings with about thirteen small dark spots along veins; mesonotum yellow, striped with reddish brown; first two to four oral bristles nearly equal. Mass., N. J., Ind., D. C., N. Car., Ala., Tex., (Fla.—Walker).
guttifera Walker.
 Wings much clouded; posterior crossvein sinuate; small prescutellars present. N. Y., Ill., Md., D. C., Va., Tenn., N. Car., Ala., Tex. *sigmoides* Loew.¹
 Wings clear, or slightly clouded on crossveins or tips of longitudinal veins 6.

¹ The species recorded as *D. sigmoides* by Ainslie (1906, Canad. Ent., XXXVIII, p. 44) from Minn. is really *D. inversa* Walker. I have examined the specimens in the U. S. National Museum.

6. A pair of presutural acrostichal bristles present; yellowish brown species. Frequents fungi. N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., Ill., Va., Tenn., N. Car., S. Car., Ga., Ala., Miss. *putrida* Sturtevant.
No presutural acrostichals. 7.
7. Second orbital about half length of first; only one large oral bristle; yellow species; 2½ mm. long. N. H., Quebec. *ordinaria* Coquillett.¹
Second orbital less than half length of first. 8.
8. Costal index not more than 2.1. Neotropical species, found in southern Florida. 9.
Costal index not less than 2.5. 10.
9. Reddish brown species; bristles and branches of arista short. Lives in flowers. Fla., Cuba, Jamaica, Porto Rico, Costa Rica. *lutzii* Sturtevant.
Yellow; bristles and branches of arista as usual. Lives on fruit. Fla., Bahamas, Cuba, Jamaica, Hayti, Porto Rico, St. Vincent, Brit. Honduras, Costa Rica, Panama, Brazil. *willistoni* Sturtevant.
10. Ground color of mesonotum blackish or grayish, not at all yellowish. 11.
Ground color of mesonotum yellow, or reddish brown. 16.
11. Second oral bristle over half length of first; fourth vein index about 1.8. . . . 12.
Second oral less than half first. 13.
12. Carina broad; costal index about 3.0; 2½ mm. long. N. Y. *virilis* Sturtevant.
Carina narrow; costal index about 4.0; 1½ mm. long. Md., Va. *pseudomelanica* Sturtevant.
13. Carina distinctly sulcate; mesonotum grayish pollinose, irregularly marked with reddish brown; about 3 mm. long. Ontario, N. H., Mass., Pa., Md., D. C., Va., Ga. *sulcata* Sturtevant.
Not as above. 14.
14. First coxæ black; 2½ mm. long. See below, under 24, *robusta* Sturtevant.
First coxæ brown; 2 mm. long. 15.
15. Mesonotum blackish brown; "cheek" (from lower hind part of eye to lower hind corner of head) one-sixth greatest diameter of eye. N. H., Mass., R. I., N. Y., Md., Va., N. Car., Ga., Ala., Ind., Mo., Ark. *melanica* Sturtevant.
Mesonotum brownish black; "cheek" one-third diameter of eye. N. Car., Ga. Fla., Ala. *melanissima* Sturtevant.
16. Wings clear; abdomen banded; only one large oral bristle. Wash. *melanderi* Sturtevant.
At least posterior crossvein slightly clouded. 17.
17. Reddish yellow; abdomen banded. Fla., Cuba, Hayti, Porto Rico, Dominica, Costa Rica, Panama. *cardini* Sturtevant.
Yellow, not reddish. 18.
18. Abdomen with interrupted dark posterior band on each of first four segments, and a median anterior spot on third, fourth and fifth segments. N. Y. (?), Ind., Md., Va., S. Car., Ala., La. *modesta* Sturtevant.
Abdomen spotted, but without median spots. 19.
- 19.² Dull yellow; tips of longitudinal veins not clouded. Europe, Me., N. H., Mass., N. Y., N. J., Md., Va., Tenn., Ind., Ill., Kans., Ala. *transversa* Fallén.

¹ *D. ordinaria* is listed in Smith's N. J. Catalogue. This is probably an error. All New Jersey specimens so labelled that I have seen are *D. transversa* Fallén or *D. putrida* Sturtevant.

² Study of living material and of spermathecae has convinced me that these two species are distinct. They are, however, sometimes difficult to distinguish in pinned material, and further study may necessitate changes in the records of distribution.

- Shining yellow; tips of second, third, and fourth veins clouded. N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., O., Md., Va. *quinaria* Loew.
20. Carina minute; small prescutellars present; wings much clouded. N. H., Vt., Mass., N. Y., N. J., Ill., Minn., Wash. *inversa* Walker.
Carina usual size; prescutellars not differentiated; wings clear or with small clouds along veins. 21.
21. Mesonotum yellow, with distinct reddish longitudinal stripes; second orbital nearly as long as third. N. H., Mass., Conn., N. Y., N. J., Pa., Md., D. C., Va., W. Va., Fla., Ala., La., Ind., Ill., Ore., Calif., Cuba, Australia, (Kans.—Kahl; Minn.—Coquillett; Canaries, Europe, S. Africa — Becker, Ville-neuve, as *D. rubrostriata* Becker¹). *busckii* Coquillett.
Mesonotum light gray, with numerous dark brown spots; carina sulcate. Mass., R. I., N. Y., N. J., Pa., Md., D. C., Va., Tenn., Fla., Ala., La., Tex., Ind., Mo., Ark., Calif.; Bermuda, Bahamas, Cuba, Jamaica, Hayti, Porto Rico, Dominica, Barbados, Mexico, Brit. Honduras, Costa Rica, Panama, Brazil; Hawaii, E. Africa, (Canaries — Becker; Austria, W. Africa — Mik; Java — Van der Wulp, as *D. nigropunctata* Van der Wulp) *repleta* Wollaston.
Mesonotum not distinctly marked. 22.
22. Costal index about 1.0; fourth vein index about 5.5; pleuræ with a dark stripe above. Ala., Ga. *quadrata* Sturtevant.
Costal index 2.0 or over; fourth vein index less than 3.0; no pleural stripe. 23.
23. Blackish species, not at all yellowish or reddish. 24.
Yellow or reddish brown. 25.
24. Costal index about 4.0; 2½ mm. long; no combs on tarsi. Mass., N. Y., Md., Va., Ark., Ala. *robusta* Sturtevant.
Costal index about 2.7; 2 mm. long; a comb of short stout black bristles on each of the two basal joints of the first tarsi of the male. Europe, Ore., Calif. *obscura* Fall.
25. Costal index less than 3.0; fourth vein index about 2.3; the male has a comb of short stout black bristles on the basal tarsal joint of the first leg. Nova Scotia to Wash., south to Chile; Europe, Africa, Australia, Hawaii. The species is apparently to be found everywhere except in very cold regions. *melanogaster* Meigen.
Costal index over 3.5; fourth vein index less than 1.5; no tarsal combs. 26.
26. Dull yellow, not at all reddish; a row of very short, stout bristles on lower apical part of front femur; wings slightly clouded on posterior crossvein and tips of first and second veins. Mass., N. Y., N. J., O., Fla., Ala., La., Calif., Costa Rica, (Canaries — Becker) *tripunctata* Loew.
Reddish brown; no combs on femora; wings clear, or occasionally slightly clouded on posterior crossvein. Quebec, N. H., Vt., Mass., R. I., Conn., N. Y., N. J., Pa., O., Ind., Ill., Md., D. C., Va., Ga., Ala., Wis., S. Dak., Alberta, Brit. Columbia, Kans., N. Mex., Calif.; Mexico, Trinidad (W. I.), Europe, Australia. *funebri* Fabricius.

¹ Mr. F. Knab pointed out this synonymy to me in the first instance. The species is surely cosmopolitan.

***Drosophila duncani*, new species**

Arista with six branches above and two below. Antennæ yellow, third joint darker, long, and clothed with long yellow hairs. Front over one-third the width of the head, wider above; reddish yellow, orbits and triangle grayish. Second orbital about half the third, which is scarcely over half the first. Carina quite narrow, confined to the upper part of the face. Face and cheeks yellow. Second oral bristle scarcely half the vibrissa. Greatest width of cheeks about one-sixth greatest diameter of eyes. Eyes with short fine pile.

Acrostichal hairs in six rows; no prescutellars. Mesonotum and scutellum dull yellowish brown. Pleuræ yellow, brownish above. Legs pale yellow. Apical and preapical bristles on first and second tibiæ, preapicals on third.

Abdomen yellow, each segment with a dark brown posterior band, thickened in the middle.

Wings clear. Costal index about 3.8; fourth vein index about 1.4; 5x index about 1.2; 4c index about 0.9.

Length body $2\frac{1}{4}$ mm.; wings $2\frac{1}{2}$ mm.

Type and three paratypes, Flat Rock, Ill., 1915, "Fungus" (Dr. F. N. Duncan). The type is deposited in The American Museum of Natural History.

The following Nearctic species are listed in Aldrich's Catalogue but are not included in the tables above. The synonymy is not new.

Drosophila albipes Walker. Not recognizable from the description.

D. ampelophila Loew = *melanogaster* Meigen.

D. apicata Thomson = *Scaptomyza terminalis* Loew.

D. brevis Walker. Not recognizable from the description.

D. colorata Walker. May be same as *sulcata* Sturtevant. Uncertain.

D. confusa Stæger. Does not occur in Nearctic region. Records are based on *D. affinis* Sturtevant.

D. decemguttata Walker. Probably not *Drosophila*. (*Diastata*?)

D. flaveola Meigen. Does not occur in Nearctic. Is a *Scaptomyza*.

D. fronto Walker. Not recognizable from the description.

D. linearis Walker. Probably not *Drosophila*. (*Scaptomyza*? Geomyzid?)

D. minuta Walker. Not recognizable from the description.

D. multipuncta Loew = *guttifera* Walker.

D. punctulata Loew = *repleta* Wollaston.

D. quadrimaculata Walker = *Leucophenga varia* Walker.

D. valida Walker = *Minettia macula* Loew.