

## First report of Eriocottidae from Madagascar (Lepidoptera: Tineoidea)

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**Abstract:** The genus *Filiramifera* gen.nov. is established to accommodate the first examined species of Eriocottidae from Madagascar, named as *F. naumanni* spec. nov. The new species differs from the remaining taxa of the family by the presence of unipectinate antennae and strongly spined abdominal terga of the male. The male genitalia, wing venation and the adult moth are illustrated.

**Key words:** Taxonomy, Eriocottidae, *Filiramifera naumanni* gen. nov. spec. nov., Madagascar.

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### INTRODUCTION

Eriocottidae is a small family of primitive, ditrysian moths, recorded from all continents (Davis & Robinson, 1998). In sub-Saharan Africa three genera are attributed to this family: *Compsoctena* Zeller, 1852, *Cathalisticus* Meyrick, 1917 and *Picrospora* Meyrick, 1912. The first is the most species-rich genus with about 50 species described from sub-Saharan Africa and India. They were listed by Janse (1968) and earlier authors in the genus *Melasina* Boisduval, 1840, which is a taxon included in Psychidae today. The main synapomorphies of the family are the presence of additional pairs (3–4) of short anterior apophyses located dorsally within segment VIII–IX of the female abdomen and the presence of microtrichia scattered over all wing surfaces (Dierl, 1970; Nielsen, 1978; Zagulajev, 1988; Davis, 1990). Microtrichia are well visible on some descaled areas of the forewings. Wing venation and the architecture of the male genitalia are in correspondence with species of *Compsoctena*. The new species differs from all taxa of Eriocottidae by the presence of a tergal spining on the abdomen and by the male antennae, which are not filiform or bipectinate, but unipectinate. In the male genitalia, the presence of a slender juxta and short saccular process are further significant distinguishing characters. The new species cannot be assigned to any described genus and is placed in a genus of its own, which is established herewith.

### MATERIAL AND METHODS

Lepidoptera were collected during the third workshop on African Lepidoptera in Madagascar in 2018. A particular specimen of a dull-brown moth with large, unipectinate antennae in the collection was identified as an unusual and undescribed representative of Eriocottidae Spuler, 1898, a family poorly known but known to occur in Madagascar.

The single adult moth was pinned in the field and set later in the laboratory. Genitalia drawings were made from *in situ* preparations in alcohol prior to embedding in Euparal on a genitalia slide. Genital preparations were made according to the procedure described in Mey (1997).

### DESCRIPTION OF NEW TAXA

#### Eriocottidae: Compsocteninae Dierl, 1970

##### *Filiramifera* gen. nov.

urn:lsid:zoobank.org:act:75165365-5507-43C1-80D1-7431DDC005F7

*Type species.* *F. naumanni* sp. nov.

*Gender.* Feminine

*Description.* See description below of *F. naumanni* sp. nov.

*Etymology.* Derived from Latin “filum“, thread, “ramus“, branch, twig and “fero“, to carry, in reference to the antennae with elongate, filiform rami.

##### *Filiramifera naumanni* sp. nov.

urn:lsid:zoobank.org:act:CB9517BD-84D5-4403-96D8-232BD0AB6021

*Type material.* Holotype ♂, Madagascar, Toliary Province, 10 km east of Sakaraha, Zombitse National Park, 22°53'11.3" S 44°41'32.2"E, 812 m, at light, 16.iv.2018, leg. S. Naumann, genitalia slide Mey 33/19 (MfN).

*Description.* Adult (Figs 1–2): Length of forewing 13 mm, wingspan 28 mm. Head with erect, piliform, grey-brown scales, frontal scales of vertex protruding between antennae; eyes hemispherical, interocular index 0.9; ocelli and chaetosemata absent; antennae 0.5 x the length of forewing, scape broad and tubular, with pecten on frontal margin, pedicellus with short, apical scale tuft, 34 flagellomeres with a single ramus each, scaled dorsally, ciliated ventrally, rami slightly curved fronto-ventrad forming a basket. Maxillary palpi absent, labial palpi pale grey-brown, four times longer than diameter of eye, porrect, basal segment short, second segment longest with semi-erect scales on dorsal side, apical segment small, pointed, lateral bristles on base of second segment thin,

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deciduous; proboscis absent; thorax dark brown, forelegs dark brown, paler on articulations, epiphysis longer than tibia, all legs covered by short, acute scales, spurs 0.2.4., praetarsi with small arolium, tibiae without ventral spines; abdomens with tergal spining present across posterior margins (Fig. 2); forewings grey-brown with darker spots along costal margin, venation heteroneurous (Fig. 3), microtrichia present on dorsal wing surface, forewing with accessory and intercalary cell (due to bifurcation of M in cell) present, longer than their stalks, radius 5-branched, R1 arising from base of discal cell, basal part of Cu2 present, fading towards wing margin, A1 and A2 forming anal loop at base; male retinaculum a broad, shallow lobe arising from wing membrane between C and Sc, male with single frenular bristle on hindwing costa.



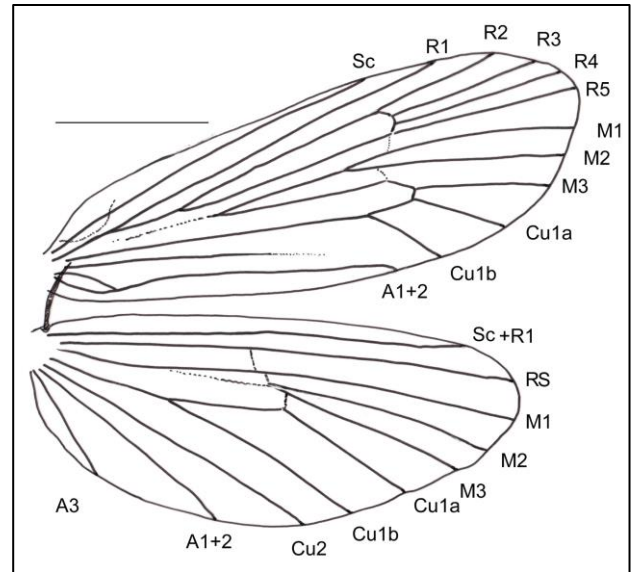
**Figure 1** – Male holotype of *Filiramifera naumanni* gen. nov., spec. nov. The thick bars on the scale indicate 5 mm intervals.



**Figure 2** – Close-up of the abdomen with dark, tergal spinning, of the male *Filiramifera naumanni* gen. nov., spec. nov.

**Male genitalia** (Fig. 4). Uncus with two widely separated, acute lobes, attached to the broad, hood-like tegumen; gnathos U-shaped, without subscaphium; juxta a slender band connected to phallic apparatus in vertical position; vinculum moderately short, attenuated into an elongate saccus; unsclerotized transtilla present connecting valval apophyses on dorsal sides; valvae with basal half (sacculus) broad, dorsal and ventral sides convex, distal half more slender and rounded apically, ventral margin of sacculus with short, acute process, apical thorn absent, ventral margin of cucullus with prominent, triangular,

acute process directed medially; phallic apparatus elongate, without cornuti, diaphragm around phallus with small spines.



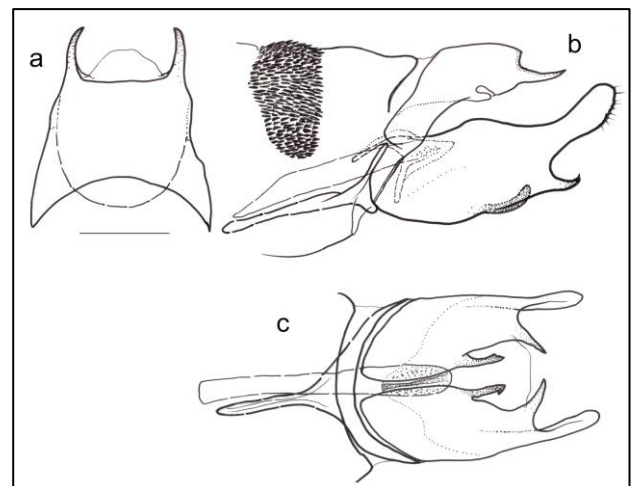
**Figure 3** – Wing venation of the male *Filiramifera naumanni* gen. nov., spec. nov. (scale bar: 4 mm).

**Diagnosis.** Large species with wingspan over 20 mm, antennae unipectinate, proboscis and maxillary palpi absent, labial palpi elongate and correct, accessory cell in forewings very long, abdominal terga spined, male genitalia with U shaped gnathos plate, juxta present, sacculus and cucullus with ventral process.

**Habitat.** Unknown

**Distribution.** Madagascar

**Etymology.** The species is named in honour of Dr. Stefan Naumann, experienced lepidopterist and collector of the new species.



**Figure 4** – Male genitalia of *Filiramifera naumanni* gen. nov., spec. nov.: a) lateral aspect, b) dorsal aspect and c) ventral aspect (scale bar: 0.5 mm).

## DISCUSSION

The principal diagnostic features of the new taxon, unipectinate antennae and spined terga are significant and

unique characters in Eriocottidae, which justify the establishment of a separate genus. They are, however, derived and autapomorphic characters contributing little to ascertain phylogenetic relationship. The absence of ocelli, well developed maxillary palpi and a long proboscis is suggestive of a systematic position within the subfamily Compsocetinae, with similarities to *Compsoceta* (pectinate antennae, vestigial proboscis) and *Picrospora* (sacculus process, juxta). Interestingly, a spine-like process of the sacculus lobe is also present in *Crepidochares* Meyrick, 1922, a genus included in the subfamily Eriocottinae (Davis, 1990; Mey, 1997).

The description of *Filiramifera naumanni* gen. nov., spec. nov., is the first documented evidence of the existence of Eriocottidae on Madagascar, although their presence had been suggested previously (Lees & Minet, 2003). Given the high phylogenetic age and the many eriocottine species living on the African continent and often occurring with high abundances, the record from Madagascar was long overdue. There are further groups from which there are no records from Madagascar, e.g. Hepialidae, and the present example gives hope that those groups can still be found on this large island in the future.

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