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A revision of the taxonomy and distribution of *Spirostreptus* Brandt 1833 (Diplopoda, Spirostreptida, Spirostreptidae) with descriptions of a new species and a new genus of spirostreptid millipede

TAROMBERA MWABVU[1], MICHELLE HAMER[1,2], ROBERT SLOTOW[1] & DAVID BARRACLOUGH[1]

[1] *School of Biological & Conservation Sciences, University of KwaZulu-Natal, Westville Campus, PBX54001, Durban 4000, South Africa. E-mail: mwabvut@ukzn.ac.za; slotow@ukzn.ac.za; barracloughd@ukzn.ac.za*

[2] *South African National Biodiversity Institute, PBX 101, Pretoria 0001, South Africa. E-mail: hamer@sanbi.org*

Abstract

The giant millipede genus *Spirostreptus* Brandt 1833 is revised to include six species from Africa, south of the Congo River. The six species formerly included in the genus were *S. heros* Porat 1872, *S. kruegeri* Attems 1928, *S. sebae* Brandt 1833, *S. tripartitus* (Cook & Collins 1893), *S. unciger* Attems 1928 and *S. kymatorhabdus* Attems 1914. *Spirostreptus kymatorhabdus* is here removed from *Spirostreptus* and accommodated in the new genus *Namibostreptus*. A new species, *S. batokensis* Mwabvu from Zimbabwe, is described. A key to the species of *Spirostreptus* species based on gonopod morphology is presented. Despite the remarkable similarity between the gonopods of *S. heros* and *S. kruegeri*, the two species are distinct. *Spirostreptus* has strict fidelity to the savanna biome, with overlapping distributions of species, thus making conservation of many species in one biome possible.

Key words: savanna, millipedes, gonopod, identification key, conservation, southern Africa

Introduction

Millipedes constitute a major part of soil macrofauna (Crawford 1992) both in terms of numbers of species and biomass (Dangerfield 1990). They enhance organic matter breakdown (Bond & Sierwald 2002; Sierwald & Bond 2007) and mix organic matter with upper soil layers (Edwards *et al*. 1970). The high densities of millipedes that emerge from the soil during the rainfall season and their relatively large body size suggest a much greater role as detritivores in tropical environments than previously estimated. Crawford (1992) ranked millipedes behind earthworms and termites as one of the major groups important in the breakdown of organic matter. Dangerfield and Telford (1989) estimated that millipedes in tropical miombo woodland would consume close to 30.6 % of annual litter fall.

Millipedes prefer moist microhabitats, which are often patchy, and because millipedes are unable to completely close their spiracles, their ability to disperse over long distances is limited. Therefore many millipede species are isolated and occur in small areas (Hopkin & Read 1992), which makes them vulnerable to habitat disturbance and extinction (Hamer & Slotow 2000; 2002), and this also means that they are suitable bioindicators for ecological studies. Despite being conspicuous, important in ecological processes, diverse (552 species in southern Africa; Hamer 1999, 2000) and habitat specific, millipedes remain neglected and under-utilised in biodiversity/conservation studies. This is largely due to lack of up to date data on diversity and distribution (Hamer & Slotow 2000), and the scarcity of millipede taxonomists (Hamer 1997).

Because of the threats to invertebrate diversity due to habitat alteration (New 1995; Hamer 1997), it is essential that surveys and taxonomic studies on millipedes are conducted to establish species diversity and distribution. The number of millipede species recorded in southern Africa could increase substantially once

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