

the three teeth in nearly the same plane, may be as primitive as any. In most Pompilidae the ventral concavity is strong and the teeth tend to surround it. Reduction in the teeth is shown to some degree in *Anoplius* and at its ultimate in *Homonotus*. Of the genera of Pompilini studied, certainly *Poecilopompilus* is as primitive as any, for the mandibles are unspecialized and the spiracles elliptical and suggestive of those of *Pepsis*.

On the whole, I feel that the study of pompilid larvae is off to a promising beginning and that eventually larval characters may prove of much value in helping to classify this notoriously difficult family. The family Pompilidae is much more homogeneous than the Sphecidae, and one does not find the striking differences in larval structure which occur in that family. Nevertheless differences do occur, and every effort should be made to collect and describe the larvae of additional species and genera.

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## CLASSIFICATION OF THE PSYCHODINI (PSYCHODIDAE: DIPTERA)<sup>1</sup>

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#### ABSTRACT

This tribe of the Psychodidae is defined and classified, with keys to and descriptions of six genera. The structure of the labellum is employed for the first time in classification, and other characters of the male and female genitalia, the wings, and the head are considered. It is postulated that the tribe arose from a *Brunettia*-like ancestor, that one line of development led to *Trichopsychoda* and possibly

to *Lepidopsychoda*, and that the main phylogenetic line gave rise to *Philosepedon*, *Threticus*, *Psychoda*, and the new genus *Eurygarka* (type, *Psychoda helcis* Dyar 1929). Species assigned to each genus (except *Psychoda*) are listed, with bibliography and distribution for each species. Other new generic reassignments include 1 species to *Trichopsychoda*, 11 to *Philosepedon*, and 7 to *Threticus*.

The present study is an attempt to classify members of the tribe Psychodini based on a re-study of available characters and re-evaluation of the various groups. The tribe belongs to the subfamily Psychodinae and is, in general, composed of small gray or yellowish species belonging to the genus *Psychoda* and allied groups.

Eaton (1904) erected the subgenera *Philosepedon*, *Threticus*, and *Logima* within the genus

*Psychoda* based on the shortened surstyle and multiple tenacula of the male genitalia and the presence of erect hairs on R<sub>1</sub>. Tonnoir (1922) recognized the group *Trichopsychoda* as another subgenus of *Psychoda* distinguished by the presence of vestiture on the wing membrane. *Lepidopsychoda* was described by Edwards (1928) to receive a species allied to species of *Psychoda* with scales on the wing membrane.

The above groups were placed in the tribe Psychodini and subtribe Psychodina by Enderlein (1937). In the same subtribe were included

<sup>1</sup>Accepted for publication September 15, 1958.

other genera related to *Pericoma*. *Philosepedon*, *Threticus*, and *Logima* were treated as subgenera of *Psychoda*. *Trichopsychoda* was accorded full generic status and *Lepidopsychoda* was omitted. Subsequent authors (Tonnoir 1940, Jung 1956) have treated *Philosepedon* and *Threticus* as subgenera of *Psychoda*, *Logima* a synonym of *Psychoda*, and *Trichopsychoda* a full genus.

Previous workers have not considered the structure of the labellum in their classification of the genus *Psychoda* and related groups. Yet this structure seems to be of basic taxonomic importance and one of the most important keys

mining the relationships of other groups to the dominant genus *Psychoda*, s.s., and is a character not used previously..

#### ACKNOWLEDGMENTS

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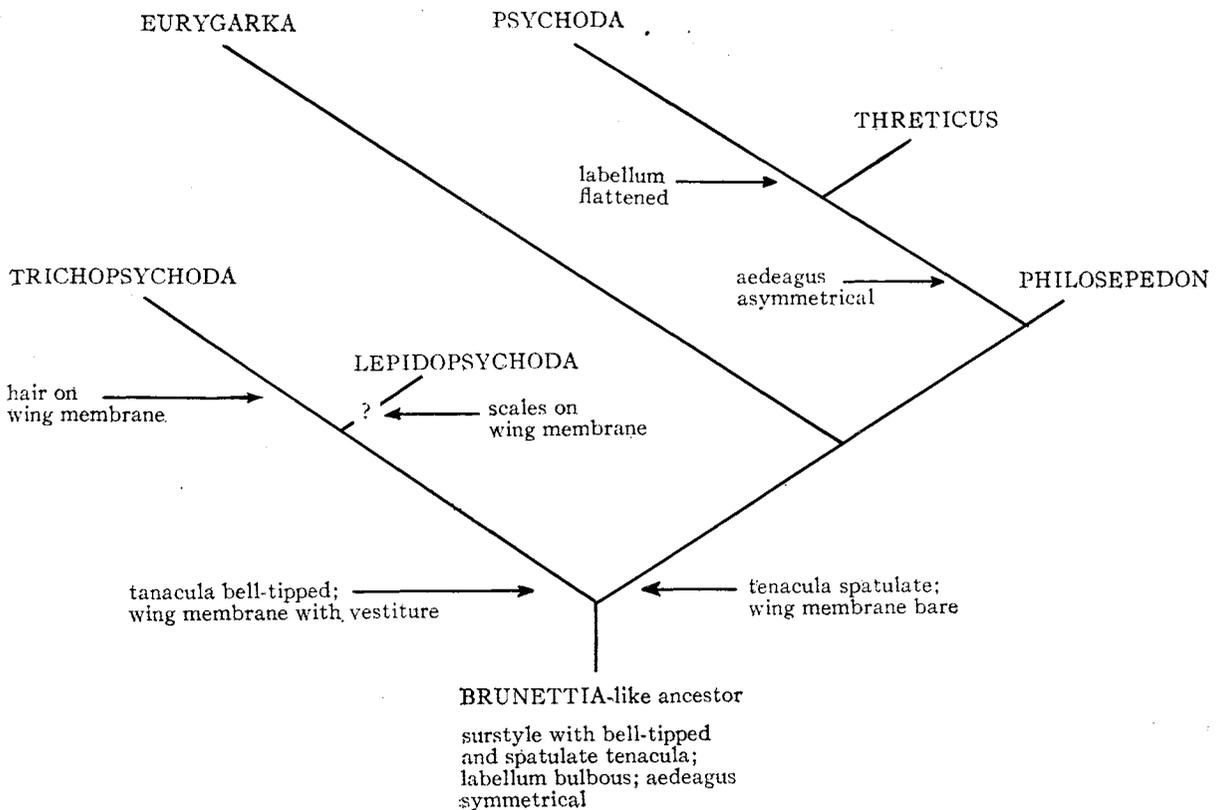


FIG. 1.—Diagrammatic representation of origin and relationships of the tribe Psychodini, showing some important morphological changes.

to the classification of the Psychodini. In all psychodids, except the Phlebotominae and *Psychoda*, the labellum is a fleshy, bulbous structure flattened on the apex (fig. 3). The stability of the bulbous labellum, as shown by its extensive distribution in the various groups of the family, has led to the conclusion that the change from the primitive condition was a major one, not easily achieved, and worthy of serious taxonomic consideration. To be sure, other characters must be used in constructing a classification. The male genitalia are especially important and also useful are the antennal sensory filaments, shape of the head, female genitalia, etc., but the labellum seems the most critical single character in deter-

#### PHYLOGENETIC RELATIONSHIPS

The genus *Trichopsychoda* is perhaps the closest to being an annectant group between the Psychodini and its nearest psychodid relative. It has male genitalia much like those of *Brunettia*, with short surstyli which bear multiple, bell-shaped tenacula. The wing venation, head, antennae, and sensory filaments are like those of other Psychodini. It also has distinctive features of its own in the hairy membrane and incomplete forks of the wing. Thus *Trichopsychoda* is in the anomalous position of possessing characters of two genera plus features of its own, but is clearly most closely related to the Psychodini. While it indicates derivation of the Psychodini from a

*Brunettia*-like form (as already pointed out by Satchell 1955: 49), it is quite far removed from the ancestor of the group.

It is quite possible that the Psychodini were derived from a primitive *Brunettia*-like form that had both bell-tipped and spatulate tenacula (fig. 1). A number of species of *Brunettia* possess this feature, such as *B. splendens* Tonn., from Africa, *biformis* Edwards from Polynesia, and others. Perhaps the primitive psychodine ancestor had these combined genitalic features and early in the history of the group there was a split. One branch lost the spatulate tenacula and gave rise to *Trichopsychoda* (and also possibly *Lepidopsychoda*, but not enough details are available about this genus to be certain of its relationships). The other branch, the most productive, lost the bell-tipped tenacula and gave rise to the other genera of the Psychodini.

The genus *Eurygarka* is markedly divergent from the other psychodines in the structure of the female genitalia and antennal sensory filaments. At present it stands rather by itself as a monotypic genus and presumably arose from the second main branch of the tribe.

*Philosepedon*, *Threticus* and *Psychoda* are three closely related genera. *Philosepedon* is the least specialized of the three in having a bulbous labellum, 16-segmented antennae with the three reduced, terminal segments present, Y-shaped antennal sensory filaments, and symmetrical aedeagus of the male genitalia. The distinguishing features of *Threticus* and *Psychoda* can be derived from those of *Philosepedon* and those genera probably arose from the ancestral stock of *Philosepedon*.

Loss of the right lateral shaft of the aedeagus of a *Philosepedon*-like form might have been the first step toward the evolution of *Threticus* and *Psychoda*. The loss of one of the anterior branches of the antennal sensory filaments would give rise to the species now placed in the genus *Threticus*; modification of the labellum would lead to the genus *Psychoda*.

The changes that occurred when the labellum changed to the flattened structure of *Psychoda* seem to have had great significance in the evolution of the group, for this genus contains the bulk of psychodine species and gives the tribe its dominant position alongside the other major groups of Psychodidae. The bulk of the species of Psychodini are those with the flattened labellum of the genus *Psychoda* and, judged on the basis of number of species, far and away the most successful genus of the tribe.

That the above conclusions are tentatively advanced should be obvious, but at least it is a start. At a later date it will be possible to corroborate, modify or abandon the above scheme as more complete information regarding immature stages, biology, zoogeography, etc. becomes available.

### Tribe Psychodini

*Adult*.—Small to medium-sized, wing length 1 to 3 mm.; vestiture usually uniformly pale yellow or gray in color, spotted in few species. Antenna with 14 to 16 segments, longer than width of wing; verticils well developed, cupuliform; sensory filaments generally Y-shaped and longer than segment bearing them; flagellar segments nodiform; terminal segments beyond 13 always reduced in size. Wing with acute apex, radial fork distad of medial,  $R_5$  ending exactly at apex.

#### KEY TO GENERA OF PSYCHODINI

1. Wing membrane with vestiture. . . . . 2  
Wing membrane without vestiture. . . . . 4
2. Wing vestiture consisting of hairs. . . . . 3  
Wing vestiture consisting of scales. . . . . **Lepidopsychoda**
3. Vein bifurcations  $R_{2+3}$  and  $M_{1+2}$  always absent at base, thus forks incomplete. . . . . **Trichopsychoda**  
Bifurcations complete, or only one incomplete. . . . .  
**Philosepedon, pars**
4. Sensory filaments unbranched elements or without posterior branch. . . . . 5  
Sensory filaments of antenna Y-shaped (sometimes 3 anterior branches). . . . . 6
5. Sensory filaments single, consisting of a sinuate branch. . . . . **Threticus**  
Sensory filaments consisting of a pair of broad, leaf-like anterior branches. . . . . **Eurygarka**
6. Labellum bulbous (fig. 3); antenna with 16 segments. . . . . **Philosepedon**  
Labellum flattened (fig. 2); antenna with 14 to 16 segments. . . . . **Psychoda**

#### Genus *Trichopsychoda* Tonnoir

*Trichopsychoda* Tonnoir, 1922, Ann. Soc. Ent. Belg. 62: 59 (subgenus of *Psychoda*); Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 87; Freeman, 1950, Hndbk. Ident. Brit. Ins. 9(2): 80, 91; Satchell, 1953, Austral. Jour. Zool. 1: 391; 1955, Proc. Roy. Ent. Soc. London (B) 24: 50; Quate, 1959, Insects Micronesia, Bishop Mus. Vol. 12, No. 4, in press.

*Adult*.—Head: vertex longer than width of eye bridge; eye bridge (median projection of eyes above antenna) with four rows of facets. Labellum bulbous, apically with bristles, but without teeth; palpus about as long as head from posterior margin to apex of mouth parts, first palpal segment more than one-half length of third segment. Antenna almost always with 16 segments (15 in *montana* Satchell), terminal segments beyond 13 reduced, separated; sensory filaments Y-shaped.

Wing with forks incomplete; base of  $R_3$  distad of base of  $M_2$ ;  $R_5$  ending at apex; membrane densely covered with hairs.

Male genitalia: surstyle small, tenacula long and slender, with number of bell-shaped tips; aedeagus symmetrical.

Female genitalia: genital digit absent; subgenital plate bilobed or only with apical concavity; spermatheca large. Cerci moderately slender, longer than subgenital plate.

Type species: *Psychoda hirtella* Tonnoir (by original designation).

Distribution: in all zoogeographical regions except Neotropical.

Satchell (1955) reviewed the genus *Trichopsychoda* and broadened it to include all the species of the Psychodini with hairs on the membrane. I do not agree with this generic diagnosis and believe that Satchell includes in the genus a number of species which are not congeneric with *T. hirtella*, the type species, but properly belong to the genus *Philosepedon*.

The hairy-winged species removed from *Trichopsychoda* do not possess the genitalic characters of this genus, nor are the bases of  $R_3$  and  $M_2$  absent. Removing these species, there is left a nucleus of closely related species well separated from the other Psychodini on conspicuous features of wing and genitalic structures, namely the hairy membrane, atrophied vein bifurcations, the *Brunettia*-like male surstyle, and the characteristic female genitalia (not easily defined in words, but evident in available illustrations).

Distribution: Great Britain and western Europe.

***Trichopsychoda insulicola* (Quate)**  
new combination

*Psychoda insulicola* Quate, 1954, Proc. Hawaiian Ent. Soc. 15: 342; 1955, Univ. Calif. Publ. Ent. 10: 225.

Distribution: southeastern United States, Hawaii.

***Trichopsychoda montana* Satchell**

*Trichopsychoda montana* Satchell, 1953, Austral. Jour. Zool. 1: 391.

Distribution: Australia.

Genus ***Lepidopsychoda* Edwards**

*Lepidopsychoda* Edwards, 1928, Ins. Samoa, Brit. Mus. (Nat. Hist.), Pt. 6, p. 71; Fairchild, 1951, Bull. Brooklyn Ent. Soc. 46: 14.

Type species: *Lepidopsychoda tineiformis* Edwards (by original designation).

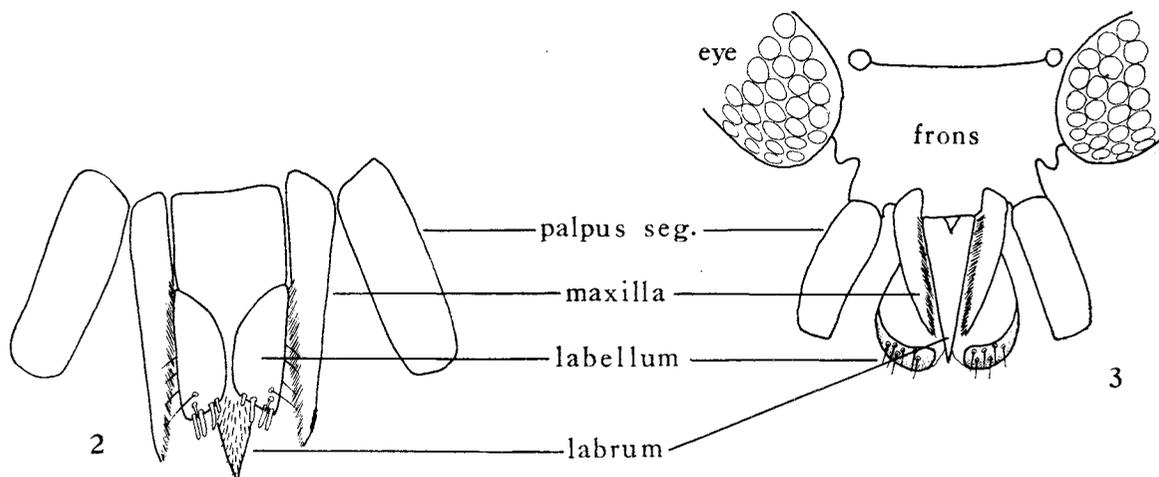


FIG. 2.—Mouth parts and anterior part of head of *Threticus bicolor* showing bulbous labellum, dorsal view.  
FIG. 3.—Mouth parts of *Psychoda alternata* showing flattened labellum, ventral view.

INCLUDED SPECIES

***Trichopsychoda africana* Satchell**

*Trichopsychoda africana* Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 51.

Distribution: Africa (Natal).

***Trichopsychoda boninensis* Quate**

*Trichopsychoda boninensis* Quate, 1959, Insects Micronesia, Bishop Mus. Vol. 12, No. 4, in press.

Distribution: Bonin Isl.

***Trichopsychoda carolinensis* Quate**

*Trichopsychoda carolinensis* Quate, 1959, Insects Micronesia, Bishop Mus. Vol. 12, No. 4, in press.

Distribution: central Caroline Isl.

***Trichopsychoda hirtella* (Tonnoir)**

*Psychoda hirtella* Tonnoir, 1919, Ann. Soc. Ent. Belg. 59: 15.

*Psychoda (Trichopsychoda) hirtella*, Tonnoir, 1922, Ann. Soc. Ent. Belg. 62: 60; Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 87.

*Trichopsychoda hirtella*, Edwards, in Tonnoir, 1940, Trans. Soc. Brit. Ent. 7: 61; Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 50.

According to Edwards (1928) and Satchell (in litt.), *Lepidopsychoda* is related to *Psychoda* but differs in that the wing is covered with scales instead of hairs. The antennae are 16-segmented, with the terminal three segments reduced and separated,  $R_5$  ends exactly at the wing tip, and the elongate male surstyle bears two tenacula. While I have not seen specimens of this genus, I would assume that the mouth parts are bulbous, as it appears most closely related to *Trichopsychoda* in which this condition exists.

Distribution: Oriental.

INCLUDED SPECIES

***Lepidopsychoda tineiformis* Edwards**

*Lepidopsychoda tineiformis* Edwards, 1928, Ins. Samoa, Brit. Mus. (Nat. Hist.), Pt. 6, p. 72; Satchell, 1950, Proc. Roy. Ent. Soc. London (B) 19: 184, 1953, *ibid.*, 22: 188.

Distribution: Samoa, Fiji.

**Lepidopsychoda trimicra** (Edwards)

*Brunettia* (*Parabrunettia*) *trimicra* Edwards, 1927, *Treubia*, 9: 364; Enderlein, 1937, *Deutsche Ent. Zeitschr.* 1936: 105.

*Lepidopsychoda trimicra*, Edwards, 1928, *Ins. Samoa, Brit. Mus. (Nat. Hist.)*, Pt. 6, p. 72.

Distribution: Java.

**Genus *Philosepedon* Eaton**

*Philosepedon* Eaton, 1904, *Ent. Mo. Mag.* (2) 15: 57; 1913, *Trans. Linn. Soc. London* (2) 15: 429; Tonnoir, 1922, *Ann. Soc. Ent. Belg.*, 62: 61 (subgenus); Enderlein, 1935, *Sitz. Gesell. Natur. Freunde* 1935: 248; 1936, *Tier. Mitteleur.* 6 (Abt. 16): 29; 1937, *Deutsche Ent. Zeitschr.* 1936: 87; Tonnoir, 1940, *Trans. Soc. Brit. Ent.* 7: 32 (subgenus); Jung, 1956, *Deutsche Ent. Zeitschr. (n.F.)* 3: 190 (subgenus) (gender feminine).

stocky, not much longer than 9th tergite, generally bearing two or three tenacula, but some species with only one; aedeagus (fig. 4) approximately symmetrical, consisting of central, main shaft and one or two pairs of shorter, flanking spines or rods.

Female genitalia: genital digit absent. Cerci (ovipositor) equal to or shorter than subgenital plate, generally shorter than *Psychoda* s.s.

Type species: *Psychoda humeralis* Meigen (by original designation, monotypic).

Distribution: Holarctic and Ethiopian.

As originally defined on the basis of two tenacula of the male surstyle and used by subsequent authors (Tonnoir 1922, 1940; Jung 1956)

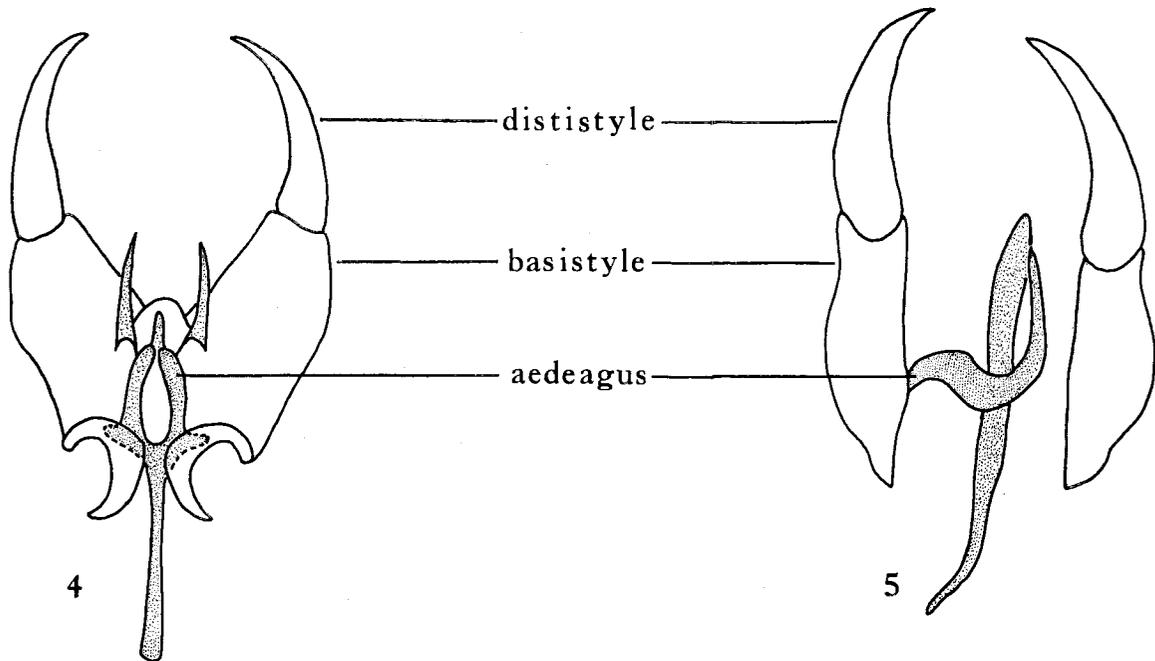


FIG. 4.—*Philosepedon humeralis*, coxites and aedeagus, showing symmetrical aedeagus.

FIG. 5.—*Psychoda pusilla*, coxites and aedeagus, showing asymmetrical aedeagus.

*Adult*.—Head: vertex long, two or three times as long as width of eye bridge; eye bridge with three or four rows of facets. Labellum bulbous, apically with bristles, but without teeth; palpus long, longer than entire length of head from posterior margin to apex of mouth parts, first palpal segment short, one-half or less length of third and fourth segments. Antenna with 16 segments, terminal 3 reduced and almost always clearly separated; sensory filaments Y-shaped.

Wing rather narrow; fork  $R_{2+3}$  distad of  $M_{1+2}$  by distance equal to more than three times width of cell  $R_2$  at point of bifurcation; forks generally complete;  $R_5$  ending at wing apex; membrane usually without vestiture.

Male genitalia: surstyle usually short and

this group was not based on solid foundations and sometimes was ignored (Freeman 1950). In my opinion the fundamental differences between the mouth parts of this group and those of *Psychoda* cannot be ignored and necessitate its recognition as a separate group. Combined with the characters mentioned in the above description, the mouth parts substantiate the belief that the group is a valid genus.

**INCLUDED SPECIES**

The following species belong to the genus *Philosepedon*. Undoubtedly additional species also belong, but a description of the labellum is lacking from most works and this prevents definite placement of the species.

**Philosepedon bishoppi** (del Rosario)  
new combination

*Psychoda bishoppi* del Rosario, 1936, Philip. Jour. Sci. 59: 141; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 205; Quate, 1955, Univ. Calif. Publ. Ent. 10: 230.

Distribution: eastern United States.

**Philosepedon distyla** (Quate), new combination

*Psychoda distyla* Quate, 1957, Nat. Malgache 9: 259.

Distribution: Madagascar.

**Philosepedon flavithorax** (Satchell)  
new combination

*Trichopsychoda flavithorax* Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 52.

Distribution: Malaya.

**Philosepedon humeralis** (Meigen)

*Psychoda humeralis* Meigen, 1818, Syst. Besch. 1(7): 106; Eaton, 1893, Ent. Mo. Mag. (2) 4: 33; Rapp and Cooper, 1945, Jour. N. Y. Ent. Soc. 53: 124; Freeman, 1950, Handbk. Ident. Brit. Ins. 9(2): 91, 95.

*Philosepedon humeralis*, Eaton, 1904, Ent. Mo. Mag. (2) 15: 57; 1913, Trans. Linn. Soc. London, (2) 15: 429; Spärck, 1920, København Ent. Medd. 13: 120.

*Psychoda (Philosepedon) humeralis*, Tonnoir, 1919, Ann. Soc. Ent. Belg. 59: 14; 1922, *ibid.*, 62: 61; Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 87; Jung, 1956, Deutsche Ent. Zeitschr. (n.F.) 3: 190, 201.

Distribution: Europe, Great Britain, Seychelle Isl.

**Philosepedon interdicta** (Dyar), new combination

*Psychoda interdicta* Dyar, 1928, Proc. Ent. Soc. Wash. 30: 88; del Rosario, 1936, Philip. Jour. Sci. 59: 109; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 206; 1945, *ibid.* 53: 209; Quate, 1955, Univ. Calif. Publ. Ent. 10: 227.

Distribution: eastern U. S., West Indies.

**Philosepedon maderensis** (Satchell)  
new combination

*Trichopsychoda maderensis* Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 56.

Distribution: Madeira.

**Philosepedon malayensis** (Satchell)  
new combination

*Trichopsychoda malayensis* Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 55.

Distribution: Malaya.

**Philosepedon mayeri** (Satchell), new combination

*Trichopsychoda mayeri* Satchell, 1955, Proc. Roy. Ent. Soc. London (B) 24: 54.

Distribution: Austria.

**Philosepedon opposita** (Banks), new combination

*Psychoda opposita* Banks, 1901, Canad. Ent. 33: 274; Haseman, 1907, Trans. Amer. Ent. Soc. 33: 321; Johnson, 1925, Occ. Papers Boston Soc. Nat. Hist. 7(15): 45; del Rosario, 1936, Philip. Jour. Sci., 59: 121; Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 86; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 207; Quate, 1955, Univ. Calif. Publ. Ent. 10: 230.

Distribution: eastern U. S. to Iowa and Texas.

**Philosepedon tesca** (Quate), new combination

*Psychoda tesca* Quate, 1955, Univ. Calif. Publ. Ent. 10: 229.

Distribution: California.

**Philosepedon triangulata** Eaton

*Philosepedon triangulatus* Eaton, 1913, Trans. Linn. Soc. London (2) 15: 429.

*Psychoda (Philosepedon) triangulatus*, Tonnoir, 1922, Ann. Soc. Ent. Belg. 62: 61; Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 87.

Distribution: Seychelle Isl.

**Philosepedon triastyla** (Quate), new combination

*Psychoda triastyla* Quate, 1957, Nat. Malgache, 9: 259.

Distribution: Madagascar.

**Philosepedon tridactila** (Kincaid)  
new combination

*Pericoma tridactila* Kincaid, 1899, Ent. News, 10: 32.

*Psychoda tridactila*, Haseman, 1907, Trans. Amer. Ent. Soc. 33: 304; del Rosario, 1936, Philip. Jour. Sci. 59: 135; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 208; Quate, 1955, Univ. Calif. Publ. Ent. 10: 225.

Distribution: western United States.

Genus **Threticus** Eaton

*Threticus* Eaton, 1904, Ent. Mo. Mag. (2) 15: 57; Tonnoir, 1922, Ann. Soc. Ent. Belg. 62: 65 (subgenus); Enderlein, 1935, Sitz. Gesell. Natur. Freunde 1935: 249; 1936, Tier. Mitteleur. 6(16): 29; 1937, Deutsche Ent. Zeitschr. 1936: 86 (subgenus); Rapp, 1945, Bull. Brooklyn Ent. Soc. 40: 177; Jung, 1956, Deutsche Ent. Zeitschr. (n.F.) 3: 190 (subgenus) (gender masculine).

*Adult.*—Head: vertex long, two or three times as long as width of eye bridge; eye bridge with four rows of facets. Labellum bulbous (fig. 3), apically with bristles, but without teeth; palpus long, longer than entire length of head from posterior margin to apex of mouth parts, first palpal segment short, one-half or less length of third and fourth segments. Antenna with 16 segments, terminal 3 reduced and almost always separated; sensory filaments consisting of single branch, moderately sinuous.

Wing moderately broad; forks  $R_{2+3}$  usually distad of  $M_{1+2}$  by distance equal to more than three times width of cell  $R_2$  at point of bifurcation; forks complete;  $R_5$  ending at wing apex; membrane without vestiture.

Male genitalia: surstyle short and usually stocky, not much longer than 9th tergite, bearing one to four tenacula; aedeagus asymmetrical, unpaired lateral shaft much different from central shaft.

Female genitalia: genital digit absent. Subgenital plate bilobed, but apical concavity small.

Type species: *Psychoda lucifuga* Walker (by subsequent selection, Enderlein, 1935, Sitz. Gesell. Natur. Freunde, p. 249).

Distribution: Holarctic, Ethiopian, Australasian.

As with the preceding genus, the mouth parts of the species of *Threticus* differ fundamentally from those of *Psychoda* species. The structure

of the antennal sensory filaments is unique among the Psychoidini in being formed of a single unbranched element rather than the usual Y-shape.

## INCLUDED SPECIES

**Threticus aenigmaticus** (Satchell)  
new combination

*Psychoda aenigmatica* Satchell, 1953, Austral. Jour. Zool., 1: 376.

Distribution: Tasmania.

**Threticus bicolor** (Banks), new combination

*Psychoda bicolor* Banks, 1894, Canad. Ent. 26: 33; 1901, *ibid.* 33: 275; Haseman, 1907, Trans. Amer. Ent. Soc. 33: 314; Banks, 1932, Bull. Brooklyn Ent. Soc. 26: 227; del Rosario, 1936, Philip. Jour. Sci. 59: 116; Enderlein, 1937, Deutsche Ent. Zeitschr. 1936: 86; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 205; Quate, 1955, Univ. Calif. Publ. Ent. 10: 233.

Distribution: eastern United States; Quebec, Ontario.

**Threticus dubitatus** (Tonnoir), new combination

*Psychoda dubitata* Tonnoir, 1939, Ruwenzori Exp., Brit. Mus. 1(4): 57.

Distribution: Kenya, Africa.

**Threticus irroratus** (Satchell), new combination

*Psychoda irrorata* Satchell, 1953, Austral. Jour. Zool. 1: 379.

Distribution: Tasmania.

**Threticus jonesi** (Quate), new combination

*Psychoda jonesi* Quate, 1955, Univ. Calif. Publ. Ent. 10: 231, 253.

Distribution: eastern United States.

**Threticus lucifugus** (Walker)

*Pericoma lucifuga* Walker, 1856, Ins. Brit. 3(1): 257.  
*Psychoda lucifuga*, Eaton, 1893, Ent. Mo. Mag. (2) 4: 129; 1894, *ibid.* 5: 23; Rapp and Cooper, 1945, Jour. N. Y. Ent. Soc. 53: 124; Freeman, 1950, Hndbk. Ident. Brit. Ins. 9(2): 91, 95.

*Threticus lucifugus*, Eaton, 1904, Ent. Mo. Mag. (2) 15: 57.

*Psychoda* (*Threticus*) *lucifuga*, Tonnoir, 1919, Ann. Soc. Ent. Belg. 59: 14; 1922 *ibid.* 62: 65; 1940 Trans. Soc. Brit. Ent. 7: 32; Jung, 1956, Deutsche Ent. Zeitschr. (n.F.) 3: 190, 201.

Distribution: western Europe, Great Britain.

**Threticus philpotti** (Satchell), new combination

*Psychoda philpotti* Satchell, 1950, Trans. R. Ent. Soc. London, 101: 175; 1954, *ibid.*, 105: 478.

Distribution: New Zealand.

**Threticus unimaculatus** (Satchell)  
new combination

*Psychoda unimaculata* Satchell, 1953, Austral. Jour. Zool. 1: 378.

Distribution: Tasmania.

In the opinion of Tonnoir (1922, Ann. Soc. Ent. Belg. 62: 65) the short, stocky surstyle of the male genitalia was the chief characteristic of *Threticus*, and on this basis he placed several species in it

that properly belong to *Psychoda*. These species, *cinerea* Banks (= *compar* Eaton), *gemina* Eaton, and *obscura* Tonnoir, are not congeneric with the species of *Threticus*, as they possess the flattened labellum found only in the genus *Psychoda*.

**Eurygarka**,<sup>2</sup> new genus

*Adult*.—Head: vertex long, about one and one-half times as long as width of eye bridge; eye bridge with four rows of facets. Labellum bulbous, apically with bristles, but without teeth, palpus long, longer than length of head, first palpal segment short, less than one-half length of third and fourth segments. Antenna with 16 segments, terminal 3 reduced and clearly separated; sensory filaments consisting of a pair of broad, leaflike blades, each blade with 4 to 6 longitudinal veins.

Wing moderately broad; fork  $R_{2+3}$  distad of  $M_{1+2}$  by distance equal to little more than width of cell  $R_2$  at point of bifurcation; forks complete;  $R_5$  ending at wing apex; membrane without vestiture.

Male genitalia: surstyle short and stocky, shorter than ninth tergite, bearing two tenacula; aedeagus symmetrical, consisting of straight main shaft flanked by pair of rods.

Female genitalia: genital digit absent; subgenital plate not bilobed, tapering to rounded apex with no apical concavity; spermatheca smaller than in species of *Psychoda*, but of similar structure; cercus (ovipositor) subquadrate, not long and tapering.

Type species: *Psychoda helcis* Dyar, by present designation.

Distribution: Neotropical mainly.

The most conspicuous differences between this genus and others of the Psychodini are the leaflike structure of the antennal sensory filaments, the unilobate female subgenital plate and the short, broad, subquadrangular female cerci.

## INCLUDED SPECIES

**Eurygarka helcis** (Dyar), new combination

*Psychoda helcis* Dyar, 1929, Proc. Ent. Soc. Wash. 31: 64; del Rosario, 1936, Philip. Jour. Sci. 59: 134; Rapp, 1944, Jour. N. Y. Ent. Soc. 52: 205; 1945, Jour. N. Y. Ent. Soc. 53: 29; Quate, 1955, Univ. Calif. Publ. Ent. 10: 235.

Distribution: southeastern United States, West Indies.

Genus **Psychoda** Latreille

*Psychoda* Latreille, 1796 Précis. caract. gén. ins. p. 152; 1802, Hist. Nat. Crust. Ins. 3: 424; Quate, 1955, Univ. Calif. Publ. Ent. 10: 191, 252 (bibliography); Jung, 1956, Deutsche Ent. Zeitschr. (n.F.) 3: 187, 192.

*Timearia* Schellenberg, 1803, Gattungen der Fliegen, pl. 40. (Type species: *Psychoda alternata* Say, by subsequent selection, Coquillett, 1910.)

*Trichoptera* Meigen, 1803, Illiger's Mag. 2: 261. (Type species: *Tipula phalaenoides* Linnaeus, by subsequent selection, Coquillett, 1910.)

<sup>2</sup>Eurygarka.—Gr., *eury*s—broad; *garka*—rod; referring to broad sensory filaments of antenna. Gender feminine.

*Logima* Eaton, 1904, Ent. Mo. Mag. (2) 15: 58; Tonnoir, 1922, Ann. Soc. Ent. Belg. 62: 63 (subgenus of *Psychoda*); Enderlein, 1935, Gesell. Natur. Freunde, 1935: 248; 1936, Tier. Mitteleur. 6(16): 29. (Type species: *Psychoda erminea* Eaton, by original designation and monotypic.)

*Adult.*—Head: vertex short, not extending above eyes more than distance equal to width of eye bridge; eye bridge usually with four rows of facets, rarely with three or five. Labellum (fig. 2) flattened and bearing about five teeth on apical margin; palpus equal to or shorter than length of head from posterior margin to apex of mouth parts, first palpal segment two-thirds or more length of following segments. Antenna with 14, 15, or 16 segments, terminal segments beyond 13 always reduced, about one-half size of preceding, often fused; sensory filaments Y-shaped, rarely with three anterior branches.

Wing: fork  $R_{2+3}$  distad of  $M_{1+2}$  by varying distances, forks generally complete, though bases of  $R_3$  and  $M_2$  lacking in many species;  $R_5$  ending at wing apex; membrane without vestiture.

Male genitalia: surstyle most often slender and considerably longer than ninth tergite but may be short and stocky, bearing single tenaculum; aedeagus (fig. 5) asymmetrical, consisting of main shaft flanked by smaller lateral shaft on left side.

Female genitalia: genital digit almost always present. Cerci longer than subgenital plate; subgenital plate bilobed.

Type species: *Tipula phalaenoides* Linnaeus (by monotypy).

Distribution: cosmopolitan.

*Tinearia* is clearly a synonym of *Psychoda*, as its type species, *alternata*, is quite closely related to other members of the genus. Although the species is allied to a cluster of closely related, monophyletic species forming a minor division within the genus, there are no grounds for recognizing a separate subgroup. *Trichoptera* is identical with *Psychoda*, as these two genera are isogenotypic. *Logima* was erected on the basis of absence of erect hairs on veins  $R_3$ ,  $R_5$ ,  $M_2$  and A ( $Cu_2$ , Tonnoir, 1922). However, this does not warrant another subgroup and is of even less

significance than the standing of the *alternata* complex.

#### Genus *Termitadelphos* Holmgren

*Termitadelphos* Holmgren, 1905, Zool. Anz. 29: 530; Speiser, 1906, *ibid.*, 30: 176; Edwards, *in* Tonnoir, 1929, Dipt. Patagonia and So. Chile, Brit. Mus. (Nat. Hist.), Pt. 2, 1: 2; Fairchild, 1951, Bull. Brooklyn Ent. Soc. 46: 15.

Type species: *Termitadelphos silvestrii* Holmgren (by monotypy).

From the illustrations provided by Holmgren, *Termitadelphos* appears to be synonymous with either *Threticus* or *Philosepedon*. It is not possible to be certain of its position without examination of specimens, in spite of Edwards' (1929) statement that it is clearly a synonym of *Psychoda*.

The genus was based on a single specimen collected in the nest of the termite *Eutermes rotundiceps* Holmgren and assumed to be a termitophilous fly. While this assumption may be correct, it is also possible that its presence in the nest was quite accidental, as psychodids are often found in dark, protected places.

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