

A NEW SUPRAGENERIC CLASSIFICATION OF THE SCATOPSIDAE (DIPTERA: PSYCHODOMORPHA)¹

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ABSTRACT

The suprageneric classification of the Scatopsidae is revisited. A new classification for the group is proposed, based on the phylogenetic relationships between the genera of the family. All four recognized subfamilies are maintained. *Anapausini trib.n.* is proposed for *Anapausis* Enderlein, 1912 in the Psectrosciarinae. The tribe Colobostematini *trib. n.* is proposed for the genera *Ferneiella* Cook, 1985, *Cookella* Freeman, 1985, *Holoplagia* Enderlein, 1912, *Borneoscatopse* Freeman, 1985, *Lumpuria* Edwards, 1928, and *Colobostema* Enderlein, 1926, up to now placed in the *Scatopsini*. The concept of *Scatopsini* is restricted to the genera *Scatopse* Geoffroy, 1762, *Apiloscatopse* Cook, 1974, *Reichertella* Enderlein, 1912, and *Pharsoreichertella* Cook, 1974. Generic rank is proposed to *Pharsoreichertella* Cook, originally considered a subgenus of *Reichertella*. In the Rhegmoclematini, *Diamphidicina subtrib.nov.* is erected for *Diamphidicus* Cook, 1972; *Parascatopsina subtrib.n.* is erected for *Parascatopse* Cook, 1955, *Rhegmoclemina* Enderlein, 1936, *Austroclemina* Cook, 1972, *stat.n.*, and *Neorhegmoclemina* Cook, 1955, *stat.n.* These last two genera were included up to now as subgenera of *Rhegmoclemina*. The subtribe Rhegmoclematina is restricted to *Rhegmoclema* Enderlein, 1912, *Aldrovandiella* Enderlein, 1912, and *Parmaferia* Cook, 1976. *Aldrovandiella* is revalidated. The phylogenetic relationships among the subfamilies, tribes, subtribes and genera in the classification are indicated through a sequenciation system. The systematics of the genus *Rhexoza* Enderlein, 1936 still presents a number of problems affecting the whole tribe Swammerdamellini. Diagnoses are proposed for the new taxa.

KEYWORDS. Diptera, Psychodomorpha, Scatopsidae, systematics, classification.

INTRODUCTION

The Scatopsidae had the family category proposed by NEWMAN (1834), as "Scatopsites". The genera now maintained in Synneuridae (= Canthyloscelidae; =Corynoscelidae; =Hyperoscelidae; Hyperoscelididae) were placed in Scatopsidae until ENDERLEIN (1936) propose their inclusion in the subfamilies Synneurinae and Corynoscelinae of his family Corynoscelidae, earlier (ENDERLEIN, 1912) considered a subfamily of Scatopsidae, Corynoscelinae. At the end of the 40's, the classification of the Scatopsidae included the subfamilies Aspistinae, erected by RONDANI (1840) for *Aspistes*, and Scatopsinae itself.

More recently, Prof. Edwin F. Cook published a long list of papers revising the systematics of the family, describing species of all biogeographical regions, revising types and studying in considerable detail the morphology of the male and female terminalia of the group. COOK (1963) proposed a suprageneric classification for the

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group based on his previous studies of the family. He maintained the family-rank for "Hyperoscelidae" (COOK, 1963) and accepted Rondani's subfamily Aspistinae, adding to the Scatopsidae the subfamilies Psectrosciarinae and Ectaetiinae. In the subfamily Scatopsinae, COOK (1963) proposed the tribes Rhegmoclematini and Swammerdamellini. His classification for the family was maintained since then, except for minor changes on the placement of some genera (see COOK, 1981).

COOK (1963) based his classification on an extensive morphological knowledge of the group, but there was no hypothesis for the phylogenetic relationships among the genera of the Scatopsidae. In my Master's unpublished thesis (AMORIM, 1982b) I made a phylogenetic analysis of the Scatopsidae of the world, which resulted in a cladogram for the genera of the family based on 412 characters of head, thorax, wing, legs, abdomen, and male terminalia. The need of the new names on papers including systematic problems in the family (Sabrosky, *in litt.*; Haenni & Vaillant, *in litt.*) encouraged me to publish the classification in a paper apart, before the whole revision of the group, with about 200 figures of the adult morphology, in addition to an analysis of the female terminalia, is ready to be published.

A new suprageneric, phylogenetic classification for the Scatopsidae has been proposed, which differs from that of COOK (1963) on some aspects. A new tribe is proposed for the Scatopsinae, with the restriction of the concept of the Scatopsini, and subtribes are added for the Rhegmoclematini. In the Psectrosciarinae, the genera are placed in separate tribes, one of them erected herein. The knowledge about the phylogenetic interrelationships among the subfamilies, tribes and genera, not present in the earlier classifications, is expressed in the classification below. Generic status is proposed to *Pharsoreichertella*, established by COOK (1974) as a subgenus of *Reichertella*.

The systematics of the Swammerdamellini presents a number of difficulties, especially concerning the large genus *Rhexoza*. COOK (1975, 1978) partially solved this problem stating that *Coboldia* actually belongs to the Swammerdamellini (COOK, 1975) and creating new genera - *Quateiella* and *Akorhexoza* - for species that were earlier placed in *Rhexoza*. The genera *Pararhexosa* and *Abrhexosa* were proposed by FREEMAN (1985) for species previously assigned to *Rhexoza*. In fact, even after the erection of these new genera, the species included in *Rhexoza* compose a non-monophyletic assemblage inside the Swammerdamellini. A complete resolution of the systematics of the Swammerdamellini can be solved only with the erection of new genera in the tribe, the redefinition of some genera and the reassessment of the species. The genus *Rhexoza* is indicated as a merophyletic arrangement ("*Rhexoza*") and for the time being the relationships among the genera in the Swammerdamellini is not proposed. The genus *Aldrovandiella* Enderlein, considered a junior synonym of *Rhegmoclema* Enderlein by COOK (1955), is herein revalidated.

Phylogenetic classification of the Scatopsidae

The following phylogenetic classification uses the sequencing convention of NELSON (1972), the *incertae sedis* convention of WILEY (1979) for taxa of doubtful position in the phylogeny, the square bracket convention of CHRISTOFFERSEN (1988) for redundant nominal taxa, and the group+ artifact of AMORIM (1982a) proposed for unnamed inclusive taxa in sequenced classifications. The definition of the new taxa

proposed is given below.

Scatopsidae Newman, 1834

Aspistinae Rondani, 1840

Aspistes Meigen, 1818

Arthria Kirby, 1837

Ectaetiinae Enderlein, 1936

Ectaetia Enderlein, 1912

Psectrosciarinae Cook, 1963

Anapausini, **trib. n.** [*Anapausis* Enderlein, 1912]

Psectrosciariini Cook, 1963 [*Psectrosciara* Kieffer, 1911]

Scatopsinae Newman, 1834

Rhegmoclematini Cook, 1955

Diamphidicina, **subtrib. n.** [*Diamphidicus* Cook, 1971]

Rhegmoclematina Cook, 1955

Parmaferia Cook, 1976

Aldrovandiella Enderlein, 1912, **revalid.**

Rhegmoclema Enderlein, 1912

Parascatopsina, **subtrib. n.**

Parascatopse Cook, 1955

Rhegmoclemina Enderlein, 1936

Austroclemina Cook, 1971, **stat. n.**

Neorhegmoclemina Cook, 1955, **stat. n.**

Scatopsini Newman, 1834

Scatopsini, **incertae sedis**, *Scatopse brevipalpis* Cook, 1956

Scatopse Geoffroy, 1762

Apiloscatopse Cook, 1974

Reichertella Enderlein, 1912

Pharsoreichertella Cook, 1974, **stat. n.**

Colobostematini, **trib. n.**

Ferneiella Cook **in** Freeman, 1985

Holoplaga Enderlein, 1912

Cookella Freeman, 1985

Borneoscatopse Freeman, 1990

Colobostema Enderlein, 1926

Lumpuria Edwards, 1928

Swammerdamellini Cook, 1972

Pararhexosa Freeman, 1990, **sedis mutabilis**

Swammerdamella Enderlein, 1912, **sedis mutabilis**

Coboldia Melander, 1916, **sedis mutabilis**

"*Rhexoza*" Enderlein, 1936, **sedis mutabilis**

Hawomersleya Cook, 1971, **sedis mutabilis**

Akorhexoza Cook, 1978, **sedis mutabilis**

Quateiella Cook, 1975, **sedis mutabilis**

Abrhexosa Freeman, 1990, **sedis mutabilis**

Psectrosciarinae Cook, 1963**Anapausini, trib.n.**

The genus *Anapausis* is the only member of the tribe at this time. This is a rather large genus, including species with different morphology that could eventually be divided into formal groups. Differently from the Psectrosciarini, the dorsal half of the epimeron I is short. The male sternite 6 in the ground-plan of the genus has a deep incision almost dividing the sclerite into a pair of plates, a rather odd shape for sternite 6. The females present two rather striking features on the terminalia: the spiracles of 8 (lost in many members of the family) are near each other mesally on the tergite and the sternum 9 produces internally a pair of rounded, distinctive lobes. The male terminalia presents a number of very striking modifications. The tergum 8 is distinctly developed and sclerotized, fused to the tergite 9 and projected latero-posteriorly to the anus and the aedeagus has in virtually all species a "pseudopenis" projecting ventrally.

Scatopsinae Newman, 1834**Rhegmoclematini Cook, 1955****Diamphidicina, subtrib.n.**

This subtribe includes a single genus, *Diamphidicina*, with two known species, *D. australis* Cook, 1971 and *D. chilensis* Amorim, 1989. The genus is very different from the remaining Rhegmoclematini species. The diagnostic features of the tribe are the presence of a short, typically shaped fork of M, the presence of a yellowish scutellum, setulae irregularly arranged on flagellomeres, no setae on posterior wing veins nor on wing membrane, and the absence of setae on the posterior half of the epimeron II. In *D. australis*, the females have the anal opening displaced anteriorly to the mid of the sintergal 8+9 plate and the cercus-like plates of tergum 10 fused to the sintergal 8+9 plate. The gonocoxites are ventrally fused to the sternum 9, which is well produced in both known species.

Parascatopsina, subtrib.n.

Generic rank is herein given to *Neorhegmoclemina* and *Austroclemina*, included by COOK (1971) as subgenera of *Rhegmoclemina*. These three genera sum with *Parascatopse* to compose this new subtribe. The species of the group are usually smaller than those of Rhegmoclematina, particularly those of *Parascatopse*, which are minute. The diagnosis of the subtribe includes the following features: no setae on posterior wing membrane nor on veins M, M₁, M₂, M₁₊₂ and CuA₁, extensive coverture of microtrichia on pleural thoracic sclerites, a group of setae on the post-pronotal area, the second and third coxae present vertical incision on its dorsal margin due to a weaker sclerotization. In the Rhegmoclematina are kept the genera *Rhegmoclema*, *Aldrovandiella*, and *Parmaferia*.

Colobostematini, trib. n.

The genera in this tribe were previously included in the Scatopsini (see COOK, 1974). It includes the genera *Ferneiella*, *Holoplusia*, *Colobostema*, as well as *Lumpuria* Edwards (= *Villoscatopse* Cook), and the genera proposed by FREEMAN (1985, 1990), *Cookella* and *Borneoscatopse*. These groups are rather poorly represented in the Neotropical region and I have not been able to examine specimens of *Lumpuria* and of *Borneoscatopse*. The diagnosis proposed here may be subject to revision. Particularly, the position of *Borneoscatopse* must be considered provisional. Most species have the thorax rather short, about as long as wide and show the wing rather densely microtrichiose. The antepnotum and the scutum are rather densely covered with microtrichia in all genera except *Ferneiella*.

Acknowledgments. I am deeply indebted to Dr. Curtis Sabrosky, who made important corrections on the text, especially on dates and correct spellings of the latinized forms of the new names. Jean-Paul Haenni made some useful comments on this manuscript and on that on the phylogeny of the Scatopsidae that influenced this paper.

REFERENCES

- AMORIM, D. S. 1982a. Classificação por seqüenciação: Uma proposta para a denominação dos ramos retardados. **Revta bras. Zool.**, São Paulo, **1** (1): 1-9.
- . 1982b. **Sistemática Filogenética dos Scatopsidae (Diptera: Oligoneura: Bibionomorpha)**. São Paulo, Tese de Mestrado, Universidade de São Paulo [unpublished].
- CHRISTOFFERSEN, M.L. 1988. Genealogy and phylogenetic classification of the world Crangonidae (Crustacea, Caridea), with a new species and new records for the southwestern Atlantic. **Revta nord. Biol.**, João Pessoa, **6** (1): 43-59.
- COOK, E.F. 1955. A contribution toward a monograph of family Scatopsidae (Diptera). 1. A revision of the genus *Rhegmoclema* Enderlein (= *Aldrovandiella* Enderlein) with particular reference to the North American species. **Ann. ent. Soc. Am.**, Lanham, **48**: 240-251.
- . 1963. Family Scatopsidae. In: Connecticut State Geological and Natural History Survey. Guide to the insects of Connecticut, pt. 6. The Diptera or true flies, fasc. 8. **Bull. Geol. Surv.**, Connect. **93**: 1-37.
- . 1971. The Australian Scatopsidae (Diptera). **Austr. J. Zool.**, Suppl., East Melbourne, **8**: 1-90.
- . 1974. A synopsis of the Scatopsidae of the Palaearctic. 3. The Scatopsini. **J. nat. Hist.**, London, **8** (1): 61-100.
- . 1975. A reconsideration of the Nearctic *Rhexoza* (Diptera: Scatopsidae). **Pan-Pacific Ent.**, San Francisco, **51**: 62-75.
- . 1978. A new genus and five new species of Scatopsidae from California, Mexico, El Salvador and Peru. **Pan-Pacific Ent.**, San Francisco, **54**: 31-37.
- . 1981. 20. Scatopsidae, pp. 313-319. In: McALPINE, J.E. et alii (coords.). **Manual of Nearctic Diptera**. Vol. 1. Ottawa, Research Branch, Agriculture Canada Monograph 27.
- ENDERLEIN, G. 1912. Zur Kenntnis der Zygophthalmen. Über die Gruppierung der Sciariden und Scatopsiden. **Zool. Anz.**, Jena, **40**: 261-282.
- . 1926. Zur Kenntnis der Scatopsiden. **Zool. Anz.**, Jena, **68**: 137-142.
- . 1936. Diptera (Zweiflügler). In: **Tierwelt Mitteleuropas 6: Insekten**, Berlin, **3**: 1-259.
- FREEMAN, P. 1985. Scatopsidae. In: FREEMAN, P & R.P. LANE, Bibionid and scatopsid flies - Diptera Bibionidae and Scatopsidae. **Handbk. Ident. Br. Insects**, **9** (7). London, Royal Entomological Society of London, p. 20-48, 54-74.
- . 1990. Redescription of seven Oriental species of Scatopsidae (Diptera) described by F.W. Edwards in the genus *Scatopse*. **Entomol. monthl. Mag.**, London, **126**: 9-19.
- NELSON, G. 1972. Phylogenetic relationship and classification. **Syst. Zool.**, Lawrence, **21** (2): 227-231.
- NEWMAN, E. 1834. Attempted division of the British Insects into natural Orders. **Entom. Magaz.** London,

2: 379-441.

RONDANI, C. 1840. **Sopra alcuni nuovi generi di insetti ditteri per servire alla Dipterologia Italiana.** Parma, Donati.

WILEY, E.O. 1979. An annotated Linnean hierarchy, with comments on natural taxa and competing systems. **Syst. Zool.**, Lawrence, **28** (2): 308-337.

Recebido em 13.09.1993; aceito em 05.11.1993



Amorim, Dalton de Souza. 1994. "A New Suprageneric Classification Of The Scatopsidae (Diptera: Psychodomorpha)." *Iheringia* 77, 107–112.

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