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urn:lsid:zoobank.org:pub:E3FE6230-6C62-4A2D-9109-06FD8DA48F50

New and little known earthworm species from Central Madagascar (Oligochaeta: Kynotidae)

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Abstract

The investigation of a small number of earthworms collected in Central Madagascar resulted in the discovery of two species new for science, *Kynotus minutus* and *Kynotus parvus* **spp. nov.** Apart from the descriptions and illustrations of the new species, the two little-known species *Kynotus alaotranus* Michaelsen, 1907 and *Kynotus michaelseni* Rosa, 1892 are recorded for the first time after the original description, and commented short diagnoses are provided. With the two new species described in this paper, the genus *Kynotus* now contains 20 species. The monogeneric earthworm family Kynotidae is endemic to Madagascar.

Key words. Earthworms, Madagascar, *Kynotus*, new species

Introduction

Madagascar and the surrounding islands in the Indian Ocean constitute one of the 25 biodiversity hotspots in the World (Myres *et al.* 2000). These islands are characterized by a high number of endemics (Goodman & Benstead 2003), and new species are identified every year. However, earthworms of Madagascar are poorly studied. Until recently (Razafindrakoto *et al.* 2010, 2011), the last taxonomic report on Malagasy earthworms has been that of Michaelsen (1931). Some 30 species were reported by that time belonging to the introduced megascolecids, benhamiins and native acanthodrilids; however, the earthworm fauna of Madagascar is dominated by a remarkable endemic group, namely the family Kynotidae.

The first kynotid species was reported by the German zoologist Prof. Konrad Keller under the name *Geophagus darwini* in 1887. As the genus name was preoccupied by the cichlid fish *Geophagus* Heckel, 1840, Michaelsen (1891) proposed the replacement name *Kynotus* to accommodate Keller's *darwini* and several other, newly described species. The genus was placed in Glossoscolecidae (Microchaetinae) by Michaelsen (1897) until Jamieson (1971) created the subfamily Kynotinae for it, because of the presence of a pair of evertible copulatory organs with attached prostate-like glands. Later, Jamieson (1980) elevated the subfamily to family rank.

Up to 2008 the number of described *Kynotus* species reached as many as 16 (including two synonymous names) when a project, entitled *Changement global et diversité de la macrofaune du sol à Madagascar* (Global change and soil macrofauna diversity in Madagascar), was launched. The main goal of this project was to explore the soil macrofauna of Madagascar in order to create a database and to set up a museum collection for earthworms and other soil invertebrates (termites, Coleoptera larvae).

The work so far has resulted in an overview of the introduced peregrine earthworm species of Madagascar (Razafindrakoto *et al.* 2010) and in descriptions of three giant *Kynotus* earthworm species collected in eastern Madagascar, two of them new to science (Razafindrakoto *et al.* 2011). In this paper, we present the *Kynotus* species recorded from central Madagascar during this project including two species new to science.