Notes on a small collection of Prioninae from Nord-East Madagascar with the description of a new *Schizodontus* Quentin & Villiers, 1974 (Cerambycidae, Closterini)

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Abstract. We here present observations from a small collection of longhorn beetles belonging to the Prioninae subfamily and collected during a physically challenging expedition in the rainy season to a newly designated protected area Mahimborondro in North-East Madagascar. The material included a new Prioninae Closterini from a small genus with only two species *Schizodontus angustus* Quentin & Villiers, 1974 and *S. latus* Quentin & Villiers, 1974, that is described here under the name *S. mahimborondroensis* sp. nov. An identification key to the three species is included.

Résumé. Des observations de longicornes appartenant à la sous-famille des Prioninae et collectées lors d'une expédition physiquement difficile pendant la saison des pluies vers une zone protégée, nouvellement désignée sous le nom de Mahimborondro et située dans le nord-est de Madagascar, sont présentées ici. Le matériel comprenait un nouveau Prioninae de la tribu des Closterini d'un petit genre comprenant seulement deux espèces *Schizodontus angustus* Quentin & Villiers, 1974 et *S. latus* Quentin & Villiers, 1974, tous deux connus de haute altitude. La nouvelle espèce est décrite sous le nom de *S. mahimborondroensis* sp. nov. et une clé d'identification des espèces est incluse.

Keywords. Beetles, Cerambycidae, Madagascar, Mahimborondro, mountain forest, new species.

Introduction

The island of Madagascar is characterized by an extremely diverse and specialized biota with high levels of endemism (Goodman & Benstead, 2003). Madagascar is facing environmental degradation on a massive scale (Jones *et al*., 2019). And unfortunately, to date up to 50% of Madagascar's original forests have been altered (McConnell & Kull, 2014) and most probably countless species, mostly invertebrates have been lost forever.

There of course are also some positive conservation events, such as the story of the Madagascar Pochard, *Aythya innotata* (Salvadori, 1894). This species was declared extinct but on a tiny crater lake surrounded by a small patch of forest in the remote mountains of north-eastern Madagascar, one of the authors (Réné de Roland) rediscovered a small flock of nine Madagascar Pochards. This rediscovery enabled the creation of the Bemanevika (officially Paysage Harmonieux Protégé de Bemanevika) and Mahimborondro protected areas (officially Réserve de Resources Naturelles de Mahimborondro) in April 2015. Mahimborondro forms a corridor that links the protected area of Bemanevika to the Tsaratanàna massif (Réserve Naturelle Intégrale de Tsaratanàna) and together with these areas forms part of northern Madagascar's largest protected landscape (the Complex des Aires Protégées d'Ambohimirahavavy-Marivorahona or CAPAM) (Goodman *et al*., 2018). The remote patch of forest where the pochard survives has proved to be a 'lost world' that is home to several of Madagascar's most enigmatic and poorly known species such as the Madagascar Serpent-eagle *Eutriorchis astur* Sharpe, 1875 and the Madagascar Red Owl *Tyto soumagnei* (Grandidier, 1878). Little is known of the invertebrate biodiversity of this protected area complex, as surveys thus far have focused primarily on flora of the region (Goodman *et al*., 2018). As part of a rapid biodiversity expedition (see also Mittermeier *et al*., in press) we here provide first records from a small collection of longhorns (Prioninae) collected at the light trap in the remote forest patches of the Bemanevika and Mahimborondro Protected Areas.

Among the material, a new species of *Schizodontus* was collected. Quentin and Villiers (1974) created the genus *Schizodontus* to place two new characteristic Closterini species *Schizodontus latus* Quentin & Villiers, 1974 and *Schizodontus angustus* Quentin & Villiers, 1974. Species in this genus have bifid terebra of the mandibles compared to single terebra for all other genera in the Closterini. Also characteristic for this genus is a pronotum decorated with three strong lateral spines and a short and dense pubescence on elytra and antennae. We here describe a third species for the genus collected in the North East of Madagascar close to Bealanana.

Material and Methods

Field work

Field work was performed from 29 January - 14 February 2019 in the forest of the Bemanevika and Mahimborondro Protected Area in Northern central Madagascar. Longhorns were collected at a light trap located close to camp localities from where the biodiversity surveys were organized (Figure 1). The light trap was equipped with a 125 W

Philips MV bulb strung in front of a vertical white piece of cloth at about 150 cm above the ground. A white piece of plastic was placed under the bulb. Power was provided by a portable generator. Light trapping was initiated at dusk and continued for as long as there was no rain. Cerambycids were collected and preserved in 70% ethanol and mounted, labelled and preserved in natural history collections in Belgium.

Species photographs
Photographs related to figures 2 were taken with Canon EOS700D DSLR Camera and 105 mm F2.8 Sigma EX DG Macro OS Lens; stacking by Zerene Stacker software (by the first author). Photographs related to figures 3-4 were taken Canon EOS 500D DSLR camera, Canon EF-S60 f/2,8 Macro lens, stacking by CombineZP software.
Photographs related to figures 5–7 were taken with a Canon EOS Rebel T3i DSLR camera, Canon MP-E 65 mm f/2.8 1-5X macro lens, stacking by Zerene Stacker software (by the first author).

Measurements
Total length is measured as the distance between the tip of the mandibles and the distal edge of elytra. Prothoracic length is measured along the central line of the prothorax. Prothoracic width is measured as the widest point between the lateral margins orthogonal on the prothoracic length, without the spines. Measurements were taken in ‘‘mm’’.

The Museum collection acronyms used in this study are as follows:
RBINS: Royal Belgian Institute of Natural Sciences, Brussels, Belgium.
MNHN: Muséum d’Histoire naturelle de Paris, France.

Results

Three species of Prioninae were collected. The first are 11 males of a *Closterus* sp. still unidentified with certainty, as the genus currently comprises 44 species, all endemic to Madagascar (Tavakilian & Chevillotte, 2018). The second is represented by 2 males and 1 female of *Phlyctenosis laeta* (Waterhouse, 1880). The third species were three males of a new species of *Schizodontus* described below.

Schizodontus mahimborondroensis sp. nov. Bouyer & Drumont
(Figs 2, 5-7 & 8(1))

Type material. Holotype male and 2 paratypes male: Madagascar, Bamevika, 1717 m, 14.2939 S- 48.7569 E, 8-II-2019, light trap, [MAD19 RIDGE LT]. BINCO_MAD_19_0008, Leg. Merlijn Jocque & Dan Slootmaekers, *in* coll. RBINS (HT and 1 PT), and coll. Th. Bouyer (1 PT).

Description. Holotype male (Fig. 2).

Head and thorax Head, pronotum and scutellum (Fig. 5) strongly punctuated and covered with a dense mat of small hairs. The interocular space is flat, a well-defined median groove is present between the base of the antenna. A shallow transversal supramandibular groove clearly present. Antennae long, reaching just before or just about the end of the elytra. Antennomeres relatively wide, with an external apical tooth clearly visible from the 3rd

antennomer onwards. An internal apical tooth present from the 7th antenna but always much smaller than the external apical tooth. The 10th and 11th antennomere almost completely merged (Fig. 7).

Lateral pronotal spines medium to small, the central spines almost equally sized as the anterior spines. Ventral thorax clearly and densely haired. Pronotum with a well-defined medial notch in the posterior ridge behind the head. No local depression in the pronotum.

Abdomen and elytra. General color dark brown. Elytra covered with a short, sparse and barely visible mat of fine hairs, providing shiny elytra, especially at the level of the disc. Elytra finely punctuated with well-defined longitudinal ridges (Fig. 6).

Female. Unknown

Dimensions. Holotype is 34 mm (Fig. 2). Range length for the three male specimens collected is 29-34 mm. Pronotum length: 3.5-4.5 mm. Pronotum maximal width without spines: 6.5-7.5 mm.

Etymology. The species is named after the Malagasy name for the type locality: Mahimborondro, meaning “a place to feel the clouds” and refers to the cloud forest habitat of the species.

Ecology. Nothing is known about the ecology of the species at this point, but the animals were collected in dense high elevation ridge clad in montane forest (Fig. 9).

Similar species. There are only three species in the genus. Holotypes of *S. latus* and *S. angustus* are preserved in MNHN (Figs 3 & 4) and high resolution images of the two species are available through the website of the Prioninae (http://www.prioninae.eu/) managed by one of the authors (J. Pirkl). Males of the three species can most easily be separated based on the structure of the antennae (Fig. 8). Additionally, *S. latus* has a smooth posterior pronotum, while both *S. angustus* and *S. mahimborondroensis* sp. nov. have a small well-defined medial notch in the posterior pronotum edge. Also, the colouration and brightness of the elytra differs between the species *with S. mahimborondroensis* sp. nov. dark brown compared to reddish brown in *S. latus* (Fig. 4) and its elytra are more reflecting compared to both other species.

The three *Schizodontus* species can be identified with the following dichotomous key.

1 - Antennae with narrow articles (ratio length / width for antennomer 3 : 2.9) the third article with subparallel sides and no tooth on the apical angles (Fig. 8).
S. angustus Quentin & Villiers, 1974

- Antennae with wide articles (ratio length / width for antennomer 3 : 2.1-2.4), the third article anteriorly widened with a small well defined apical external tooth (Fig. 8). 2

2 - Prominent external apical tooth present only on the fifth or sixth article of the antennae, anterior pronotum ridge smooth and uninterrupted, reddish brown elytra.
S. latus Quentin & Villiers, 1974

- Prominent external apical tooth on the third article of the antennae, anterior pronotum ridge centrally with a small notch, dark brown elytra.

S. mahimborondroensis sp. nov.

Discussion

The Prioninae is a well-studied group in Madagascar with the milestone study by Quentin & Villiers (1975) and now comprises 115 species (Tavakilian & Chevillotte, 2018). This description of a new taxon adds to this already impressive list of species. This third species of *Schizodontus* reinforces the eastern character of the geographic distribution of the genus in Madagascar, the other two species being known only from the central part of the island around Antananarivo or the northern half of the eastern coast. This species was only collected at 1700m+ elevation further confirming its high elevation restriction. The discovery of such a large species shows the need for more surveys especially in the more difficult to reach and lesser explored montane habitats.

Acknowledgments

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Figures

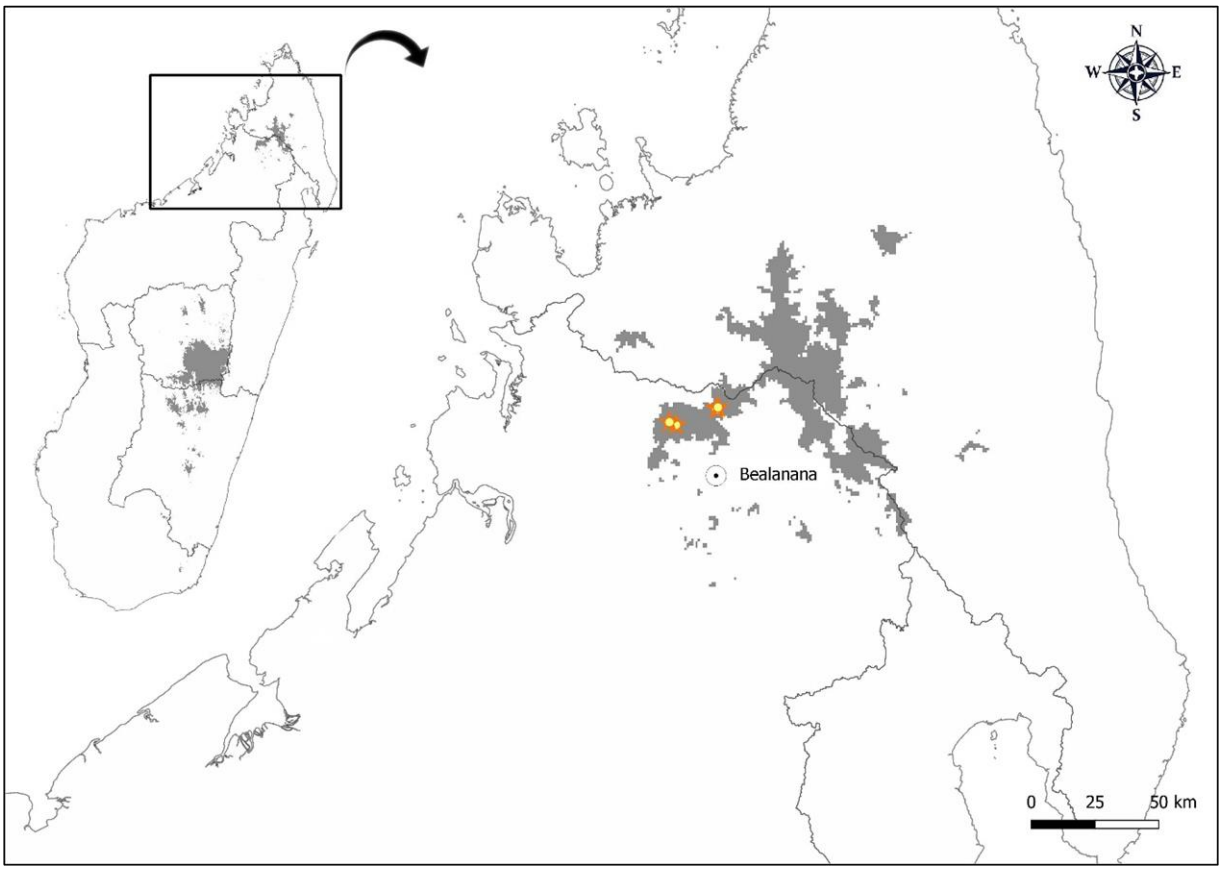


Figure 1. Map showing the sampling localities close to the village of Bealanana in the Mahajanga province, Madagascar. Grey patches indicate all terrain above 1500m.

Fig. 2

Fig. 3

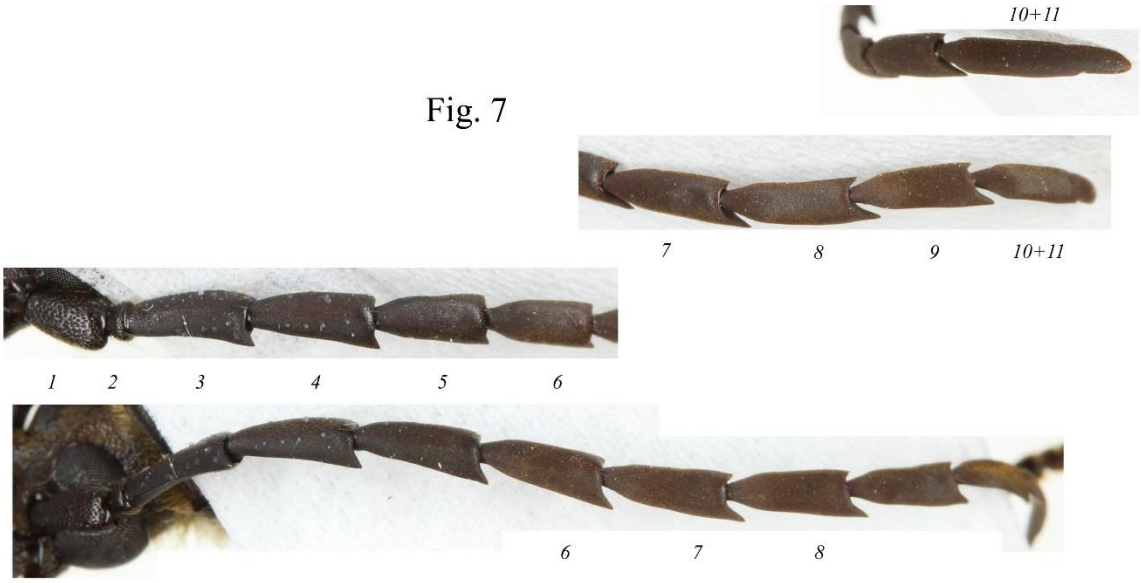
Fig. 4

Figure 2. *Schizodontus mahimborondroensis* sp. nov. Holotype male, 34 mm, dorsal view (RBINS). **Figure 3. *Shizodontus angustus* Quentin & Villiers, 1974**. Holotype male, 34 mm, dorsal view (MNHN). **Figure 4. *Shizodontus latus* Quentin & Villiers, 1974.** Holotype male, 37 mm, dorsal view (MNHN). (Photos. Fig. 2 Thierry BOUYER, figs 3-4: Jiri PIRKL).

Fig. 5

Fig. 6

Fig. 7



Figures 5-7. ***Schizodontus mahimborondroensis*** **sp. nov.** Male holotype (34 mm). Fig. 5: holotype, head and pronotum, dorsal view. Fig. 6: elytra, lateral view from the left side. Fig. 7: left antenna with numbered articles (Photos Thierry BOUYER).

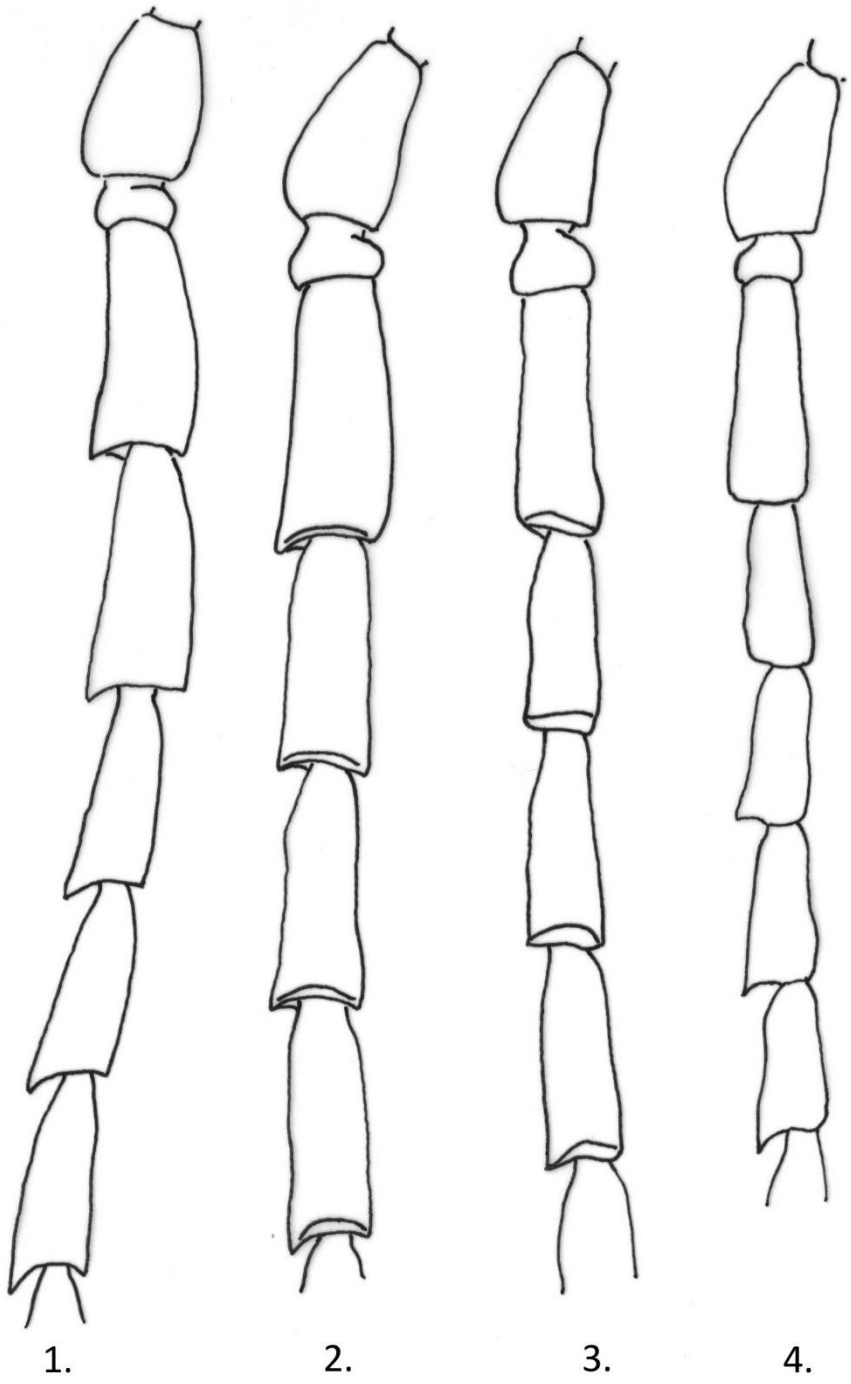


Figure 8. First antennal segments of 1) *Schizodontus mahimborondroensis* n. sp. (male), 2) *S. latus* (male), 3) *S. angustus* (male) and 4) *S. latus* (female). 2-4 after Quentin & Villiers, 1975, figs 227-229.

Figure 9. Forested montane ridge forest where *Schizodontus mahimborondroensis* n. sp. was collected (image: M. Jocque).