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Taxonomic notes on some flies of the Crozet Islands (Diptera)

By

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Abstract: Some new synonymies are proposed in Sphaeroceridae: Dreuxiella Matile, 1975, is a new junior syn. of Anatalanta Eaton, 1875; A. formiciformis Enderlein, 1903, and A. gracilis Enderlein, 1908, are junior synonyms of A. aptera Eaton, 1875, Dreuxiella spinosa Matile, 1975, is synonymous with Anatalanta crozetensis Enderlein, 1908. Locality and habitat data of seven species (Helcomyzidae, Tethinidae, Ephydridae, Sphaeroceridae) are given with taxonomic notes. With 13 figures.

Dipterous species of the antarctic islands - first of all flightless ones - have been readily involved in the so-called phylogenetic argumentations as examples for adaptation to a special climate (for references see HACKMAN, 1964). The authors who made real and effective work on them are far less in number. I must mention here TREHEN (1978) who studied life habits of two Anatalanta species on the Crozet Islands and a very recent work of TREHEN et VERNON (1982) on Diptera populations of the La Possession, incl. species involved in this paper. Regarding the high importance of more extensive taxonomic knowledge of the species of Anatalanta Eaton in general taxonomy of Sphaeroceridae, I was pleased with an opportunity of studying a part of the unnamed material of the Crozet Islands flies preserved in the Paris Museum (cf. PAPP, 1982). Through the courtesy of Dr. Loic MATILE (Muséum National d'Histoire Naturelle Paris, Entomologie général et applique) 632 unnamed dipterous flies were received and studied. I am sincerely grateful to Dr. MATILE also for an extended loan of the holotype of Dreuxiella spinosa MATILE.

This comparatively numerous material involved eight species. One species of Psychodidae (10 ex.) was left unnamed, all the other specimens belong to the acalyptrates. The studies on species represented by big series of specimens enabled me to solve some of the taxonomic problems. The material is deposited in the Paris Museum, some of the duplicates are in the collection of the Zoological Departement of the Hungarian Naturel History Museum.

HELCOMYZIDAE

Paractora dreuxi Séguy, 1965

Material studied: 4 ♂: Plage au Nord du Cap verdoyant, 30.III.1974, (on the first male) "Paractora dreuxi Séguy" L. Matile det. 1975; 4 ♂, 1 ♀: Plage de la Caverne, 22.III.1974; 3 ♂: Grotte du Cap verdoyant, 23.III.1974; 1 ♂: ibid., 9.IV.1974; 49 ♂, 11 ♀: ibid., 15.II.1974; 18 ♂, 13 ♀: ibid., 13.II.1974 - sous des Laminaires; 10 ♂, 29 ♀: Crique et grotte au Nord du Cap verdoyant, 18.III.1974; 3 ♂, 3 ♀: Grotte au Nord du Cap verdoyant, 11.III.1974; 1 ♂, 1 ♀: Plage pres de la Colonie de Cormorans au sud du Cap verdoyant, 20.II.1974. 151 ex. There is a second label on all of the above specimens and also on all of the other speciemens in the present material: "Ile aux Cochons, Archipel Crozet, J. F. Voisin coll.". Our specimens completely agree

with the description of the species but there were also some bigger specimens, up to 13.5 mm. A micropterous species, endemic for the Ile aux Cochons and La Possession.

TETHINIDAE

Apetaenus litoralis Eaton, 1875

Material studied: 1 ♂: Plage de la Caverne, 22.II.1974; 1 ♂, 3 ♀: ibid., 15.II.1974; 3 ♂, 2 ♀: Nord de la plage du Morne rouge, rochers littoraux à marée basse, 22.II.1974; 13 ♂, 13 ♀: Plage près de la Colonie de Cormorans au sud du Cap verdoyant, 20.II.1974; 1 ♂: Nord de la Plage du Morne rouge, rochers supralittoraux, 19.II.1974; 2 ♂, 6 ♀: Grotte du Cap verdoyant, 13.II.1974 and 15.II.1974; 6 ♂, 6 ♀: Plage Tournyol de Clos Rocher Trempé par la mer couvert d'Algues vertes et de Patelles, 16.II.1974. 57 ex. A micropterous species described from the Kerguelen Islands. These specimens agree well with the description and also with figures of ENDERLEIN, 1908 (Fig. 106, 142, 144) made on Kerguelen specimens and also with those of HENNIG (1971: Abb. 71-81). A later careful comparison of genitalia of specimens from the Crozet Is. and from the Kerguelen Is. seems advisable. GRIFFITHS (1972) widened the family concept of Tethinidae to include this genus and Listriomastax End. Though these two genera are not closely related, their proposed relegation could be corroborated by the study of the above specimens (see also below). The possible way of the distribution of this species may be similar to that of the Anatalanta species.

Listriomastax litorea Enderlein, 1908

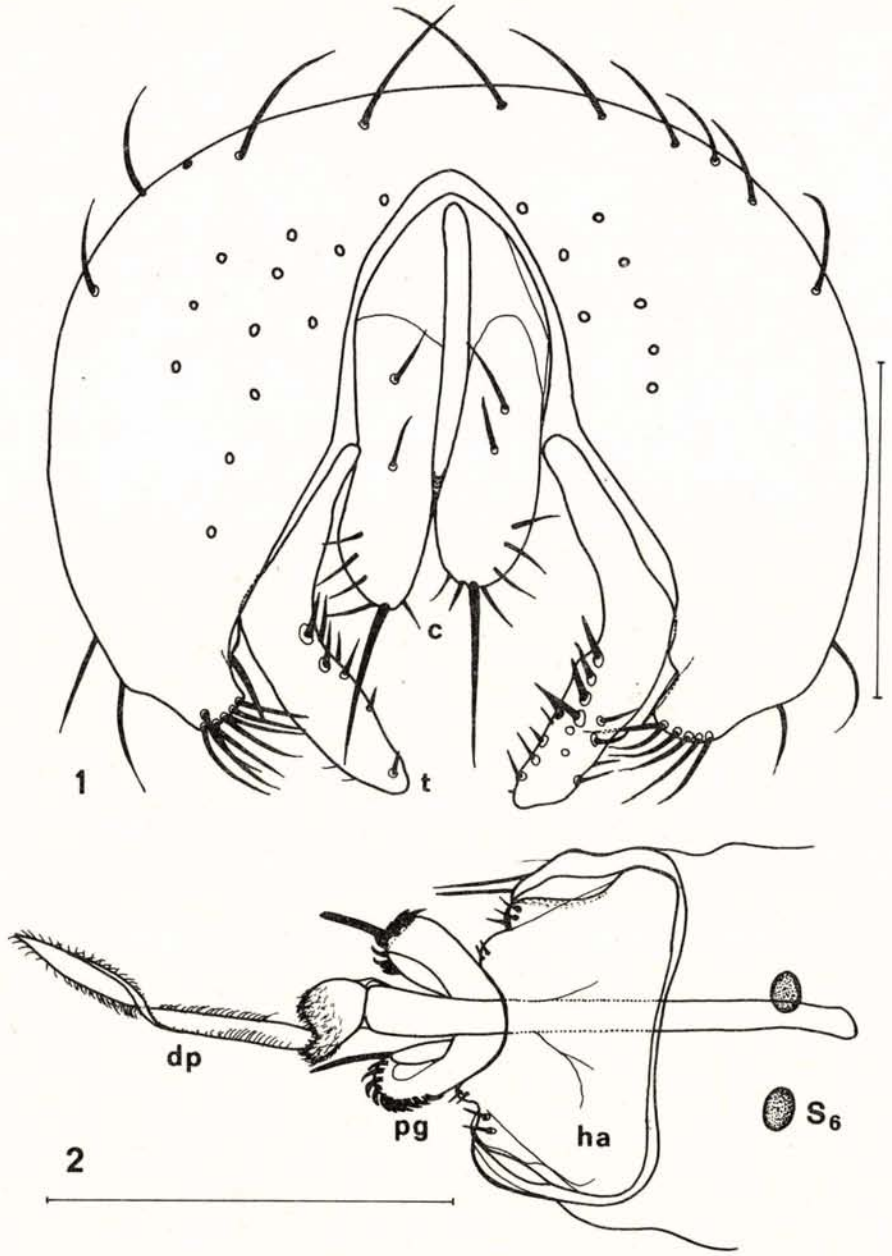
Material studied: 1 ♂: Nord de la plage du Morne rouge, 11.II.1974; 1 ♀: Grotte du Cap verdoyant, 13.II.1974; 1 ♂, 3 ♀: Plage près de la Colonie de Cormorans au sud du Cap verdoyant, 28.I., 20.II.1974; 1 ♂: Cascade dans de ravin, 11.II.1974; 1 ♂, 6 ♀: Plage Tournyol du Clos Laisses de mer sur Sable, 25.II.1974; 2 ♂, 3 ♀: Plage de la Caverne, 22.II.1974; 7 ♂, 13 ♀: ibid., 15.II.1974; 49 ♂, 69 ♀: Bord de mer au sud de l'ile Fossile (Laves, Cotula, Tillaea, Graminées), 15.II.1974; 3 ♂, 3 ♀: Grotte du Cap verdoyant, 15.II.1974; 3 ♂, 3 ♀: Sud de la plage de la Grande Manchotiére, 23.II.1974; 1 ♂: Plage de la Grande Manchotiére, 21.II.1974 - Racines de Poa; 1 ♀: Plage pres de la Colonie de Cormorans, 14.I.1974; 3 ♂, 3 ♀: Cap verdoyant, Goeland mort, 10.I.1974. 177 ex.

The only fully winged species among the flies studied here. It was described from the Possession I. (Crozet Is.) and it seems endemic for the Crozet Is. Its description was supplemented by comparatively good drawings (Figs 131-140, 145 of ENDERLEIN, 1908), which served as a good base for GRIFFITHS (1972) to refer it to the Tethinidae, its proper systematic place, here corroborated in every respect. Male genitalia (Figs 1-2) symmetrical except for aedeagus; epandrium rather small, cerci with a pair of long bristles ventrally; telomeres (Fig. 1) with wide base and bearing short and thick thorns in their median surface; ventral lobes of epandrium with long dense bristles; male sternum 6 consisting of two small elliptic plates, hypandrium large, postgonites with numerous thick black and much curved thornlets and with a pair of long thick thorns: basiphallus hairy, distiphallus of medium length, ribbon-like, switched with short hairs; male terga ± divided in the sagittal line; female tergum 3 bipartite (Fig. 3) but all other terga more or less divided, e.g. terga 5 and 6 with large caudal emarginations; female sterna 6 and 7 (Fig. 4) with a deep caudal emarginations each, sternum 8 divided into two parts; sternum 9 with a pair of long bristles (Fig. 5), cerci with numerous moderately long bristles; two spermathecae; terga with numerous very long bristles in both sexes.

EPHYDRIDAE

Amalopteryx maritima Eaton, 1875

Material studied: 4 ♂, 5 ♀: Crique au Nord du Cap verdoyant, 30.I.; 1 ♂, 10 ♀: Sommet de l'Ile Fossile, env. 150 m. d'alt., 15.II.; 2 ♂, 5 ♀: Cap de la Décepcion, 26.I.; 10 ♂, 3 ♀: Sud de la plage de la Grande Manchotière, 23.II.; 1 ♂, 1 ♀: Jeune Macronectes giganteus crevé, Cinq géants, 12.II.; 1 ♂, 1 ♀: Plage de la Grande Manchotière, 21.II.1974 - Racines de Poa; 6 ♂, 4 ♀: Nord de la plage du Morne rouge, 11.II.; 5 ♂, 16 ♀: Le Delta, sédiments fins et humides, 14.II.; 10 ♂, 5 ♀: lit du ruisseau, près du Camp, 8.I.; 2 ♂, 2 ♀: Plage, près de la Colonie de Cormorans, sud du Cap verdoyant, 28.I. All the above specimens bear a second label: "Ile aux Cochons, Archipel Crozet, J. F. Voisin coll." and collected in 1974. Other specimen: 1 ♂: Archipel Crozet, Ile de la Possession, 6. I.1974, J. F. Voisin coll. 95 ex. An interesting



Figs 1-2. Listriomastax litorea Enderlein, 1908, male - 1: epandrium with telomeres (t) and cerci (c), caudal view - 2: genitalia in ventral view (S_6: sternum 6 in two pieces, ha: hypandrium, pg: postgonite, dp: distiphallus) (scales: 0.2 mm, 0.5 mm)

stenopterous species. The above specimens from the Crozet Is. completely agree with the description given by PAPP (1979) for a specimen from the Kerguelen Is.

SPHAEROCERIDAE

Siphlopteryx antarctica Enderlein, 1908

Material studied: 1 ♂: Touffe de Graminées sur la plage de la Grande Manchotière, 14.II.; 1 ♂: Crique au Nord du Cap verdoyant, 30.I.; 1 ♀: Le Delta, sédiments fins et humides, 14.II.; 1 ♀: Camp, 10.II.; 1 ♀: Sud de la plage de Grande Manchotière, 23.II. 5 ex. Its description was based on seven specimens collected on the Possession I. ("Weihnachts-Bucht"). Probably endemic for the Crozet Is. Wing rudiments are so small in this species that one can regard it as apterous. Regarding some of its unique outer features and characteristics in male genitalia, this species deserves much more attention than it has been paid for it; also the present author would like to study it more in the future, first of all as regards its possible relationships in the subfamily Limosininae.

Anatalanta Eaton, 1875

EATON, 1875: Entomol. mon. Mag., 12: 59. Type species: A. aptera Eaton, 1875; l.c. (mon).

Dreuxiella spinosa Matile, 1975: Bull. Soc. ent. Fr., 80: 174.

It was described on the base of one immature female specimen from Ile de la Possession, Grande Manchotière. The holotype had been preserved in lactophenol and it was replaced into alcohol in the course of the present studies; it is in a rather poor state of preservation but I was able to find all the key characteristics and I think I can prove its conspecificity with Anatalanta crozetensis End. Namely its second antennal joint very long and conical, 3 small ocelli present (and clearly discernible by medium magnification on the specimen in alcohol), thorax short, scutellum extremely short, as in species of Anatalanta, only 1 posterior frontoorbital pair, small bristles on orbitalia covering also upper part of jowls, proboscis with a strong, pointed lancet-like sclerite, as in A. crozetensis; middle tibia with a middle anteral bristle; abdominal sternites (Fig. 6) with numerous long bristles, as in A. crozetensis females. On the basis of a careful comparison of this holotype with specimens of A. crozetensis, I can propose a synonymization of Dreuxiella Matile, 1975, with Anatalanta Eaton, 1875 and D. spinosa with A. crozetensis Enderlein, 1908, as new junior subjective synonyms. The holotype specimen is an immature female which possesses somewhat longer and thicker apical scutellars and somewhat longer and more dense marginal abdominal bristles than usual in A. crozetensis, but it shares all the other features with that species. It is more than probable that the variability in size, colour and thickness of legs in A. crozetensis will be proved as high as it has been found in A. aptera among specimens involved in the present studies (see below).

Anatalanta crozetensis Enderlein, 1908

Material studied: 1 ♂: Le Plan, au pied de la Ote, piège dans zone pierreuse, 25.II.1974 - Ile aux Cochons, Archipel Crozet, J. F. Voisin coll. - "Anatalanta crozetensis End. ♂" L. Matile det. 1975.; 1 ♀: Archipel Crozet, Ile de la Possession, 6.I.1974 - Archipel Crozet, J.F. Voisin coll. Also its syntypes in the Berlin Museum have been studied and it was partly redescribed on the basis of an additional specimen (PAPP, 1979). It was described from the Possession Is. ("Weihnachts-Bucht, 25. Dezember 1901. 1 ♂, 2 ♀. Gesammelt von E. Vanhöffen"). Discussed below.

Anatalanta aptera Eaton, 1875

Material studied: 13 ♂, 15 ♀: Plage Tournyol du Clos, 17.II., 2 ♂, 1 ♀: Plage Tournyol paroi rocheuse suintante près des marmites de Phoquières, 25.II.; 3 ♂, 9 ♀: Cap de la Déception, 26.I.; 4 ♂, 14 ♀: Cap verdoyant, Goëland mort, 10.I.; 5 ♂, 1 ♀: Plage près de la Colonie de Cormorans, 14.I.; 11 ♂, 6 ♀: ibid., 20.I.; 4 ♂, 5 ♀: Jeune Macronectes giganteus crevé cinq géants, 12.II.; 5 ♂, 2 ♀: Grande Manchotière, 15.I.; 1 ♂: La plan au pied de la côte, piège dans

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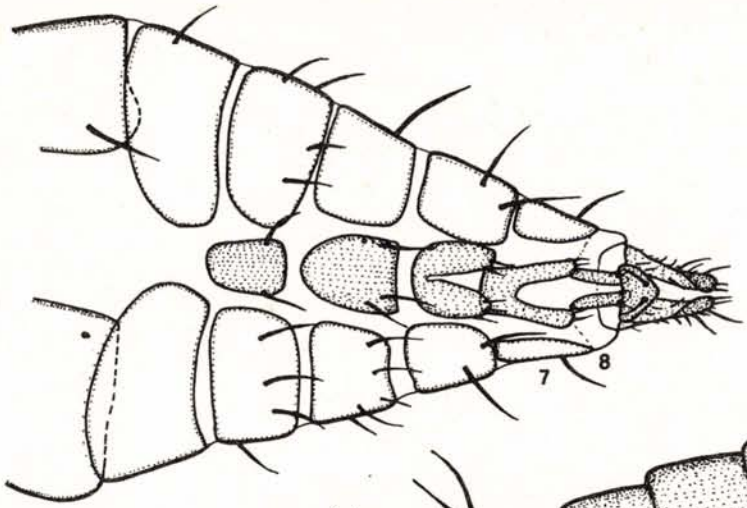
Figs 3-5. Listriomastax litorea Enderlein, 1908, female - 3: abdomen in ventral view - 4: abdomen in dorsal view (terminalia omitted) - 5: terminalia in ventral view (7; 8: seventh and eighth segment, T_2: tergum 2, T_8: tergum 8) (scales: 0.5 mm, 0.2 mm)



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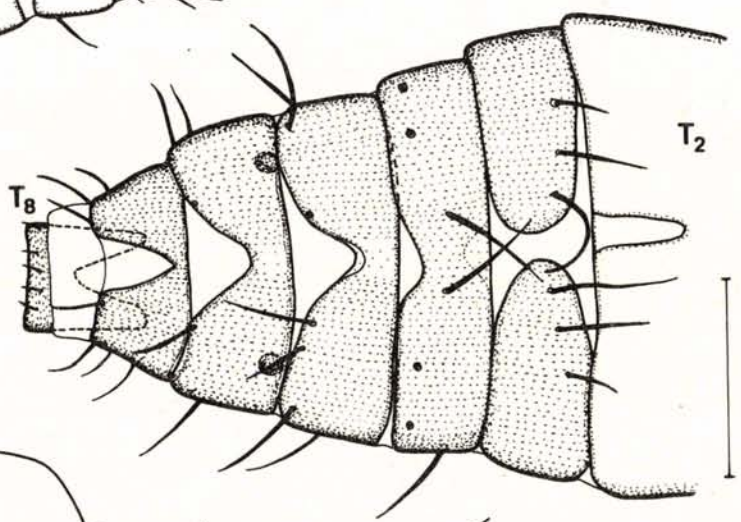

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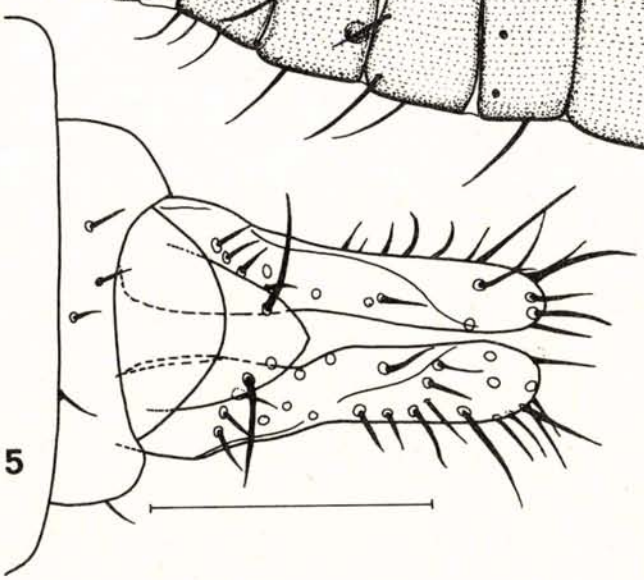

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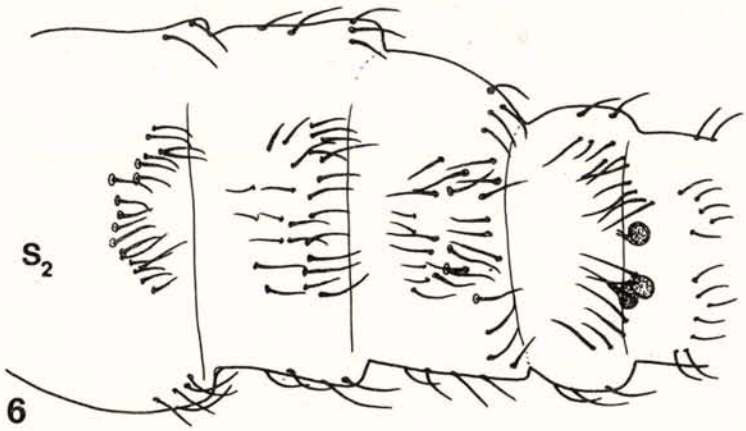
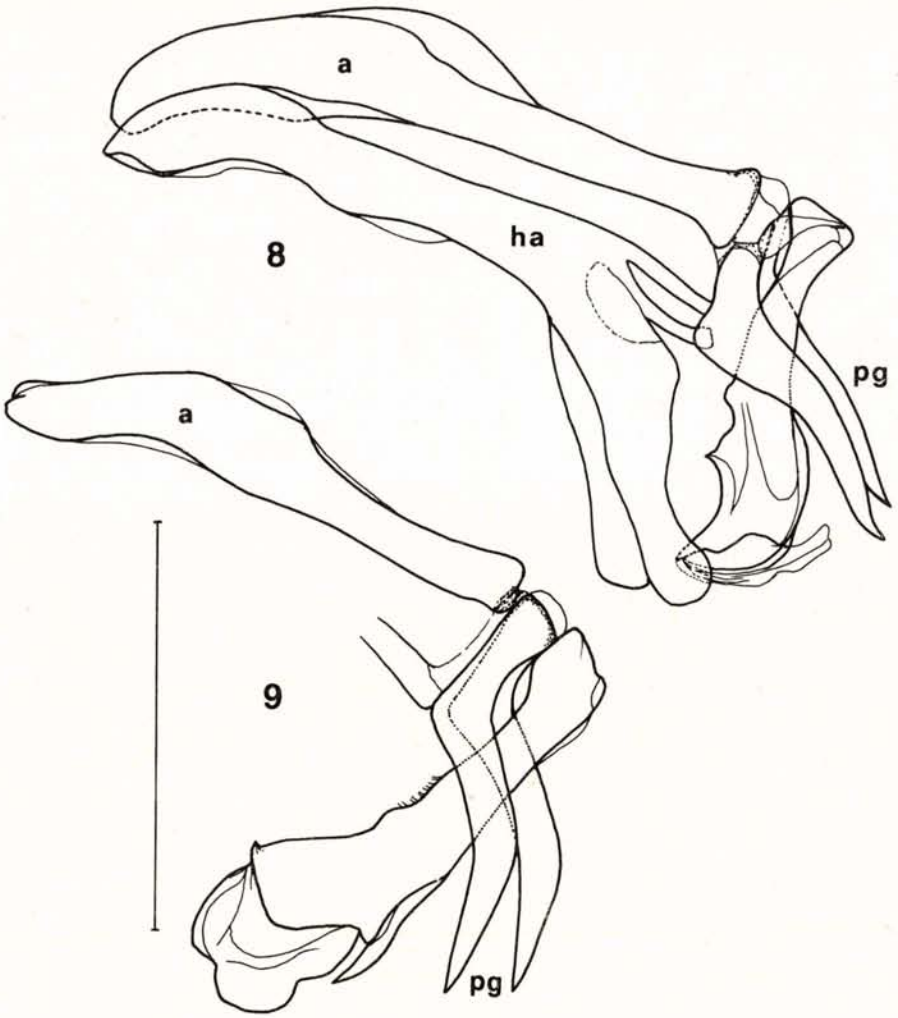


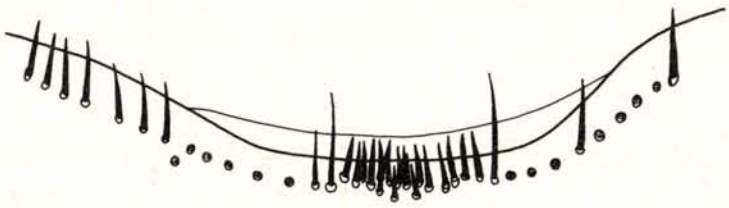
Figs 6-7. 6: Dreuxiella spinosa Matile, holotype female, abdomen in ventral view - 7: Anatalanta aptera Eaton, male epandrium and right telomere in subventral view (S_2: sternum 2, c: apex of cerci, t: right telomere) (scale: 0.5 mm)

zone pierreuse, 25.II.; 2 ♂, 5 ♀: La Plan, 10.I.1974, dans Skua mort; 4 ♂, 4 ♀: Plage pres de la Colonie de Cormorans au sud du Cap verdoyant, 20.II.; 1 ♂: ibid., 30.I.; 5 ♂, 1 ♀: Plage de la Caverne, 15.II.; 1 ♂, 1 ♀: Bord du mer au sud de l'Ile Fossile (laves, Cotula, Tillaea, Graminées); 1 ♂: Morne rouge, 18.I.; 3 ♂: Touffe de Graminées sur la plage de la Grande Manchotiere, 14.II.; 1 ♀: Archipel Crozet, Ile de la Possession, 6.I.; 1 ♀: Promontoire rocheaux, ouest de la Colonie Manchots royaux, 25.I.; 1 ♀: Zone rocheaux sommet de la côte du Plan, env. 150 m. alt., 13.II.; 1 ♀: Le Camp, 3.II.; 1 ♀: Crique au Nord du Morne rouge, 18.II.



Figs 8-9. Male inner genitalia of Anatalanta spp. lateral view - 8: A. crozetensis Enderlein, 1908 - 9: A. aptera Eaton, 1875 (a: aedeagal apodeme, ha: hypandrium, pg: postgonites)(scale: 0.5 mm)

134 ex (65 ♂, 69 ♀). It was described from the Kerguelen Is., but it has been reported also from the Crozet Is. and from Heard I. It is probable that the present one is the most numerous material of this species involved in taxonomic studies. The variability of some features is very high. Namely the long thick bristle on the anterior side of apical 1/9 of the middle femora is always lacking (contrarily to A. crozetensis), but the ventroapical bristle of the middle tibia varies per specimen. As regards the armature of middle tibiae, specimens were found with dorsal, anterodorsal and posterodorsal bristles; in most cases only a preapical dorsal bristle is present, the length of these bristles is highly variable, usually weak or lacking in numerous specimens, or



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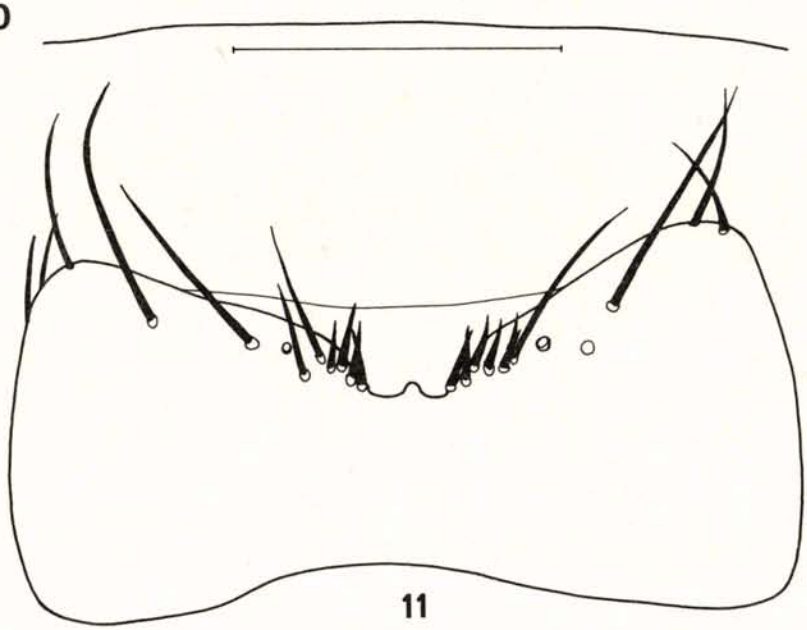

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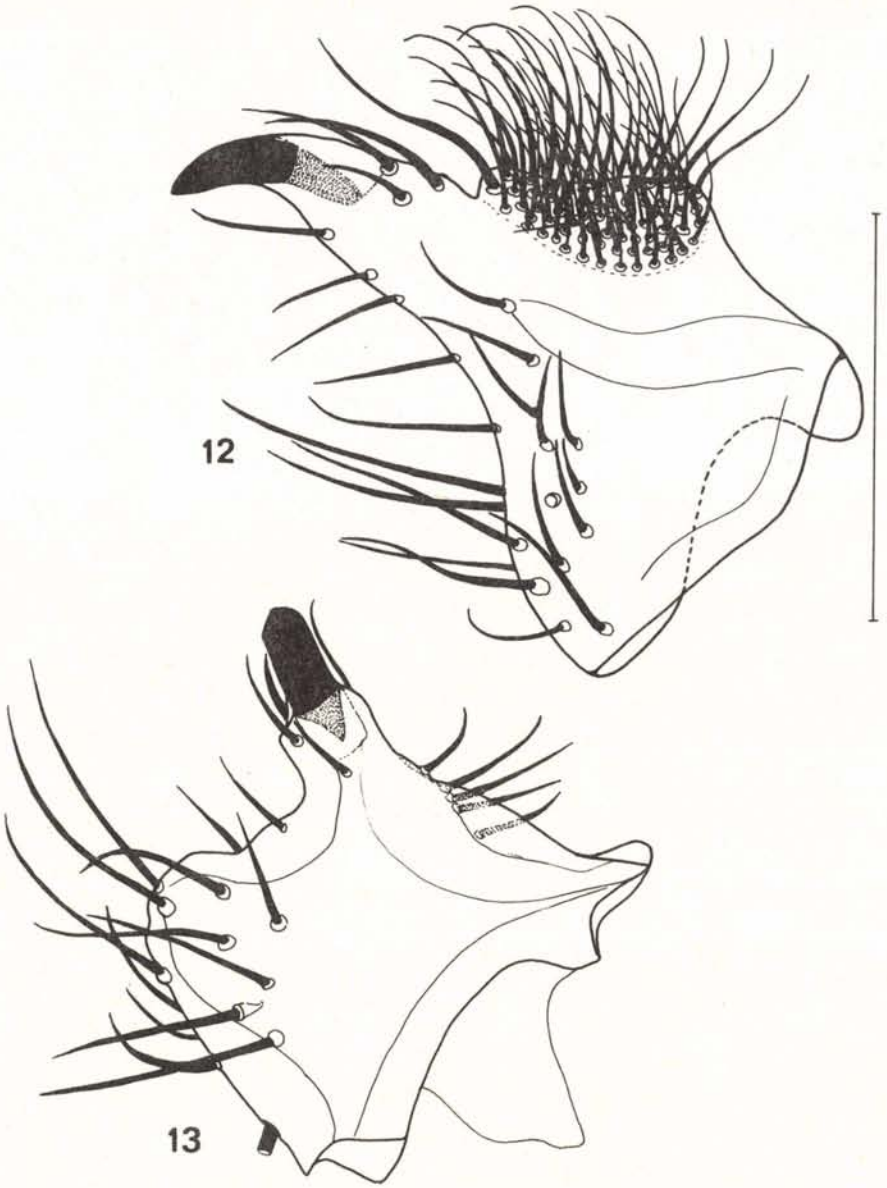
Figs 10-11. Fifth sternum of Anatalanta spp. males - 10: A. aptera Eaton, 1875 - 11: A.crozetensis Enderlein, 1908 (scale: 0.5 mm)

the armature of the left tibia is different from that of the right one. The colour of legs is varying (from light yellow to brown). The thickness of femora and tibiae is much variable; legs of smaller specimens are more slender not only in absolute measurements but also relatively. Again, the colour of the abdominal bristles varies from light yellow to black, their length from 0.06 mm to 0.18 mm (tergal marginal bristles). The forms which are related to aptera and and which were described by ENDERLEIN as A. formiciformis and A. aptera var. gracilis lie within this variability. The present author had seen type-materials in the Berlin Museum, but only the present long series of specimens enabled us to propose their synonymy with A. aptera.



Figs 12-13. Telomere of Anatalanta spp. males - 12: A. aptera Eaton, 1875 - 13: A.crozetensis Enderlein, 1908 (scale: 0.2 mm)

Anatalanta formiciformis Enderlein, 1903: 226 (Fig. 43, 47, 48, Tafel XXXIV (IV); holotype ♀: "Kerguelen. Unter Moos und Steinen an einem Teich auf der Südseite des Schönwetterhafens. 26. Dezember 1898". It seems worth mentioning that there are seven specimens in the pinned collection of Diptera of the Berlin Museum, three of them with syntype labels pinned by ENDERLEIN (!); of course, they are not types, the only type being in alcohol in an exteremely poor state of preservation, hardly investigable. In the above material there are some specimens which completely agree with the description of formiciformis.

"Anatalanta aptera Eat. var. gracilis nov."
Enderlein, 1908: 430 (Fig. 124, 129); 1 ♂, 9 ♀ syntypes from the Kerguelen Is., Observatory Bay.

Though I have seen aptera specimens also from the Kerguelen, at that time I had no opportunity to study their genitalia; however outer features are not different from those of the specimens from the Crozet Is., so two species occur in this latter island and only one in Kerguelen. The direction of winds in December-January, or in other seasons, is mainly from east to west (from Kerguelen to Crozet). A sympatric speciation seems less probable with respect to the life habits and winglessness of these species (cf. TREHEN, 1978). In their dispersion also birds may have a role. In any case, future studies on their distribution on other antarctic islands may result in a better understanding of their evolution, too (see also TREHEN et VERNON (1982)).

As it has been noted (PAPP, 1982), the genus Anatalanta has a special position in the subfamily Limosininae on the base of the cephalic and thoracic bristles, the structures of antennae, the shape of thorax and abdomen (e.g. PAPP, 1979). The studies of the male genitalia corroborated that opinion, namely that there are no distiphallus and basiphallus separable, intraperiandrial sclerite of an intricate form, postgonites very simple, aedeagal apodeme very robust, hypandrium Y-shaped with very strong arms, a small rod-like ejaculatory apodeme present (0.14 mm on one of the males of aptera). HACKMAN (1969) has published some of the characteristics of the genitalia of Anatalanta in three figures, but the drawings on aptera specimens collected on the Crozet Is. were given as for A. crozetensis.

Key to the species of Anatalanta Eaton, 1875

1 (2) Marginal bristles of abdominal terga short, also their discal bristles short. Female sterna with sparse and short bristles only. Middle femora without any strong spine, ad, d, pd bristles of middle tibiae short or missing. Male sternum 5 caudally simple (Fig. 10) with numerous, comparatively short thick bristles. Telomeres (surstyli) (Fig. 12, 7) with a tuft of long bristles and with longer apical process, apical thorn pointed (Kerguelen Is, Crozet Is, Heard I.) (junior synonyms: A. formiciformis Enderlein, 1903, A. gracilis Enderlein, 1908)

Anatalanta aptera Eaton, 1875

2 (1) Marginal bristles of abdominal terga much longer, also discal bristles longer than in aptera. Female sterna with long and numerous bristles (Fig. 6). Middle femora preapically with a strong spine on anterior surface; ad, d, pd bristles of middle tibiae long or at least never missing. Male sternum 5 mediocaudally with a deep emargination and with some very thick and long bristles (Fig. 11). Telomeres (surstyli) (Fig. 13) with shorter apical process and with less bristles, apical thorn blunt (Crozet Is) (junior synonym: Dreuxiella spinosa Matile, 1975)

Anatalanta crozetensis Enderlein, 1908

REFERENCES

EATON, A. E. (1875): Breves Dipterarum uniusque Lepidopterarum insulae Kerguelensi indigenarum diagnoses. - Entomol. mon. Mag., 12: 58-61.

ENDERLEIN, G. (1903): Die Landarthropoden der von der Tiefsee-Expedition besuchten antarktischen Inseln. I. Die Insekten und Arachnoideen der Kerguelen. - In: CHUN, C. (ed.): Wissenschaftliche Ergebnisse der deutschen Teifsee-Expedition auf dem Damper "Valdivia" 1898-1899, Bd. 3: 199-248.

ENDERLEIN, G. (1908): Die Insekten des antarktischen Gebiets.- In: von DRYGALSKI, E. (ed.): Deutsche Südpolar-Expedition 1901-1903 in Auftrage des Reichamtes des Innern, Bd. X, Zoologie II, Bd.: 361-528.

ENDERLEIN, G. (1912): Die Insekten des Antarkto-Archiplata-Gebietes (Feuerland, Falklands-Inseln, Süd-Georgien). - Kungl. svenska Vetensk. Akad. Handl., 48(3): 1-170.
HACKMAN, W. (1064): On reduction and loss of wings in Diptera. - Notul. ent., 44: 73-93.
HACKMAN, W. (1969): A review of the zoogeography and classification of the Sphaeroceridae (Borboridae, Diptera). - Notul. ent., 49: 193-210.
HENNIG, W. (1971): Neue Untersuchungen über die Familien der Diptera Schizophora (Diptera: Cyclorrhapha). - Stuttg. Beitr. Naturk., Nr. 226: 1-76.
MATILE, L. (1975): Un nouveau Sphaeroceridae aptère de l'Archipel Crozet (Dipt.). - Bull. Soc. ent. Fr., 80: 173-176.
PAPP, L. (1979): On apterous and reduced-winged forms of the families Drosophilidae, Ephydridae and Sphaeroceridae (Diptera). - Acta zool. hung., 25: 357-374.
PAPP, L. (1982): A new apterous sphaerocerid from Japan (Diptera: Sphaeroceridae). - Acta zool. hung., 27: 347-353.
SÉGUY, E. (1965): Une mouche nouvelle des Iles Crozet (Insecte Diptère Helcomyzide). - Bull. Mus. natn. d'hist. nat., Sér. 2, 36(1964) (6): 775-780.
TREHEN, P. (1978): Biologie de deux Diptères Cypselides nécrophages des Terres Australes. - Bull. Soc. zool. Fr., 103 (3): 411-412.
TREHEN, P. & VERNON, P. (1982): Peuplement diptérologique d'une île subantarctique: la Possession (46°S, 51°E; Iles Crozet). - Rev. Écol. Biol. Sol, 19(1): 105-120.

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