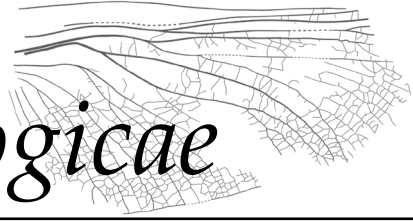


Novitates Paleoentomologicae



No. 23, pp. 1–4

5 August 2021

BRIEF COMMUNICATION

On the systematic position of the Eocene genus *Samlandotoma* (Coleoptera: Tenebrionoidea)

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Abstract. The monotypic genus *Samlandotoma* Alekseev, 2019 from Eocene Baltic amber is transferred from Ripiphoridae: Pelecotominae to Tenebrionoidea, family *incertae sedis*, based on a comprehensive review of the original description and its comparison with fossil and extant genera of Pelecotominae and other ripiphorid genera.

INTRODUCTION

Alekseev (2019) described from Eocene Baltic amber a genus, *Samlandotoma*, and placed it in the parasitic family Ripiphoridae, a specifically the subfamily Pelecotominae. A casual examination of *Samlandotoma* however indicates that it is not a ripiphorid necessitating a consideration of its proper affinities. Moreover, the differential diagnosis was based on misleading arguments as it is demonstrated below. Here, the beetle is transferred to Tenebrionoidea, family *incertae sedis*, pending examination of the type by specialists of this superfamily.

METHODS

The terminology and set of characters for delimiting Pelecotominae and other subfamilies of Ripiphoridae from *Samlandotoma* follow Falin (2003), Batelka (2005, 2009), Batelka *et al.* (2016, 2018), and Engel *et al.* (2019).

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doi: <http://dx.doi.org/10.17161/np.23.15761>

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ISSN 2329-5880

REVIEW

Characters of *Samlandotoma* that preclude its placement within Pelecotominae or Ripiphoridae:

Antennae

I. Only pedicel and scape are dissimilar to the following antennomeres.

—Three basal antennomeres are dissimilar to the following antennomeres in all South American Pelecotominae (formerly Micholaeminae); in the Cretaceous genera *Flabellotoma* Batelka, Prokop, & Engel, *Plesiotoma* Batelka, Engel, & Prokop, and *Burmitoma* Batelka, Engel, & Prokop; and in the extant genera *Clinopalpus* Batelka, *Clinops* Gerstaecker, *Pelecotoma* Fischer von Waldheim, *Scotoscopus* Brenske & Reitter, and *Zapotecotoma* Engel, Falin, & Batelka (all Pelecotominae). Four basal antennomeres are dissimilar to the following antennomeres in all New Zealand pelecotomine genera.

II. Base of each projection on antennomeres is located at distal margin of respective antennomeres.

—In Ripiphoridae the base of the projection (if present) is located just beyond the base of the respective antennomeres (except for the bowed rami in the ptilophorine genus *Euctenia* Gerstaecker). Accordingly, the much prolonged rami in pelecotomine males are closely adjacent to each other making distinct flabella, which is not the case in *Samlandotoma* [considered a male by Alekseev (2019)].

Legs

III. Pretarsal claws are simple, with inner margin simple.

—Claws dentate in former micholaemine genera, bidentate in all remaining Pelecotominae (in *Clinops* and *Scotoscopus* with one small, blunt, subsidiary tooth proximal to the inner bifid ramus). Ventral edge of pretarsal claws varies in Ripiphoridae, but it is never simple in Pelecotominae. Simple pretarsal claws are present only in Ripidiinae, a quite distinct subfamily, not resembling *Samlandotoma*.

IV. Penultimate metatarsomere is lobed or weakly bilobed.

—Penultimate tarsomeres never lobed or bilobed in Ripiphoridae; tarsomeres are always cylindrical. Note that there is an apparent discrepancy in the description of *Samlandotoma*: in the differential diagnosis the penultimate tarsomere is referred to as 'lobed', while in the description it is referred to as 'bilobed'. The shape of this tarsomere is also noted as an important discriminating character by Alekseev (2019), despite his final conclusion.

V. Relative length ratios of metatarsomeres I–IV are given as 30-10-5-7.

—These ratios are quite different in Pelecotominae, in which the legs, including the tarsomeres, are elongate and slender. For example, in the Eocene *Clinops svachai* Batelka & Prokop, 2019 the ratios of the metatarsomeres are approximately 30-17-12-13, in extant *C. inexpectatus* Engel, Falin, & Batelka, 2019 from South Africa they are 30-18-13-11, in the Mexican *Zapotecotoma* they are 30-17-14-14, and in the Mediterranean *Scotoscopus* they are 30-14-12-11. It is evident that the metatarsomeres II–IV in *Samlandotoma* are too short and their ratios do not fit the general ratio formula shared by all Pelecotominae.

VI. Metatarsomeres II and III combined are only one half of the length of the first metatarsomere.

—In Pelecotominae metatarsomeres II and III combined are as long as metatarsomere I, or nearly so.

VII. From figure 1 (Alekseev, 2019) it is evident that both metatibial spurs are rather prominent, long, triangular, and exposed from the tibial cavity.

—The tibial spurs in Pelecotominae, if present, are miniaturized, short, and usually partially hidden in the tibial cavity, and therefore always poorly observable.

Thorax

VIII. Body is compressed along a lateral plane.

—Body is wedge-shaped along a lateral plane in Ripiphoridae (*i.e.*, meso- and metathorax are expanded posteriorly and ventrally).

IX. Prothorax is subquadrate in lateral plane (*i.e.*, broad ventrally).

—Prothorax is triangular in lateral plane (*i.e.*, very narrow ventrally) in Ripiphoridae.

X. The pronotum is described as bell-shaped, but simultaneously it is noted that the posterior pronotal angles are obtusely rounded. From figure 3 (Alekseev, 2019) it is evident that the posterior pronotal angles are much shorter than the base of the pronotum.

—For the bell-shaped pronotal discs of Ripiphoridae, these are characteristically pointed at the posterior angles, which are as long as the central lobe, or nearly so. It appears that the interpretation of ‘bell-shaped’ pronotum in *Samlandotoma* is in error.

DISCUSSION

Alekseev (2019) suggested that *Samlandotoma* should be placed within Pelecotominae because of the combination of the following characters: (1) non-reduced mouthparts; (2) fully developed, distally non-divergent elytra covering the entire abdomen; (3) pectinate antennae; (4) distal apex of metatibia unmodified; (5) tibial spur formula reduced. This set of characters, however, does not support the inclusion of *Samlandotoma* in Pelecotominae, or more broadly in Ripiphoridae. Characters (1) and (2) represent symplesiomorphies of Coleoptera and do not provide evidence for placement in Pelecotominae. Character (3) is common in many lineages of Coleoptera (Elateridae, Eucnemidae, Lampyridae, Ptinidae, Cerambycidae, Vesperidae, and many genera of Tenebrionoidea: *e.g.*, *Falsopedilus* Pic, *Madrasiiindus* Pic (Mycteridae), *Pedilus*, *Eupyrochroa* Blair, *Hemidendroides* Ferrari, *Pyrochroa* Geoffroy, *Schizotus* Newman, *Phyllocladus* Blair, *Pogonocerus* Fischer von Waldheim, *Exocalopus* Broun, *Morpholycus* Lea (Pyrochroidae), *Emelinus* Casey (Aderidae), *Pectotoma* Hatch (Scraptiidae), and *Afremus* Levey (Afreminae, *incertae sedis*). Finally, reduction of tibial spurs [character (5)] is present also in other families of Tenebrionoidea: Prostomidae, Tenebrionidae, Mordellidae, Oedemeridae, and Meloidae, while in the New Zealand genera of Pelecotominae the tibial spur formula is complete (2-2-2), and therefore this character cannot be used to distinguish Pelecotominae from other Ripiphoridae or Tenebrionoidea. Lastly, the combined occurrence of these character states [moreover, not homologous in the cases of (3) and (5) across the listed families] together does not support inclusion within Ripiphoridae.

Interestingly, character (4) seems to positively exclude *Samlandotoma* from Pelecotominae, because in this subfamily the edges of the tibiae are always terminated in a dense row of regular spiniform setae, a character that is not mentioned in the description of *Samlandotoma* and is therefore presumably absent. The legs are described as ‘long, slender’ but figures 1–3 appear to depict legs of a typical length and are rather stout/robust (as, for example, in Ptilophorinae). A synapomorphy of Pelecotominae

proposed by Falin (2003) is that the pretarsus is longer than the protibia, but this is unfortunately not mentioned in the description and therefore cannot be evaluated.

The combination of characters (I–X), outlined above — *i.e.*, the shape of antennae, legs and thorax (especially the shape, structure, and proportions of their particular segments and podites) — does not allow placement of *Samlandotoma* in Pelecotominae or to Ripiphoridae. It is recommended that a specialist on some other families of Tenebrionoidea should make a restudy of the holotype to clarify the state of important structures. Interestingly, Alekseev (2019) also mentioned in the differential diagnosis that: “The simple, non-ramose two basal and two distal antennomeres, lobed penultimate tarsomere and triangular terminal maxillary palpomere of the new taxon are not characteristic of Ripiphoridae and resemble characters of several other tenebrionid [sic] families (in particular, Pyrochroidae).” Why he finally decided to place *Samlandotoma* to Ripiphoridae instead rather than leaving it without familial placement is not corroborated in the text. Unfortunately, the Ripiphoridae have often served as a default placement for many morphologically peculiar beetles of unclear systematic placement, as has been demonstrated by several studies (*e.g.*, Falin, 2003; Batelka *et al.*, 2018; Ferreira *et al.*, 2018). As our knowledge of the family continues to improve and characters supporting and diagnosing the family and its constituent lineages become more clearly delimited, it will hopefully minimize misplaced living and fossil taxa.

ACKNOWLEDGEMENTS

The author thanks two anonymous reviewers for their insightful remarks and suggestions.

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Pharciphyzelus lacefieldi Beckemeyer & Engel, 2011

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Novitates Paleoentomologicae was established at the University of Kansas through the efforts of Michael S. Engel, Jaime Ortega-Blanco, and Ryan C. McKellar in 2013 and each article is published as its own number, with issues appearing online as soon as they are ready. Papers are composed using Microsoft Word® and Adobe InDesign® in Lawrence, Kansas, USA.

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ISSN 2329-5880