AN ANNOTATED LIST OF THE HORSE FLIES OF FLORIDA
AND AN ILLUSTRATED KEY TO THE GENERA
(DIPTERA: TABANIDAE)

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This paper summarizes, briefly, the nomenclatural status of horse flies from Florida. Following each name in the list of species are annotations relating to the papers published, since Philip's catalog (1947), which deal either directly or indirectly with Florida forms. If no annotations follow a species name, it means that no references subsequent to 1947 have been found in available literature, pertaining to that species. Full titles and sources are given in the bibliography. At the present time there are at least 120 names, exclusive of synonyms, applicable to the horse flies of Florida.

The generic key is designed to identify specimens of adult flies representing species known to occur in the State, and is a colligation and modification of keys published by Stone (1938), Fairchild (1942, 1950), Bequaert and Renjifo-Salcedo (1946), Philip (1941, 1947, 1954c, 1955), Steyskal (1953), and Philip and Fairchild (1956). Tribal and subfamilial separation of genera have been omitted for reasons of relevancy and brevity. Classificatory matters within the family are largely unsettled. Details of suprageneric grouping are treated by Mackerras (1954, 1955a, 1955b). Specific names mentioned, refer to either the only species of a given genus known from Florida, or, to certain species within a given genus which have particular characteristics emphasized in the key.

Plates I & II are original, free hand drawings, meant to facilitate usage of the key. Styles of female Diachlorus ferrugatus, figured in Plate II, represent the proboscidial elements common to the Brachycera and Nematocera. In this species, mandibles are boomerang-shaped with scalloped cutting-edge; galeae strong, their apical § serrate, and otherwise covered with scattered spiculi. Males in these suborders have the same kind of styles as females, though they are thin, frail, without cutting edge, or otherwise reduced. Cyclorrhaphous flies, some of which are mistaken for horse flies by laymen, do not have mandibles.

NOMENCLATURE

The generic name Agkistrocerus Philip, 1941, transliterated from the Greek, would read Ancistrocerus. However, a change is not likely, and would result in preoccupation of the name by Ancistrocerus Wesmael, 1836, in the Hymenoptera. The generic name Aegialomyia Philip, 1941, is treated here as a subgeneric name, with its species psammophilus, under Stenotabanus Lutz, 1913. Haematopota Meigen, 1803, is used as a counterpart generic name of Chrysosoma Meigen, 1800, and Chrysops Meigen, 1803, a counterpart of Chrysops Meigen, 1800, following the report of Melville (1960).

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Plate I. Identifying characters in the horse flies.
Since Brennan's monograph (1935), the generic name *Chrysops* Meigen, 1803, has been used as a feminine noun. Some recent articles have treated it as a masculine noun. Because adjetival specific names must agree grammatically with the generic name, it is meaningful for the gender of *Chrysops* to be fixed, and the name used uniformly. Analysis of the word gives some criteria upon which an opinion may be based concerning the gender, but this is beyond the scope of the present paper. The stems, meaning, and genders of the adjective from which the noun form of the generic name is derived, lead to the choice of chrysops as the original form of the word and support the use of *Chrysops* Meigen, as a feminine noun. The rule-of-thumb that a compound noun derives its gender from the suffix used, is defended in the Copenhagen Decisions (1958).

**Diagnosis of Tabanidae**

Antenna with 3 obvious segments; the flagellum with 2 or more annulations, without arista or style; squamae large; empodium like the pulvilli; venation similar to Plate II, Figure 1, with veins \( R_1 \) and \( R_2 \) bounding the apex of the wing; males holoptic (except in the Australian genus *Archeomyia* Philip, 1941); females dichoptic; setitaly not evident.

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**Plate I. Explanation**

**Figure 1.** Right wing, frontal aspect, in *Agyktrocerus megerlei*, female specimen. (a) basicostal scale adjoining costal vein; (b) bare basicostal scale in another species; (c) snaulaet, at base of wing; (d) notopleural lobe of mesothorax.

**Figure 2.** Head, frontal aspect, upper portion of face, in *Chrysops vittata floridana*, female specimen. (e) ocellar tubercle bearing ocelli; (f) basal callus; (g) subcallus, showing antennal socket.

**Figure 3.** Head, frontal aspect, upper portion of face, in *Chlorotabanus crepuscularis*, male specimen. (h) subcallus, showing antennal socket.

**Figure 4.** Head, dorsal aspec, in *Tabanus atratus*, male specimen. Vertical line represents intimate junction of the compound eyes. Horizontal arms represent hind border of compound eyes. (i) ocellar tubercle, without ocelli.

**Figure 5.** Head, dorsal aspect, in *Leucotabanus annulatus*, female specimen. Same as Fig. 4, but eyes are separated. (k) ocellar tubercle, without ocelli.

**Figure 6.** Left antenna, lateral aspect, in *Diachlorus ferrugatus* specimen. (m) flagellum, showing annulations on apical portion; (n) scape; (o) pedicel. These divisions correspond to segments 3, 2, 1, respectively.

**Figure 7.** Left antenna, lateral aspect, in *Chlorotabanus crepuscularis* specimen. Same division as in Fig. 6.

**Figure 8.** Left antenna, lateral aspect, in *Chrysops vittata floridana* specimen. Same divisions as in Fig. 6, but the segments are longer and narrower.

**Figure 9.** Head, frontal aspect, full face, in *Diachlorus ferrugatus*, female specimen. Eyes narrowly separated, ocellar tubercle not present. (q) median callus; (r) basal callus; (s) subcallus, showing antennal socket; (t) gena; (u) clypeus; (v) maxillary palpus; (w) labium.

**Figure 10.** Left antenna, lateral aspect, in *Agyktrocerus megerlei* specimen. Same divisions as in Fig. 6. (p) dorsal, forwardly directed hook on base of segment 9, the flagellum.
Plate II. Identifying characters in the horse flies.

Plate II. Explanation

Figure 1. Right wing, dorsal aspect, in Diachlorus ferrugatus specimen. Stippling represents smoky-colored areas. (C) base of costal vein; (Rs) radial sector, beginning basad of the discal cell; (Sc) subcostal vein; (R, 2 + 3, 4, 5) radial veins; (dc) discal cell. Posterior veins not numbered.

Figure 2. (St) stump vein present at base of R. Prominent in Stenotabanus psammophilus.

Figure 3. Stylets of the mouthparts of Diachlorus ferrugatus, female specimen, dorsal view, slide mount. (a) salivary duct, visible through clypeus; (b) salivary canal in hypopharynx; (c) right maxillary galea; (d) right mandible, with scalloped cutting edge; (e) labrum, showing central food canal; (f) hypopharynx; (g) enlarged tip of left galea, showing cuticular, saw-toothed edge.
ANOTATED LIST OF HORSE FLIES KNOWN TO OCCUR IN FLORIDA

*Agkistrocerus finitimus* (Stone), 1938
  Philip, 1954a. Note on holotype; description of female, pp. 31, 32

*Agkistrocerus meyerlei* (Wiedemann), 1828

*Anacimasa geropogon* Philip, 1936
  Philip, 1952a. New record

*Anacimasa limbellatus* Enderlein, 1923

*Chlorotabanus crepuscularis* (Bequaert), 1926
  Jones, 1958. Seasonal occurrence; larval habitat.

*Chrysops abata* Philip, 1941

*Chrysops amazon* Daecke, 1905
  Philip, 1955, p. 87.

*Chrysops amazon hubbelli* Philip, 1955

*Chrysops atlantica* Pechuman, 1949

*Chrysops beameri* Brennan, 1935

*Chrysops bistellata* Daecke, 1905
  Fairchild, 1950. Distribution, p. 10

*Chrysops brimleyi* Hine, 1904

*Chrysops brunnea* Hine, 1903

*Chrysops callida* Osten Sacken, 1875
  Fairchild, 1950. Distribution, p. 10

*Chrysops cincticornis* Walker, 1848
  Synonym: *Chrysops celer* Osten Sacken, 1875
  Philip, 1959, p. 201.

*Chrysops cincticornis nigroptera* Fairchild, 1937

*Chrysops cursim* Whitney, 1879

*Chrysops dacne* Philip, 1955

*Chrysops dimmocki* Hine, 1905

*Chrysops divisa* Walker, 1848

*Chrysops dorsovittata* Hine, 1907

*Chrysops flavida* Wiedemann, 1821
  Philip, 1957. Southern extension in Antilles, pp. 15, 16.
Chrysoptes flavida reicherti Fairchild, 1937

Chrysoptes fuliginosa Wiedemann, 1821

Chrysoptes fulvistigma Hine, 1904

Chrysoptes fulvistigma dorsopuncta Fairchild, 1937

Chrysoptes geminata Wiedemann, 1828

Chrysoptes hini Daekke, 1907
   Jones, 1953. Seasonal occurrence.

Chrysoptes moeca Osten Sacken, 1875
   Philip, 1901 in litteris (Jan.), C. B. Philip to F. S. Blanton,
   Univ. Florida. New record. To be published subsequently.

Chrysoptes montana Osten Sacken, 1875

Chrysoptes montana perplexa Philip, 1955

Chrysoptes nigra Macquart, 1838

Chrysoptes nigra taylori Philip, 1955
   Philip, 1955. New subspecies, p. 112

Chrysoptes nigribimbo Whitney, 1879

Chrysoptes obsoletea Wiedemann, 1821

   Synonyms: Chrysoptes lugens Wiedemann, 1821
      Philip, 1950a, p. 431.

Chrysoptes trinotata Macquart, 1838
   Philip, 1956, p. 100.

Chrysoptes obsoletea lugens Wiedemann, 1821

   Synonym: Chrysoptes obsoletea ultima Whitney, 1914

Chrysoptes pavulata Daekke, 1907

Chrysoptes piki Whitney, 1904
   Philip, 1961, in litteris (Jan.) C.B. Philip to F. S. Blanton,
   Univ. Florida. New record. To be published subsequently.

Chrysoptes pudica Osten Sacken, 1875
   Jones, 1953. Seasonal occurrence.

Chrysoptes sackeni Hine, 1908
Chrysops univittata Macquart, 1855

Chrysops viittata Wiedemann, 1821

Chrysops viittata floridana Johnson, 1913
Jones, 1953. Seasonal occurrence.

Chrysops wiedemanni Krober, 1926

Chrysops new species.

Diachlorus ferrugatus (Fabricius), 1805
Showell, 1947. First male reported and described.
Philip, 1960c. Lectotype, p. 174

Glaucops daedalus (Stone), 1938

Haematopota punctulata (Macquart), 1838
Philip, 1953. Key to Nearctic species of the genus, under Chrysozona.

Hamatabanus carolinensis (Macquart), 1838
Synonym: Hamatabanus scitus (Walker), 1848
Philip, 1950a, p. 433.
Philip, 1950b, p. 120.

Hamatabanus sexfasciatus (Stone), 1935

Hybomitra hinei (Johnson), 1904

Hybomitra hinei wrighti (Whitney), 1915

Hybomitra lasiophthalma (Macquart), 1838
Synonym: Hybomitra freita (Stone), 1938
Philip, 1950a, pp. 433, 434.

Hybomitra trispila trispila (Wiedemann), 1828

Leucotabanus annulatus (Say), 1823
Jones, 1953. Larval habitat.

Merycomya brunnea Stone, 1953
Merycomyia whitneyi (Johnson), 1904
Philip, 1954c. Distribution and key to species of the genus, p. 60.

Microtabanus pygmaeus (Williston), 1887

Stenotabanus floridensis (Hine), 1912
Stone, 1938. New combination, p. 34.

Synonym: Tabanus floridensis Hine, 1912
Stone, 1938, p. 34.
Philip, 1950a, p. 435

Stenotabanus psammophilus (Osten Sacken), 1876
Fairchild, 1961. Eye pattern compared to Panaman species.
Philip, 1958. Occurrence in Florida; keys to other species.

Tabanus aar Philip, 1941

Tabanus abacor Philip, 1936

Tabanus abdominalis Fabricius, 1805

Synonym: Tabanus limbatinervis Macquart, 1847
Philip, 1959, p. 208 (Tasmanian species)

Tabanus acutus (Bigot), 1892

Tabanus americanus Forster, 1771
Jones, 1958. Seasonal occurrence.

Tabanus atratus Fabricius, 1775
Jones, 1958. Seasonal occurrence.

Tabanus atratus fulvopilosus Johnson, 1919

Tabanus birdiei Whitney, 1914

Tabanus bishopi Stone, 1933

Tabanus caliens Linnaeus, 1767

Synonym: Tabanus giganteus Degeer, 1776
Philip, 1952b, p. 311.
Tashiro and Schwartd, 1953. Immatures; rearing.

Tabanus cayensis Fairchild, 1935

Tabanus cheliopterus Rondani, 1850

Tabanus cheliopterus subfronto Philip, 1936
Tabanus coarctatus Stone, 1935

Tabanus endymion Osten Sacken, 1878

Tabanus equalis Hine, 1923

Tabanus exilipalpis Stone, 1938

Tabanus fulvulus Wiedemann, 1828

Tabanus fulvulus pallidescens Philip, 1936

Tabanus funspinus Wiedemann, 1828
Jones, 1955. Seasonal occurrence; life cycle.

Tabanus fuscicostatus Hine, 1906
Pechuman, 1949. New record, p. 53

Tabanus gladiator Stone, 1935

Tabanus gracilis Wiedemann, 1828

Tabanus imitans var. imitans Walker, 1848

Tabanus imitans var. excessus Stone, 1938
Philip, 1960b. Compared with other varieties of the species.

Tabanus imitans var. pechumanii Philip, 1960

Tabanus johnsoni Hine, 1907

Tabanus kisuki Stone, 1940

Tabanus lineola Fabricius, 1794
Jones, 1953. Seasonal occurrence; larval habitat; pupal parasites.

Tabanus longiusculus Hine, 1907

Tabanus melanocerus Wiedemann, 1828
Tabanus melanocerus lacustris Stone, 1935

Tabanus molestus mixis Philip, 1950

Tabanus mularis Stone, 1935

Tabanus nigrescens Palisot de Beauvois, 1809

Tabanus nigrescens atripennis Stone, 1935

Tabanus nigripes Wiedemann, 1821

Synonym: Tabanus coffeatus Macquart, 1847
Philip, 1950a, p. 434.

Tabanus nigrovittatus Macquart, 1847

Synonym: Tabanus vicarius Walker, 1848 ex parte

Tabanus nigrovittatus fulvillanus Philip, 1957

Tabanus petiolatus Hine, 1917

Tabanus proximus Walker, 1848

Tabanus punilus Macquart, 1838

Tabanus quinquevittatus Wiedemann, 1821
Fairchild, 1950. Distribution, p. 27.

Synonym: Tabanus manifestus Walker, 1850
Philip, 1959, p. 209.

Tabanus quirinus Philip, 1950
Philip, 1950b. New species, p. 120.

Tabanus recedens Walker, 1848
Fairchild, 1950. Distribution, p. 27.

Tabanus rufomarginatus Walker, 1850
Jones, 1953. Life cycle.

Tabanus similis Macquart, 1849

Synonym: Tabanus lineola var. scutellaris Walker, 1850
Philip, 1959, p. 208.

Tabanus sparsus Whitney, 1879

Tabanus sparsus milleri Whitney, 1914
Tabanus stygius Say, 1823

Tabanus succirostris Macquart, 1855
Tashiro and Schwartz, 1953. Larvae compared with T. giganteus
(= calens)

Tabanus trijunctus Walker, 1864
Jones, 1953. Seasonal occurrence.

Tabanus trimaculatus Palisot de Beauvois, 1807

Tabanus turbidus Wiedemann, 1828

Tabanus vittiger guatemalinus Hine, 1906
Fairchild and Aitken, 1960. Recorded from Trinidad, p. 7

Synonyms: Tabanus lineola var. carnes Bellardi, 1839
Tabanus lineola var. scutellaris Philip, 1949
Tabanus truquiti Bequaert, 1940
Tabanus vittiger var. bellardi Szilady, 1926
Tabanus vittiger var. guatemalinus Fairchild, 1942
Pechuman, 1957.

Tabanus vittiger schwartzi Philip, 1942

Tabanus wiedemanni Osten Sacken, 1876

Tabanus zythicola Philip, 1936

Whitneyomyia beatifica (Whitney), 1914

Whitneyomyia beatifica atricorpus Philip, 1950

**Key to Genera of Floridan Horse Flies**

1. Wing completely and lightly dappled, gray to brown;
   ocelli absent.................................................. *Haematopota* Meig., 1803
   Species: *punctulata*

   Wing not dappled..................................................2

2. Ocelli well developed; vein Sc bare on upper and lower surfaces
   (Pl. I, Fig. 2; Pl. II, Fig. 1)..................................................2

   Ocelli either absent or inconspicuous; vein Sc hairy on lower
   surface, at least..................................................4

3. Antenna conspicuously shorter than antero-posterior axis of head;
   basal segment at least as wide as long...........*Meryemyia* Hine, 1912
   Species: *brunnia, whitneyi*

   Antenna conspicuously longer than antero-posterior axis of head;
   basal segment at least twice as long as wide
Species: 40 or more, including varieties

4. Basicostal scale with hairs as densely distributed as those on
   adjoining costal vein (Pl. I, Fig. 1)...........................................5
   Basicostal scale either distinctly bare, or,
   with very few hairs, in a line or patch........................................8

5. Antenna with a conspicuous, dorsal, forwardly directed
   hook on the base of segment 3 (Pl. I, Fig. 10)...............................6
   Antenna without hook on base of segment 3, though a
   dorsal process may be present..................................................13

6. Eye sparsely to densely hairy\(^3\)..............................................7
   Eye bare.......................................................... Tabanus Linnaeus, 1758, ex parte
   Species: americanus, atratus, calens, funipennis,
   imitans var. imitans, imitans var. peckmani

7. Wing with isolated, smoky-colored patches;
   eye densely hairy........................................ Agathrocerus Philip, 1941
   Species: finitima, meyerlei
   Wing clear; eye sparsely hairy........................................ Hamatabanus Philip, 1941
   Species: carolinensis, sexfasciatus

8. Antenna with 2-3 annulations in flagellum; few
   hairs on basicostal scale; small flies........................................9
   Antenna with 4 annulations in flagellum..................................10

9. Antennal flagellum with 3 annulations, 2 of which are
   distinct; body blackish........................................ Microtabanus Fairchild, 1938
   Species: pygmaeus
   Antennal flagellum with 3 indistinct annulations;
   body yellow-brown......................................................... Glaucops Szilady, 1923
   Species: daedalus

10. Ocellar tubercle present; light, submedian pattern on abdominal
    tergites; basicostal scale with a few hairs
    (Pl. I, Fig. 4, 5)............................................. Stenotabanus Lutz, 1913, ex parte
    Species: floridensis
    Ocellar tubercle not present; body color different....................11

11. Thorax, abdomen, white; rubbed areas appear reddish-brown;
    legs yellowish-white; stump vein at base of R\(_4\); basicostal scale
    with a few hairs (Pl. II, Fig. 2) Stenotabanus Lutz 1913, ex parte
    Species: psammophilus
    Body not white; basicostal scale bare (Pl. I, Fig. 1-B)..............12

12. Body entirely pale yellow to green; proboscis moderately long;
    labellum small; stout flies........................................... Chlorotabanus Lutz, 1909
    Species: crepuscularis

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\(^3\) Minute hairs on disc of eye. Seen best when insect is tilted forward, the front edge of eye viewed against white, or sometimes black, background; magnified 10-60 X.
Bargren: Annotated List of Horse Flies in Florida

Body yellowish-brown; proboscis short; labellum large; mesocutum
with distinct, greenish patch; apical ¼ -⅓ of wing between
R₁ & R₅, smoky-colored (Pl. II, Fig. 1) Diachironus Osten Sacken,
1876
Species: ferrugatus

13. Ocellar tubercle present (Pl. I, Fig. 4, 5).................................14
Ocellar tubercle not present.................................................15

14. Abdomen with sublateral-longitudinal pale areas, spots or triangles;
a median dark stripe, on the tergites. Hybomitra Enderlein, 1922
Species: hinei, hinei var. wrighti,
lasiophthalma, trispila trispila
Abdomen with pale, transverse, hind borders on the tergites:
without longitudinal patterns..............................................Leucotabanus Lutz, 1913
Species: annulatus

15. Clypeus, gena, subcallus, bare and swollen; eye bare; antennal
flagellum without hairy annulations; wing dark brown;
integument shiny black.......................................................Whitneyomyia Bequaert, 1933
Species: beatifica, beatifica atricorpus
Clypeus and gena sparsely to extensively hairy; characters in
otherways different from those mentioned above........................16

16. Palpus with long hairs on basal segments; proboscis slender;
labellum small; antennal flagellum with short hairs on the
annulations; gena with long, white hair. Anasimas Enderlein, 1923
Species: goropogon, limbellatus
Palpus, proboscis, generally different from those described
above; labellum large; antennal flagellum without hairy
annulations.................................................................Tabanus Linnaeus, 1758, ex parte
Species: 58 or more, including varieties,
and names in couplet 6.

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