A Proposal of Establishing Tribes for the Family Drosophilidae with Key to Tribes and Genera (Diptera)

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ABSTRACT—Subdivision into tribes of the family Drosophilidae is attempted. Establishment of two tribes, Steganini and Leucopenthini, for the subfamily Steganinae and five tribes, Microdrosophilini, Hypselenthrini, Colocasiomyini, Dettopsomyini and Drosophilini, for Drosophilinae is proposed.

INTRODUCTION
By the end of 1984, 62 genera of the family Drosophilidae were recorded by Wheeler [1], including one fossil and five ungrouped into subfamilies. Since then, one genus, Thyreoccephala, was added by myself [2], which was, however, synonymized with Mulgravia Bock by myself [3], and two fossil genera, Miomyia and Proctochymomyza, by Grimaldi [4]. The genus Drosophila Duda was recently synonymized with Colocasiomyia de Meijere by myself [5]. The genera Ateleflorophila Hardy and Nudidrosophilina Hardy were treated as distinct genera according to Wheeler [6], although they were synonymized with Drosophila s. str. by Kaneshiro [7] because their females are not distinguishable from the latter.

To recognize tribe, a subordinate category of family or subfamily, is a general rule especially in large families of insects. No explicit subdivision of the family Drosophilidae has, however, been attempted before the present proposal, although an implicit subdivision into "Drosophiloids" and "Scaptomyzoids (as Scaptoidae)" was made for endemic Hawaiian Drosophilidae by Throckmorton [8]. The inference that drosophil taxonomy is highly developed might be accepted mostly at the level below species group.

METHODS
The descriptions of the tribes with diagnoses of involving genera are given by a form of key. For establishing the tribes and constructing the key, following fourteen diagnostic characters (n = 14: A-N) each divided into two states (0: presumed plesiomorph; 1, presumed apomorph) are taken into consideration, supplemented by some additional special characters.

Eye bare (A = 0) or piled (a = 1).
Arista plumose (B = 0) or bare or pubescent (b = 1).
Ocellars inside (C = 0) or outside (c = 1) ocellar triangle.
Postverticals present (D = 0) or absent (d = 1).
Carina undeveloped (E = 0) or developed (e = 1).
Anterior reclinate orbital large (F = 0) or fine (f = 1).
Posterior reclinate orbital nearer to inner vertical than to procline (G = 0) or nearer to procline than to inner vertical (g = 1).
Prescutellars developed (H = 0) or absent (h = 1).
Anterior dorsocentral nearer to scutellum than to suture (i = 0) or nearer to suture than to scutellum (i = 1).
Acrostichal hairs in more than 8 rows (J = 0) or 8 or less than 8 rows (j = 1).
Lateral scutellars convergent or parallel (K = 0) or divergent (k = 1).
Second costal break shallow (L = 0) or deep (l = 1).
Second costal lappet small (M = 0) or large (m = 1).
Discal and second basal cells separated (N = 0).
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**Notes:**
- 'A' indicates character presence, '0' indicates absence.
- Characters 1-11 correspond to specific traits.
- NC denotes not applicable or not recorded.
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0. Presumed plesiomorph; 1, presumed apomorph; NC, no comparison; ', fossil genus; numerical figure intercepting a longitudinal line, order of key couplet.

Fig. 1. Diagrams to show the key to tribes and genera of the family Drosophilidae. Alphabetical signs: Presumed plesiomorphous (large letters) and apomorphous states (small letters) of diagnostic characters; open and solid circles: plesiomorphs and apomorphs, respectively, appearing only once in the key; open and solid squares: plesiomorphs and apomorphs, respectively, repeatedly appearing in the key; numerical figures at the branching points of diagrams: orders of key couplets.
or confluent (n=1).

From the n X 1 matrix (Table 1), a key is
constructed by means of ‘‘even dichotomous diag-
gram method’’ [9]. The result is expressed also by
key diagrams (Fig. 1), which may enable one to
find the relationships of the tribes more easily.

Samples of some genera unknown to me were
borrowed from various investigators and institu-
tions: Dr. Ben Brugge, University of Amsterdam
(‘Colocastomyia’). Dr. Don Colles, C.S.I.R.O.,
Canberra (‘Luconimyia, Crincosia, Balara’), Dr. K.
Y. Kaneshiro, University of Hawaii (‘Grinsha-
withomyia, Titanocheta, Samnolua’), and Dr. D. A.
Grimaldi, American Museum of Natural History,
New York (‘Cladaocheta, Diathoneurea’).

RESULTS
Family Drosophilidae

1. Posterior reclinate orbital nearer to inner
vertical than to proclinate (G); prescutellar
developed (H); tibiae and tarsi of mid and
hind legs with dense rows of short bristles.
Subfamily Steganiniae, .........................2.
   — Posterior reclinate orbital nearer to proclinate
than to inner vertical (g, excl. Zaprionus
V str); prescutellar usually absent (h); tibiae
and tarsi of mid and hind legs without dense
rows of short bristles. Subfamily Drosophilinae.
   ................................................................21.

Subfamily Steganiniae

2. Discal and second basal cells separated
   — Discal and second basal cells confluent

Type genus: Stegona Meigen

3. Arista usually plumose (B) .................4.
   — Arista usually bare or pubescent (b). ....8.
4. Carina developed (e) .........................5.
   — Carina undeveloped (E) ..................6.
5. Dorso-centrals in 2 pairs; R2+3 much waved;
frons caudally protruded.......................... Genus Pyrgometopeta Kertész
   — Dorso-centrals in 1 pair; R2+3 not waved;

frons caudally protruded.................5.
5'. Acrostichal hairs in 8 or less than 8 rows (j).
   ................................................................ Genus Stegona Meigen
   — Acrostichal hairs in more than 8 rows (J).
   ................................................................ Genus Electrophorosica Bock
6. Ac-index less than 4.0; wing maculated........
   ................................................................ Genus Eostegona Bock
   — Ac-index more than 4.0; wing not maculated
   .............................................................................7.
7. Mid tibia usually with stout bristles above.
   ................................................................ Genus Stegona Meigen
   — Mid tibia without stout bristles above.
   ................................................................ Genus Amioda Loew
   — Carina developed (e) .....................11.
9. Occlars outside ocellar triangle (c); postver-
ticals absent (d). Genus Crinoseia Meigen
   — Occlars inside ocellar triangle (C); postver-
ticals present (D). .........................10.
10. Anterior reclinate orbital fine (f).
    ................................................................ Genus Apenicosa Tsacas
    Anterior reclinate orbital large (F).
    ................................................................ Genus Mayaguezia Wheeler
11. Acrostichal hairs in 8 or less than 8 rows (j).
    ................................................................ Genus Gitona Meigen
    — Acrostichal hairs in more than 8 rows (J).
    ................................................................ Genus Cacoxenopa Loew

Tribe 2. Leucophengini Okada, n.
Type genus: Leucophengos Mik

   — Carina developed (e) .................16.
13. Arista pubescent (b) .....................14.
14. Lateral scutellars divergent or parallel (K);
oecalla absent................................. Genus Acliorexina Freuenti
   — Lateral scutellars convergent (k); ocellars
   present, though minute........................ Genus Luconimyia Melloch
15. Excessive small scutellars absent........ Genus Leucophengos Mik
   — Excessive small scutellars usually present  Genus Paraleucophengos Wheeler
16. Arista pubescent (b) ..................17.
   ................................................................ Genus Pseudiasiata Coquillett
   — Arista plumose (B) ......................17.
Trichyleucophenga Hendel
- Frons not punctured. .......................... 18.

Parahinoeleucophenga Hendel
- Veins $R_{2+3}$ and $M$ divergent distally. .......................... 21.

Rhinoeleucophenga Hendel

Subfamily Drosophilinae

Microdrosophilini Okada, n.
- Frons not broadened anteriorly. .......................... 22.

Ocellars outside ocellar triangle (c); second costal break shallow (L); ocellars inside ocellar triangle (C) ......... Tribe 3. Colocasiomyini. .......................... 30.

Ocellars usually inside ocellar triangle (C) .......................... 22.

Second costal break deep (t); second costal lappet usually large (m) ......... Tribe 4. Dettopsomini. .......................... 33.

Second costal break shallow (L); second costal lappet Small (M) ......... Tribe 5. Drosophilini .......................... 36.

Tribe 1. Microdrosophilini Okada, n.
Type genus: Microdrosophila Malloch

Monotypic .......................... Genus Microdrosophila Malloch

Type genus: Hypselothyrus de Meijere

Postverticals absent (d). .......................... 25.
- Postverticals present (D). .......................... 27.

Carina undeveloped (E); eye potted (a). .......................... Genus Hypselothyrus de Meijere

Carina developed (e) .......................... Genus Sphaerochaeta Wheeler


Eye bare (A); fore femur with a row of small spicules inside. ... Genus Liodrosophila Duda

Eye pitted (a); fore femur without spicules inside. .......... Genus Lissoccephala Malloch


- Lateral scutellars convergent (K). .......................... 32.

Type genus: Colocasiomyia de Meijere

Carina developed (e); anterior reclimate orbital line (t); lateral scutellars convergent or parallel (K). .......................... 33.

Carina undeveloped (E); anterior reclimate orbital large (F); lateral scutellars divergent (k). .......................... 34.

Arista plumose (B); anterior dorsocentral nearer to scutellum than to suture (I). .......... Genus Calodrosophila Wheeler & Takada

Arista usually pubescent (b); anterior dorsocentral nearer to suture than to scutellum (i) .......... Genus Colocasiomyia de Meijere

Wing not crispy; $R_{2+3}$ apically gently curved to costa. .......... Genus Nesiodrosophila Wheeler & Takada

Wing crispy; $R_{2+3}$ apically strongly curved to costa. .......... Genus Jeannelopsis Séguy

Type genus: Dettopsomyia Lamb

Eye bare (A); anterior dorsocentral minute or absent. Genus Mycodrosophila Oldenberg

Eye pitted (a); anterior dorsocentral large. 34.

Ocellars outside ocellar triangle (c); anterior reclimate orbital behind proclinate. .......... Genus Styloptera Duda

Ocellars inside ocellar triangle (C); anterior reclimate orbital slightly before proclinate. .......................... 36.

Carina developed (e); anterior dorsocentrales nearer to suture than to scutellum (i). .......... Genus Dettopsomyia Lamb
Carina undeveloped (E); anterior dorsocentrals nearer to scutellum than to suture (I) ........ Genus Paramycterosophididae Duda

Tr. Drosophilimi Okada, n.
Type genus: Drosophila Tr.  Attenuata

36. Anterior reclinate orbital fine (f) ........37.
— Anterior reclinate orbital large (F) ........48.
37. Arista pubescent (b) or with a few branches. ........38.
— Arista plumose (B) .........................39.
38. Acrostichal hairs in 2 rows (j) ................ Genus Dictyochora Muller
— Acrostichal hairs in more than 8 rows (j) ........40. ... Genus Baeosophasia Wheeler & Takada
39. Carina undeveloped (E) ......................40.
— Carina developed (e) .........................44.
40. Head much broader than thorax. ..............41.
— Head not broader than thorax ..................41.
41. Eye bare (A). ..................................42.
— Eye piled (a) ..................................43.
42. Arista without lower branches. .................43.
— Arista with 2 lower branches. .................43.
43. Postverticals absent (d); body slender ........ Genus Neotanygastrella Duda
— Postverticals present (D); body thick .......... Genus Diatheoneura Duda
44. Arista inserted near apex of 3rd antennal joint. ....45.
— Arista inserted near base of 3rd antennal joint. ....46.
45. Arista without upper branches; orbitals present. ....45.
— Arista with upper branches; orbitals absent. ....45.
46. Lateral scutellars convergent or parallel (K); proboscis long. .... Genus Zygohtheca Wiedemann
— Lateral scutellars divergent (k); proboscis not very long. ....47.
47. Mesoscutum without white longitudinal stripes; R₄, 5 and M parallel distally. ........ Genus Collesia Bock
— Mesoscutum with white longitudinal stripes; R₄, 5 and M parallel distally. .......... Genus Phikoelestria Duda
48. Second antennal joint protruded anteriorly below. .......... Genus Grimshawomyia Hardy
— Second antennal joint not protruded anteriorly below. ..........50.
49. Carina developed (e); anterior dorsocentrals nearer to suture than to scutellum (i); wing markings distinct. .......... Genus Celosoma Hardy
— Carina undeveloped (E); anterior dorsocentrals nearer to scutellum than to suture (I); wing dark brown, basally hyaline. .......... Genus C. s. Hardy
50. Carina undeveloped (E) ......................51.
— Carina developed (e) .........................53.
51. Eye entirely or nearly bare (A); anterior dorsocentrals nearer to scutellum than to suture (I); anterior reclinate orbital before proclinate; arista with branches. .......... Genus Titanochaeta Knab
— Eye piled (a); anterior dorsocentrals nearer to suture than to scutellum (i); lateral scutellar divergent (k); anterior reclinate orbital behind proclinate; arista without lower branches. .......... Genus Titanochaeta Knab
52. Lateral scutellars convergent (K) .............. Genus Chymomyza Czerney
— Lateral scutellars divergent (k) .............. Genus Proctomyza Grimaldi
53. Prescutellars present (H); dorsocentrals in 3 pairs. .......... Genus Balara Bock
— Prescutellars usually absent (b); dorsocentrals in 2, 3, or 4 pairs. ..........54.
54. Anterior dorsocentral nearer to suture than to scutellum (i) .......... Genus Samoaia Malloch
— Anterior dorsocentral nearer to scutellum than to suture (I) .......... Genus Scaptomyza Hardy
55. Dorsocentrals in 3 pairs, body stout .......... Genus Malquezza Malloch
— Dorsocentrals in 2 pairs; body slender .......... Genus Malquezza Malloch
56. Dorsocentrals in 4 pairs; lower margin of gena densely haired. .......... Genus Malquezza Malloch
— Dorsocentrals usually in 2 pairs; lower margin of gena not densely haired. ..........57.
57. Eye nearly bare (A) .........................
   — Eye pitted (a) .........................

58. Mesoscutum with white longitudinal stripes;
   posterior reclinate orbital usually nearer to
   inner vertical than to proclinate (G) ........
   — Mesoscutum without white longitudinal
   stripes; posterior reclinate orbital nearer to
   proclinate than to inner vertical (g). ........

                      — Genus Drosophila Fallén
                      — Genus Neorrhinothorax Duda
                      — Genus Zapriothorax Duda

Ungrouped Genera

1. Arista plumose (B) ......................... 2.
   — Arista pubescent (b) ..................... 3.

2. Eye bare (A) ... Genus Apachrochema Duda
   — Eye pitted (a). Genus Laccodrosophila Duda

3. Prescutellars present though weak (H);
   anterior dorsiocentral nearer to sutures than to
   scutellum (i) Genus Pseudovacuus Duda
   — Prescutellars absent (h); anterior dorso-
   ocral to scutellum than to sutures
   (I) .................... Genus Zapriothorax Wheeler

Val, University of São Paulo.
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REFERENCES

   the World’s Drosophilidae. In “The Genetics and
   Biology of Drosophila.” Ed. M. Ashburner, H. L.
   Carson and J. N. Thompson Jr., Academic Press,

   and an allied new genus of Southeast Asia and New
   Guinea (Diptera, Drosophilidae). Kontyu, Tokyo,
   35: 335–345.


   (Diptera), with particular reference to the Hispa-

   cristata de Meijere with generic synonymy 

   mic overview. In “The Genetics and Biology of
   Drosophila.” Ed. M. Ashburner, H. L. Carson and
   57.

7. Kaneshiro, K. Y. (1976) A revision of generic con-
   cepts in the biosystematics of Hawaiian Drosophil-

8. Throckmorton, L. H. (1966) The relationships of the
   endemic Hawaiian Drosophilidae. Univ. Texas
   Publ., 6615: 335–336.

   Japanese).