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New Data on the Lepismatidae (Apterygota, Zygentoma) from the Cape Verde Islands^{*)}

Abstract

The author studied a small collection of Cape-Verdean Thysanurons collected by Mr. FRIEBE and Mr. GROH during the „German-Portuguese expedition to the Cape Verde Islands“. The specimens from the islands of Santiago and Fogo belong to 8 Lepismatidae species (Apterygota, Zygentoma). *Lepisma saccharina* and *Thermobia aegyptiaca*, both widely distributed species, the first is cosmopolitan, are recorded from the archipelago for the first time. The male of the endemic *Ctenolepisma lindbergi* WYGODZINSKY 1955 is described, formerly only female specimens were known. The number of setal combs in the prosternum of both sexes is discussed. In the original description it was stated, that the prosternum has only one pair of setal combs; we found that there are 1+1 or 2+2 setal combs.

Monachina stilifera, a typical Ethiopian species, known only from southern Africa, is recorded from the islands of Santiago and Fogo; some amendments are made to the descriptions (SILVESTRI 1908; WYGODZINSKY 1955) of the genus. The specialized sensillae, noted as lacking in the genus, have been found in the distal antenna chain; campaniform isolated sensillae and isolated trichobothria are recorded and figured. The absence of the trichobothrial areas in the nota is shown and the absence of paramera confirmed; both these characteristics are shown to be quite important as regards the phylogenetic position of the genus, one of the most complex within the Lepismatidae. A few differences between the Cape-Verdean specimens and those from continental Africa are shown, chiefly in the shape of the labial palp and of the Xth urotergit.

Kurzfassung

Neue Daten über die Lepismatidae (Apterygota, Zygentoma) der Kapverdischen Inseln. Der Verfasser untersuchte eine kleine Kollektion kapverdischer Thysanuren, die von den Herren FRIEBE und GROH während einer „deutsch-portugiesischen Expedition nach den Kapverdischen Inseln“ aufgesammelt wurde. Die Exemplare von den Inseln Santiago und Fogo gehören zu acht Lepismatidae-Arten (Apterygota, Zygentoma). *Lepisma saccharina* und *Thermobia aegyptiaca*, weit verbreitete Arten – die erste gilt als kosmopolitisch –, wurden zum erstenmal für das Archipel nachgewiesen. Ein Männchen der endemischen Art *Ctenolepisma lindbergi* WYGODZINSKY 1955 wird beschrieben. Bisher waren nur Weibchen bekannt. Die Anzahl der Borstengruben auf dem Prosternum beider Geschlechter wird diskutiert; in der Originalbeschreibung steht, daß lediglich ein Paar Borstengruben auf dem Prosternum sitzt; wir fanden, daß es entweder 1+1 oder 2+2 Borstengruben gibt.

Monachina stilifera, eine typisch äthiopische Art, die nur aus dem südlichen Afrika bekannt war, wird von den Inseln Santiago und Fogo gemeldet. Es werden einige Berichtigungen zur Beschreibung (SILVESTRI 1908) und Wiederbeschreibung (WYGODZINSKY 1955) des Genus gemacht. Spezialisierte Sensillen, die von diesem Genus als nicht vorhanden beschrieben wurden, konnten auf den distalen Antennengliedern gefunden werden. Isolierte glockenförmige Sensillen und isolierte Trichobothrien

wurden entdeckt und gezeichnet. Das Nichtvorhandensein von Trichobothrienfeldern auf den Nota wird gezeigt und das Fehlen von Parameren bestätigt. Diese beiden Charakteristika, welche die phylogenetische Stellung des Genus betreffen – eines der umfangreichsten innerhalb der Lepismatidae –, werden als sehr wichtig herausgestellt. Kleine Unterschiede zwischen den kapverdischen Exemplaren und solchen vom kontinentalen Afrika werden angesprochen: Sie betreffen hauptsächlich die Gestalt des Labialpalpus und des 10ten Urotergits.

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1. Preface

Several papers have already been published on the Thysanuron's fauna from the Cape Verde Islands (SILVESTRI 1901 and 1908a, WYGODZINSKY 1955b, SARAIVA 1961, PAULT 1966 and MENDES in press) and thirteen species have been recorded from the archipelago. For the present paper, the author studied several specimens collected in Fogo and Santiago islands by Mr. GROH and Mr. FRIEBE, to whom the author is deeply grateful. The male of *Ctenolepisma lindbergi* is described and some notes are added to the original description of the species. *Monachina stilifera*, and the genus *Monachina*, are recorded for the first time from the archipelago and some notes are added to the earlier descriptions of the genus. *Thermobia aegyptiaca* and *Lepisma saccharina*, widely distributed species, are recorded for the first time from the archipelago. The specimens investigated are in the zoological collection of the Landessammlungen für Naturkunde in Karlsruhe – West Germany.

2. Interpretation of the collected species

(1) *Asterolepisma* (A.) *myrmecobia* (SILV. 1908)

Remarks

Although probably an immature male (body length: 3,5 mm, thorax length: 1,0 mm), the specimen agrees well with the description of the species (SILVESTRI 1908a), with its redescription as *Lepisma stachi* (WYGODZINSKY 1941a), and with several other specimens we have studied from several countries.

In Cape Verde, this species has already been recorded in Santiago and Brava (SILVESTRI op. cit.) and in S. Vicente (WYGODZINSKY 1955b).

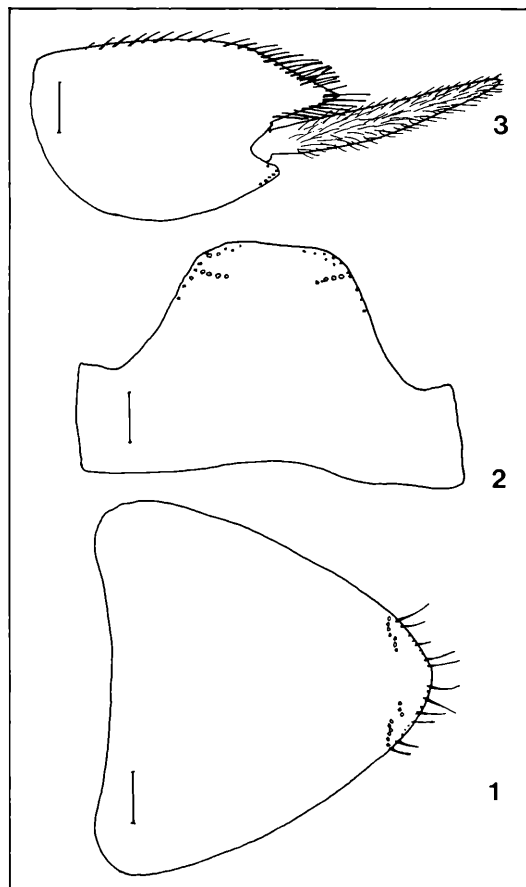


Figure 1–3. *Ctenolepisma lindbergi* WYGODZ. 1955, ♂ – 1) Metasternum; 2) Xth urotergite; 3) IXth coxite. Scale: 0,1 mm.

Material

SANTIAGO – Tarrafal, 18–20/X/1979, FRIEBE, GROH leg., 1 ♂ with 1 damaged specimen *Lepisma saccharina*, 1 ♀ *Ctenolepisma longicaudata* and 1 ♂ 1 ♀ *C. lindbergi*.

(2) *Lepisma saccharina* L. 1758

Remarks

The only specimen studied is damaged, the three posterior segments of the abdomen have been lost. However, the type and position of notal trichobothrial areas and the dorsal and ventral chaetotaxy of abdominal segments I–VII, agree fully with those presented by the species (see WYGODZINSKY 1941b and MENDES 1980).

Although cosmopolitan and anthropophilic, the species has not previously been recorded from the archipelago.

Material

SANTIAGO – Tarrafal, 18–20/X/1979, FRIEBE, GROH leg., 1 damaged specimen, with 1 ♂ *Asterolepisma* (A.) *myrmecobia*, 1 ♀ *Ctenolepisma longicaudata* and

1 ♂ 1 ♀ *Ctenolepisma lindbergi*.

(3) *Acrotelsa collaris* (FABR. 1793)

Remarks

This pantropical species has already been recorded from the Cape Verde Islands of S. Nicolau, Fogo and Brava (SILVESTRI 1908a) and S. Antao (WYGODZINSKY 1955b). It is new to Santiago island.

Material

SANTIAGO – Tarrafal, on a slope near a brook, 18/X/1979, FRIEBE leg., 1 ♂ 1 young ♀ with 1 ♂ 1 ♀ *Ctenolepisma lindbergi* and 1 ♀ *Monachina stilifera*. FOGO – 5 km S. W. of S. Filipe, m. 350, 28/X/1979, FRIEBE leg., 1 young ♀ with 1 ♂ *Ctenolepisma lindbergi* and 1 ♂ 1 ♀ *Monachina stilifera*.

(4) *Ctenolepisma feae* SILV. 1908

Remarks

This endemic species has already been found on the following islands: Boavista, Fogo, Santiago and S. Nicolau (SILVESTRI 1908a), S. Antao and Sal (WYGODZINSKY 1955b) and S. Vicente (PACLT 1966).

Material

FOGO – Cha das Caldeiras, m. 1600, 30/X/1979, FRIEBE, GROH leg., 1 ♂ (very poorly preserved).

(5) *Ctenolepisma longicaudata* ESCH. 1905

Remarks

This almost cosmopolitan and often synanthropic species has previously been collected on the islands of Boavista, Santiago, Fogo and S. Nicolau (SILVESTRI 1908a, as *C. ciliata* var. *dives*) and on S. Antao, S. Nicolau and Sal (WYGODZINSKY 1955b).

Material

SANTIAGO – Tarrafal, 18–20/X/1979, FRIEBE, GROH leg., 1 ♀ with 1 ♂ 1 ♀ *Ctenolepisma lindbergi*, 1 ♂ *Asterolepisma* (A.) *myrmecobia*, 1 damaged specimen *Lepisma saccharina*; Ibid. – Praia da Achada, 23/X/1979, FRIEBE leg., 1 ♀ with 1 ♂ *Monachina stilifera* and 1 ♀ *Thermobia aegyptiaca*.

(6) *Ctenolepisma lindbergi* WYGODZ. 1955

Description

The description of this species was based upon only 2 ♀ ♀ from S. Filipe/Fogo Island (WYGODZINSKY 1955b)

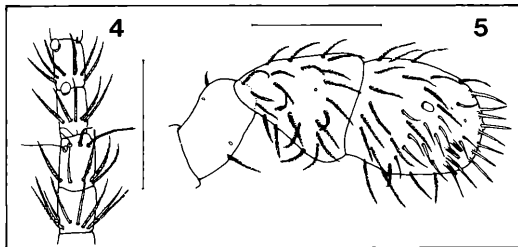


Figure 4–5. *Monachina stilifera* SILV. 1908, ♂ – 4) Distal antennal chain; 5) Labial palp; Scale: 0,1 mm.

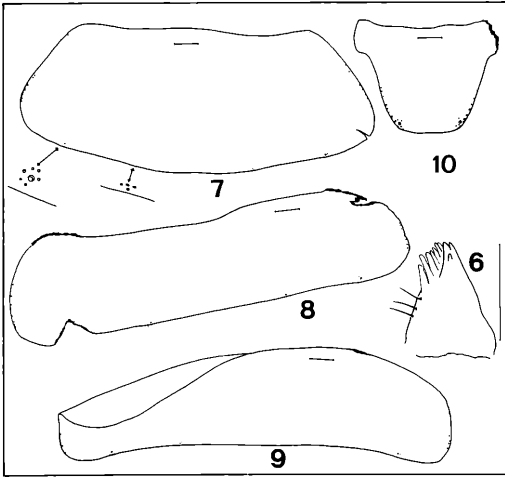


Figure 6–10. *Monachina stilifera* SILV. 1908, ♂. – 6) Maxillae; 7) Pronotum; 8) Mesonotum; 9) Metanotum; 10) Xth Urotergite. Scale: 0,1 mm.

and no more specimens had been found. It is, therefore, new to Santiago. The presence of males and females in the samples now studied, makes it possible to describe the male sex, and to present some further notes on the female one.

Body length of ♂: 5,4 mm; of ♀: 5,5 mm; maximal antennae length: 3,4 mm; thorax length of ♂: 1,6 mm; of ♀: 1,7 mm; thorax breadth of ♂: 1,3 mm; of ♀: 1,4 mm. The main difference between the specimens studied here and the type-specimens (that we have not studied) concerns the metathorax. In our specimens, there are 2+2 unmistakable macrochaetae-combs (Fig. 1), the distal ones with 4–5, the proximal ones with 6–7 macrochaetae, while only 1+1 bristle-combs have been noted on the type-specimens. This characteristic, which has been used in the dichotomous key, distinguishing *C. lindbergi* from *C. roskowskii* STACH (WYGODZINSKY op. cit. pp: 4) must be changed. Thus, „Prosternum apikal mit 1+1 Borstenkämmen“ should become „Prosternum mit 1+1 oder 2+2 Borstenkämmen“. In the original description the author did not mention the presence in the antennae of any type of specialised sensillae. As we have already found for several other species of the genus, there are isolated campaniform sensillae on the distal chain, a characteristic that we believe is typical for the genus.

Structurally the male is similar to the earlier described females. The Xth urotergite is very similar, although more elongated (Fig. 2). The IXth coxite, with dark brown violet pigment, shows an internal process that is much shorter than in the female (Fig. 3), the length almost equalling the width at the base. The penis is of the usual type in the genus. The 1+1 lateral bristle-combs of the urosternites are present on the IIId to the VIIIth segments, but not on the IIId to the VIIIth as, obviously

by mistake, described (WYGODZINSKY op. cit. pp: 3) The ovipositor is very long, surpassing the apex of the stylus IX in a length equal to 1.5 times its length; it is composed of 36–38 articles.

Material

SANTIAGO – Tarrafal, 18/X/1979, slope near a brook, FRIEBE leg., 1 ♂ 1 ♀ with 1 ♂ 1 young ♀ *Acrotelsa collaris* and 1 ♀ *Monachina stilifera*; Ibid., 18–20/X/1979, FRIEBE, GROH leg., 1 ♂ 1 ♀ with 1 ♀ *Ctenolepisma longicaudata*, 1 ♂ *Asterolepisma (A.) myrmecobia* and 1 damaged specimen *Lepisma saccharina*. FOGO – 5 km S. W. of S. Filipe, m. 350, 28/X/1979, FRIEBE leg., 1 ♂ with 1 young ♀ *Acrotelsa collaris* and 1 ♂ 1 ♀ *Monachina stilifera*.

(7) *Thermobia aegyptiaca* (LUCAS 1842)

Remarks

This widely distributed species, known from the Mediterranean Basin and from Africa, has not previously been recorded from the archipelago.

Material

SANTIAGO – Praia da Achada, 23/X/1979, FRIEBE leg., 1 young ♀ with 1 ♀ *Ctenolepisma longicaudata* and 1 ♂ *Monachina stilifera*.

(8) *Monachina stilifera* SILV. 1908

Description

The study of the Cape-Verdean specimens allowed us to make some amendments to the generic description, and to add some notes on the diagnostic characteristics that may be used to distinguish the most closely related species, *M. stilifera* and *M. zambesi* WYGODZ. 1955. As regards the genus, we found some morphological features that are slightly different from those already described, and others which have never been mentioned. These are presented below:

- (a) The antennal sensillae. After WYGODZINSKY (1955a), the distal chain of the antenna presents only „... simple or delicately feathered setae, isolated tiny sensory cones and some single trichobothria“ (op. cit. pp: 159 for *M. zambesi*) or „... specialized sensillae of articles of flagellum not developed.“ (ibid., pp: 158 for *Monachina* SILV. 1908). However, we have found in the distal articles of the flagellum (in the studied specimens composed by 26–30 articles) thin feathered setae, isolated trichobothria and isolated campaniform sensillae (Fig. 4).
- (b) The shape of the last segment of labial palp. After SILVESTRI and WYGODZINSKY (ops. cit.) the last segment of the labial palp is subsemi circular, or broader than longer. In the specimens we studied it is longer than broader (Fig. 5).
- (c) The maxillae. Regarding the typical number of setae present on the posterior region of the lacinia, we have found a reduction to only 3–4. In the lacinia there are also three well sclerotized teeth and 7 lamellated hyalin processes (Fig. 6).
- (d) The trichobothrial areas. There are no notal trichobothria.

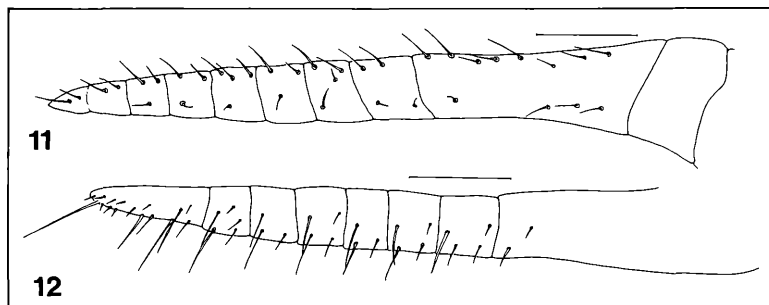


Figure 11–12. *Monachina stilifera* SILV. 1908, ♀. – 11) Anterior gonapophyses; 12) Posterior gonapophyses. Scale: 0,1 mm.

thrial areas (Figs. 7, 8 and 9). This characteristic may be seen as one more apomorphic feature of this genus, perhaps one of the most specialized genera of the Lepismatidae.

- (e) The paramera. The paramera, doubtfully considered as „absent (?)“ by WYGODZINSKY (op. cit. pp: 158) are definitely absent.

As regards differences between *M. stilifera* and *M. zambesi*, several have been given in the original description of the later species. Some other good diagnostic characteristics, can be added, as follows:

- (a) The infra-lateral bristle-comb of the urotergites is composed of 3–4 macrochaetae in *M. stilifera* and of only 2 in *M. zambesi*.
- (b) The Xth urotergite in *M. zambesi* is scarcely longer than wider, or as wide as long at its base, its lateral margins are only slightly divergent. In *M. stilifera* (Fig. 10), the Xth urotergite is clearly shorter than broader at its base, while its lateral margins are markedly divergent.
- (c) The chaetotaxy of the ovipositor is completely different in the two species. In *M. stilifera*, the setae are less abundant in the anterior gonapophyses (Fig. 11) than in the posterior ones (Fig. 12) where there are more numerous setae, without any special sensillae as have been figured for *M. zambesi* (WYGODZINSKY op. cit. Fig. 427, pp: 161).

Presence

Known only from South and Southwest Africa, the genus is new to the Cape Verde Islands. It was obviously introduced, probably from Angola, where it may be present (although never recorded) in the southwest coastal region, ecologically quite similar to its „patria typica“

Remarks

The genus *Monachina* (SILVESTRI 1908b), described for two species from South and Southwest Africa, has been redescribed (WYGODZINSKY 1955a). A third species was then described and the type-species designated, i. e. *Monachina stylifera* SILV. 1908 (errore pro *stilifera*). Keys to the known species have been, then, pointed out. Material

SANTIAGO – Tarrafal, 18/X/1979, slope near a brook, FRIEBE leg., 1 ♀ with 1 ♂ 1 young ♀ *Acrotelsa collaris* and 1 ♂ 1 ♀ *Ctenolepisma lindbergi*; Ibid. – Praia da Achada, 23/X/1979, FRIEBE leg., 1 ♂ with 1 ♀ *Ctenolepisma longi-*

caudata and 1 young ♀ *Thermobia aegyptiaca*. FOGO – 5 km S. W. of S. Filipe, m. 350, 28/X/1979, FRIEBE leg., 1 ♂ 1 ♀ with 1 young ♀ *Acrotelsa collaris* and 1 ♂ *Ctenolepisma lindbergi*.

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