Arquivos de Zoologia

MUSEU DE ZOOLOGIA DA UNIVERSIDADE DE SÃO PAULO

ISSN 0066-7870

ARQ. ZOOL. S. PAULO 34(2): 57-63 12.XII.1997

THE AMERICAN GENERA OF ASILIDAE (DIPTERA): KEYS FOR IDENTIFICATION WITH AN ATLAS OF FEMALE SPERMATHECAE AND OTHER MORPHOLOGICAL DETAILS. IX.1. SUBFAMILY ASILINAE LEACH (INCLUDING APOCLEINAE LEHR): KEY TO GENERIC GROUP

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ABSTRACT

The subfamily Asilinae Leach (including Apocleinae Lehr) of Asilidae is here divided into 11 generic groups: Ommatius, Proctacanthus, Efferia, Lochmorhynchus, Lecania, Mallophora, Eichoichemus, Eicherax, Myaptex, Glaphyropyga *and* Asilus *(= Asilini* s.s.*). A key to those generic groups and a list of their respective genera are given.*

Keywords: America, Asilinae, Taxonomy, Generic Groups, Key, List of genera.

INTRODUCTION

This is the part IX.1. of a serie of papers intended as a preliminary effort to define the American genera of Asilidae, describing the new genera, preparatory to the elaboration of a catalogue of Neotropical species for inclusion in the forthcoming World Catalogue of Flies, now being prepared by the U.S. Department of Agriculture and U.S. National Museum of Natural History, Washington, D.C.

Previous parts of this series (published and in press) are:

Part I (Key to subfamilies, subfamily Leptogastrinae): Gayana, Zool. 52(1-2): 95-114, 1988;

Part II (Dasypogoninae): Gayana, Zool. 52(3-4): 199-260, 1988;

Part III (Trigonomiminae): Bol. Soc. Biol. Concepción, 60: 35-41, 1989;

Part IV (Laphriinae, except Atomosiini): Bolm. Mus. paraense E. Goeldi, Zool. 4(2): 211-255, 1988;

Part V (Stichopogoninae): Bol. Soc. Biol. Concepción, 61: 39-47, 1990;

Part VI (Laphriinae, Astomosiini): Gayana, Zool. 55(1): 53-87, 1991;

Part VII.1 (Stenopogoninae, key to tribes): Gayana, Zool. 55(2): 139-144, 1991.

Part VII.2 (Stenopogoninae, Tribes Acronychini, Bathypogonini and Ceraturgini): Gayana, Zool. 55(3): 247-255, 1991;

Part VII.3 (Stenopogoninae, Tribes Dioctriini and Echthodopini): Gayana, Zool. 55(4): 261-266, 1992;

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Recebido para publicação em 30.I.95 e aceito em 29.V.96.

Part VII.4 (Stenopogoninae, Tribe Enigmomorphini): Bol. Soc. Biol. Concepción 62: 27-53, 1992;
Part VII.5 (Stenopogoninae, Tribe Tillobromini): Rev. chilena. Ent. 19: 17-27, 1992;
Part VII.6 (Stenopogoninae, Tribes Phellini, Plesiommatini, Stenopogonini and Willistoninini): Gayana, Zool. 57(2): 309-321, 1994;
Part VII.7 (Stenopogoninae, Tribe Cyrtopogonini): Bol. Soc. Biol. Concepción 62: 55-81,1992.
Part VIII. (Laphystiinae): Arquivos de Zoologia, São Paulo, 34(1):1-55, 1997.

In this and in forthcoming papers we treat the last subfamily remaining, Asilinae Leach (including Apocleinae Lehr). The collections studied were those of the Museu de Zoologia da Universidade de São Paulo and of the Museo de Zoología de la Universidad de Concepción. The techniques employed in the dissection and preservation of the male terminalia, female spermathecae and other morphological parts is the same used by Artigas (1971).

In the first paper of this series (Artigas & Papavero, 1988), we separated the Asilinae from the Apocleinae on the basis of the presence or absence, respectively, of hairs on the anatergite ('slopes of the metanotum'). However, two genera of the *Efferia*-group of Apocleinae have pilose anatergite, indicating that this character may have appeared two or more times, independently, in this family of flies. Accordingly, we decided to merge the two subfamilies into one. The presence of a scutellum with a clearly impressed rim, a character present in all members of the *Asilus*-group (Asilini *s.s.*) also appears many times, independently, in some species of entirely different genera of 'Apocleinae'. As happens with most of the characters in this group, they are homoplasies, rendering very difficult a neat separation of the generic groups. The division presented below is highly tentative, and does not intend to be 'natural'. We are just proposing a utilitarian key, destined exclusively to facilitate the identification of the American genera. The most reliable characters for separating the genera are those of the male terminalia, and we have relied heavily on those. Even then, groups of species which have clear divisions based on the male terminalia have an apparently uniform type of female terminalia and no other external character does differentiate them; we have had, as a result, to synonymize some nominal genera.

The Asilinae are here divided into 11 groups of genera, which may be recognized by the following key:

Subfamily Asilinae Leach

Key to the generic groups of the Americas:

1. Anatergite bare 2
   Anatergite pilose 13

2(1). Antennal style plumose. Postmetacoxal area heavily sclerotized, forming a complete bridge behind hind coxas ..... *Ommatius*-Group

   Antennal stylus bare. Postmetacoxal area membranous 3

3(2). Costal section situated between tips of R_5 and M_1 two or more times longer than costal section situated between tips of R_5 and R_4, i.e., R_5 ends at or above wing apex..... 4

   Costal section between R_5 and M_1 subequal to or much shorter than costal section situated between tips of R_5 and R_4, i.e., R_5 ends below wing apex 6

4(3). Male hypandrium short and broad, not produced, without an apical tuft of hairs. Aedeagus with 2 more or less long tubes arising from a common base. Female tergite 10 with strong spines ('acanthophorites') (except in *Proctacanthus coquillettii* Hine and *P. occidentalis* Hine (Nearctic), which have tergites 9 and 10 covered with numerous spinules). Only 2 spermathecae present, with nearly globular or ovoid capsules..... *Proctacanthus*-Group, part (except *Proctacanthella* Bromley)

   Male hypandrium variable, but most often produced, sometimes with a dense apical tuft of hairs. Aedeagus with 3 tubes

(sometimes extremely short). Female tergite 10 never with spines or spinules. Spermathecae with 3 capsules 5

5(4). Aedeagus most often characteristically curved, more or less crescent-shaped, formed by a very long common tube which opens at the apex into 3 very short tubes, normally forming a 'parrot beak'-like structure. Male terminalia slender and elongate, forming an angle (up to 90°) with the body axis. Female ovipositor strongly flattened laterally, blade-like, tergite 8 more or less elongate and slender. Spermathecal complex with an extremely long and slender endosternite, whose arms are placed very closely together. Wing normally with a stump vein at the angle of R_4 near its junction with R_5 (if stump vein absent, all the other preceding characters of the female or of the male present), or, in the case of *Efferia* Coquillett, with a complete extra vein uniting R_4 with R_{2+3} (i.e., three submarginal cells present) ....*Efferia*-Group, part

Aedeagus with 3 clearly separated, more or less divergent tubes, which may be more or less long, but never extremely short as above, arising from a more or less long common tube. Male terminalia on the same axis of the body. Female ovipositor generally conical; if laterally flattened, tergite 8 not very long, segment 8 of the abdomen never slender. Spermathecal complex with endosternite never extremely long and slender arms of endosternite normally only a little longer than their common base and more or less widely separated, never almost contiguous as above. R_4, near its junction with R_5, never with a stump vein..... .....*Lochmorhynchus*-Group

6(3). Scutellum without marginal bristles, its tumid surface only covered by relatively short, semierect pile. Male terminalia extremely variable. Ovipositor variable. Male aedeagus with 2 tubes. Only 2 spermathecae present .....*Lecania*-Group

Scutellum with at least 1 pair of well-developed marginal bristles (although marginals may be weak in a few cases). Other combinations of characters 7

7(6). Subalar sclerite with characteristic conical projection. Posterior basalare with at least some bristles and hairs, sometimes very dense. Wing with cell r_{2+3} broad apically, and vein R_4 with a complete extra vein near its junction with R_5, which unites R_4 with R_{2+3} (i.e., 3 submarginals cells present). Male terminalia small, in line with body axis. Aedeagus with 3 more or less long tubes. Female ovipositor conical, weakly sclerotized, beginning with segment 6, 7 or 8; tergite 10 never with spines. Generally very pilose flies. 3 spermathecae present, with more or less sausage-like capsules.....*Mallophora*-Group

Never with the above combination of characters 8

8(7). Wing with vein R_4 with a complete extra vein near its junction with R_5, uniting it to R_{2+3} (i.e., three submarginal cells present); if only 2 submarginal cells present, then R_4, near its junction with R_5, with a stump vein and claws obtuse. Aedeagus with 3 tubes. 3 spermathecae present (as fas as known). Male terminalia large, at a 30°-90° angle with body axis, gonopods with dense fringe of long hairs. Female ovipositor laterally compressed, shining, strongly chitinized, as long as segments 6-7 or 5-7.....*Eichoichemus*-Group

Wing with only 2 submarginal cells; claws never obtuse. Other combinations of characters 9

9(8). Male terminalia elongate, forming an angle of almost 90° with the body axis. Aedeagus a very long, crescent-shaped tube with three very short tubes at apex. Female ovipositor strongly flattened laterally, blade-like, tergite 8 elongate and slender. Spermathecal complex with an extremely long and slender endosternite, whose arms

are placed very closely together..... .....*Efferia*-Group, part (*Nerax* Hull)

Never with the above combination of characters 10

10(9). Abdominal tergites 2-3 or more without lateromarginal bristles 11

Abdominal tergites 2-3 or more with lateromarginal bristles 12

11(10). Scutellum with many discal and marginal bristles. Male terminalia small, variable, hypandrium quite large. Ovipositor shining, conical, with circlet of strong spines on tergite 10..... .....*Proctacanthus*-Group, part (*Proctacanthella* Bromley)

Scutellum with marginal bristles only. Female ovipositor without apical spines .....*Eicherax*-Group

12(10). Scutellum tumid, no sign of an impressed rim ..... *Myaptex*-Group

Scutellum with a clear impressed rim .....*Glaphyropyga*-Group

13(1). Scutellum without an impressed rim. Costal section situated between tips of R_5 and M_1 2 or more times longer than costal section situated between tips of R_5 and R_4, i.e., R_5 ends at or above wing apex. Male terminalia elongate, at an angle (up to 90°) with body axis. Aedeagus a very long, more or less crescent-shaped tube ending with 3 small tubes at the apex. Female ovipositor strongly flattened laterally, tergite 8 elongate and slender. Spermathecal complex with an extremely long and slender endosternite whose arms are placed closely together..... .....*Efferia*-Group, part (*Diplosynapsis* Enderlein and *Porasilus* Curran)

Scutellum with impressed rim. Costal section situated between tips of R_5 and M_1 subequal to or much shorter than costal section situated between tips of R_5 and R_4, i.e., R_5 ends below wing apex. Male and female terminalia and female spermathecae highly variable ....*Asilus*-Group (Asilini *s.s.*)

Generic Groups and Their Respective Genera

The list below includes only the genera considered by us as valid; no synonyms are included; in the list of genera of the *Asilus*-group, however, there may exist some synonyms, as our revision of that group is not yet completed.

I. *Ommatius*-Group

1. *Ommatius* Wiedemann, 1821

II. *Proctacanthus*-Group

1. *Eccritosia* Schiner, 1866
2. *Proctacanthella* Bromley, 1934
3. *Proctacanthus* Macquart, 1838

One new genus.

III. *Efferia*-Group

1. *Cratolestes* Hull, 1962
2. *Diplosynapsis* Enderlein, 1914
3. *Efferia* Coquillett, 1893
4. *Nerax* Hull, 1962
5. *Porasilus* Curran, 1934a
6. *Triorla* Parks, 1968

Five new genera.

IV. *Lochmorhynchus*-Group

1. *Apotinocerus* Hull, 1956
2. *Lochmorhynchus* Engel, 1930

V. *Lecania*-Group

1. *Ctenodontina* Enderlein, 1914
2. *Lecania* Macquart, 1838

VI. *Mallophora*-Group

1. *Amblyonychus* Hermann, 1921
2. *Carreraomyia* Cole, 1968

3. *Mallophora* Macquart, 1834

VII. *Eichoichemus*-Group

1. *Eichoichemus* Bigot, 1857a
Two new genera.

VIII. *Eicherax*-Group

1. *Eicherax* Bigot, 1857a
2. *Eraxasilus* Carrera, 1959

IX. *Myaptex*-Group

1. *Atractocoma* Artigas, 1970
2. *Furcilla* Martin, 1975
3. *Mayptex* Hull, 1962
4. *Rhadinosoma* Artigas, 1970
5. *Wilcoxius* Martin, 1975
Two new genera.

X. *Glaphyropyga*-Group

1. *Glaphyropyga* Schiner, 1866
2. *Leptoharpacticus* Lynch Arribálzaga, 1880
3. *Megametopon* * Artigas, 1970
4. *Nesiotes** Artigas, 1970
5. *Nomomyia* Artigas, 1970
6. *Regasilus* Curran, 1931
7. *Zoticus* Artigas, 1970
Two new genera.

XI. *Asilus*-Group (ASILINI s.s.)

1. *Anarmostus* Loew, 1860
2. *Chilesus* Bromley, 1932
3. *Chodalomyia* Hull, 1962
4. *Cratopoda* Hull, 1962
5. *Dicropaltum* Martin, 1975
6. *Epipamponeurus* Becker, 1919
7. *Leinendera* Carrera, 1945
8. *Lestophonax* Hull, 1962
9. *Lochyrus* Artigas, 1970
10. *Lycomya* Bigot, 1857b
11. *Machimus* Loew, 1849
12. *Menexenus** Artigas, 1970
13. *Negasilus* Carrera, 1934b
14. *Neoitamus* Osten Sacken, 1878
15. *Nigrasilus* Hine, 1908
16. *Philonicus* Loew, 1849
17. *Polacantha* Martin, 1975
18. *Prolatiforceps* Martin, 1975
19. *Pteralbis* Ayala, 1981
20. *Stenasilus* Carrera, 1960
21. *Stizolestes* Hull, 1962
22. *Threnia* Schiner, 1866
23. *Wyliea* Martin, 1975

Unplaced and unrecognized genera

1. *Aristofolia* Ayala, 1978
2. *Labromyia* Hull, 1962
3. *Pediphoneus* Lynch Arribálzaga, 1883 (no species included).

ACKNOWLEDGEMENTS

This research was supported by the Fundação de Amparo à Pesquisa do Estado de São Paulo (FAPESP, Grants 85/1772-5, 86/3327-1, 87/3170-8 and 94/2344-6), and Proyecto N° 203812, Dirección de Investigación, Universidad de Concepción. NP is "Pesquisador do Conselho Nacional de Desenvolvimento Científico e Tecnológico" (CNPq, Proc. n° 30.0994/79).

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* These names are preoccupied; the genera will be renamed in the corresponding paper.

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