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English names of the millipedes (Diplopoda) of KwaZulu-Natal

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ABSTRACT

Certain groups of invertebrates are becoming mainstreamed in conservation activities in KwaZulu-Natal, particularly groups that have many species endemic to the province and that are confined to small distribution ranges. As a result of this there is a need to assign common (English) names where these are unavailable. A list of scientific names and standardised common names is presented for species of millipede occurring in KwaZulu-Natal.

KEY WORDS: South Africa, common names, Polyxenida, Polyzoniida, Polydesmida, Siphonophorida, Sphaerotheriida, Spirobolida, Spirostreptida.

INTRODUCTION

A diverse array of invertebrate species is endemic to the Maputaland-Pondoland-Albany biodiversity hotspot in the eastern region of South Africa, in the middle of which lies most of the province of KwaZulu-Natal (Mittermeier *et al*. 2005). These endemic invertebrates include species of earthworms, insects, millipedes and snails. (e.g. Hamer 1998; Armstrong 2002; Herbert & Kilburn 2004; Plisko 2003).

The accumulated transformation of land in KwaZulu-Natal, where the natural indigenous vegetation is totally removed or irreversibly changed to a secondary form, reached 45 % of the total land surface of the province in 2008 (Jewitt 2012). Land transformation is probably the most important threat facing invertebrate species in KwaZulu-Natal (e.g. Plisko 2000). As a result, the conservation requirements of the endemic invertebrate species need to be highlighted and included in conservation planning and environmental impact assessments (McGeoch *et al*. 2011).

In order to mainstream invertebrates in conservation practice, a general awareness of their identities, diversity and conservation needs is required. Regarding identities, scientific nomenclature eliminates confusion, but is known only to specialists. Scientific names have little meaning for the layperson or the conservationist (Plant Protection Research Institute 1979), and often these scientific names are even difficult to pronounce correctly. Common names on the other hand can vary markedly from region to region (Plant Protection Research Institute 1979), if indeed there are common names widely in use. These may change with time, as do scientific names as taxonomic and systematic research proceeds. Therefore the list will have to be revised from time to time. However, since many people who are or will be involved in the conservation of invertebrates identify animal species by their common names and not by their scientific names, it seems judicious that a standardised list of English names is created and published for

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reference. Certain invertebrate groups such as snails (Herbert & Kilburn 2004) and butterflies (Mecenero *et al.* 2013) already have standardised lists of common names.

Millipedes are being incorporated into conservation planning and environmental impact assessments in KwaZulu-Natal (McGeoch *et al*. 2011). Ninety-one percent of the 234 known millipede species and subspecies in KwaZulu-Natal are currently thought to be endemic to the province, and many have very small total distribution ranges. A single common name will be given for a single scientific name to avoid confusion. This is possible with millipedes because common names have only recently been used for this group of invertebrates in KwaZulu-Natal. The provided list can be used as the basis for common names of genera and species elsewhere in South Africa should this be required.

METHODS OF COMPILATION

English names for various orders, families, genera and species of millipede have been in use for some time (e.g. Lawrence 1987; Ezemvelo KZN Wildlife Biodiversity Database). These common names were taken as the starting points for the naming of the millipede taxa in KwaZulu-Natal. Many orders, families and even genera in the province can be given names according to characteristics that are quite easily observable to the layperson. However, since the elaborate secondary sex organs derived from the seventh pair of legs of the males are the main distinguishing characteristics of species of millipede, and the females are often indistinguishable without the males, the scientific names often reflect some aspect of these distinguishing characteristics. This means that translation of the specific epithet of the scientific name into English was often the only means of providing a good English name for a species name, but this name may not describe readily observable features. The species occurring in KwaZulu-Natal and the scientific nomenclature were obtained from Hamer (1998, 2000, 2009) and Redman *et al*. (2003).

RESULTS

Table 1 gives the scientific names and English names of the species of millipede known from KwaZulu-Natal. Figures 1–10 provide general habitus information for various orders and associated genera.

DISCUSSION AND CONCLUSIONS

The list of species of millipede in KwaZulu-Natal gives each species a standardised English name that can be used for conservation planning and other conservation activities. Although identification of millipede species usually (but not invariably) requires male specimens and has to be done by specialists and trained technicians, the species of certain genera can be distinguished by externally visible features such as colour patterns (e.g. *Centrobolus* species, *Allawrencius* species, certain *Doratogonus* species, and certain *Zinophora* species), in conjunction with distribution if colour alone is insufficient. Other species of certain groups (e.g. some genera of Polydesmida) can be identified using external morphology under high magnification and available diagnostic keys. Species of some genera with externally similar morphology that require dissection out of the secondary sexual organs can nevertheless be easily identified under high magnification with the use of diagnostic keys (e.g. *Doratogonus* species using the key and illustrations in Hamer 2000).

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We trust that this short communication will assist with the increasing mainstreaming of millipede taxa in conservation activities and planning, as Herbert and Kilburn (2004) have done in the case of snail and slug species. The illustration of the millipede species by means of photographs in a guide could be a further improvement in the effort to increasingly include millipede species in conservation activities, as might standardisation of English names for millipede species in other parts of South Africa.

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TABLE 1
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Order Polydesmida	
Family Dalodesmidae	**Keeled millipedes (Figs 1, 2)**
Allawrencius complex Lawrence, 1953	Complex keeled millipede (Fig. 1)
Allawrencius gladiator Lawrence, 1958	Gladiator keeled millipede
Allawrencius nodulosus Verhoeff, 1939	Nodular keeled millipede
Allawrencius teres (Attems, 1934)	Elegant keeled millipede
Allawrencius triordinatus Lawrence, 1953	Three-ordered keeled millipede
Allawrencius verrucosus Lawrence, 1962	Warty keeled millipede
Drakensius minor Schubart, 1956	Minor Drakensberg keeled millipede
Gnomeskelus arcuatus Verhoeff, 1939	Arcuate keeled millipede
Gnomeskelus attemsii Verhoeff, 1939	Attems's keeled millipede
Gnomeskelus auriculatus Lawrence, 1953	Bumpy keeled millipede
Gnomeskelus bifurcatus Lawrence, 1953	Twin-forked keeled millipede
Gnomeskelus brevipes Lawrence, 1953	Short-legged keeled millipede
Gnomeskelus brincki Schubart, 1956	Brink's keeled millipede
Gnomeskelus burius Verhoeff, 1939	Plough-share keeled millipede
Gnomeskelus circulipes Verhoeff, 1939	Circular-gonopod keeled millipede
Gnomeskelus cyclocanthus Lawrence, 1958	Circular-angled keeled millipede
Gnomeskelus edentulus Lawrence, 1953	Toothless keeled millipede
Gnomeskelus falcifer Verhoeff, 1930	False keeled millipede
Gnomeskelus fluvialis Lawrence, 1958	Riverine keeled millipede
Gnomeskelus forcipifer Lawrence, 1953	Forceps-carrying keeled millipede
Gnomeskelus furculatus Verhoeff, 1939	Forked keeled millipede
Gnomeskelus glaber Lawrence, 1958	Hairless keeled millipede
Gnomeskelus globifer Attems, 1928	Globed keeled millipede
Gnomeskelus gonarthrodus Lawrence, 1962	Jointed-gonopod keeled millipede
Gnomeskelus hamuliger Verhoeff, 1939	Hook-carrying keeled millipede
Gnomeskelus harpagonifer Verhoeff, 1939	Hooked-gonopod keeled millipede
Gnomeskelus jaculator Lawrence, 1958	Javelin keeled millipede
Gnomeskelus krausi Lawrence, 1962	Kraus's keeled millipede
Gnomeskelus laevigatus Lawrence, 1953	Polished keeled millipede
Gnomeskelus larvatus Lawrence, 1962	Ghost keeled millipede
Gnomeskelus latzeli Verhoeff, 1939	Latzel's keeled millipede
Gnomeskelus lawrencei Verhoeff, 1939	Lawrence's keeled millipede
Gnomeskelus maritimus Lawrence, 1962	Maritime keeled millipede
Gnomeskelus medius Verhoeff, 1939	Midway keeled millipede
Gnomeskelus montivagus Verhoeff, 1939	Mountain-wandering keeled millipede
Gnomeskelus multidentatus Verhoeff, 1940	Many-toothed keeled millipede
Gnomeskelus natalicus Attems, 1928	Natal keeled millipede
Gnomeskelus origensis Lawrence, 1953	Original keeled millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Gnomeskelus petersii Verhoeff, 1940	Peters' keeled millipede
Gnomeskelus processiger Lawrence, 1953	Advanced keeled millipede
Gnomeskelus pugnifer Lawrence, 1953	Fisted keeled millipede
Gnomeskelus retrusus Schubart, 1956	Obscure keeled millipede
Gnomeskelus serratus Verhoeff, 1939	Serrated keeled millipede
Gnomeskelus setosus Verhoeff, 1939	Bristled keeled millipede
Gnomeskelus spectabilis Verhoeff, 1940	Visible keeled millipede
Gnomeskelus subterraneus Lawrence, 1962	Subterranean keeled millipede
Gnomeskelus tenuipes Lawrence, 1953	Preserved keeled millipede
Gnomeskelus tereticornis Lawrence, 1962	Smooth-horned keeled millipede
Gnomeskelus trifurcatus Lawrence, 1953	Three-forked keeled millipede
Gnomeskelus tristriatus (Attems, 1938)	Three-striped keeled millipede
Gnomeskelus tuberosus clivicolus Lawrence, 1962	Slope-dwelling lumpy keeled millipede
Gnomeskelus tuberosus falcifer Verhoeff, 1939	Sickle-carrying lumpy keeled millipede
Gnomeskelus tuberosus microdens Lawrence, 1962	Small-toothed lumpy keeled millipede
Gnomeskelus tuberosus tuberosus Attems, 1934	Lumpy keeled millipede
Gnomeskelus tuberosus urbanus Lawrence, 1962	Urban lumpy keeled millipede
Gnomeskelus tugelanus alticolus Verhoeff, 1939	High-collared Tugela keeled millipede
Gnomeskelus tugelanus unicolor Verhoeff, 1939	One-coloured Tugela keeled millipede
Platytarropus polydesmoides Verhoeff, 1953	Many-rowed flat-backed millipede
Platytarrus excelsus Lawrence, 1959	Lofty flat-backed millipede
Platytarrus guduensis Schubart, 1956	Gudu Falls flat-backed millipede
Rhopaleskelus affinis Schubart, 1956	Neighbouring keeled millipede
Rhopaleskelus biseriatus Verhoeff, 1939	Two-rowed keeled millipede
Rhopaleskelus longisetosus Lawrence, 1962	Long-bristled keeled millipede
Rhopaleskelus minor Lawrence, 1958	Minor keeled millipede
Rhopaleskelus pietermaritzburgensis Schubart, 1956	Pietermaritzburg keeled millipede
Rhopaleskelus terreus (Attems, 1928)	Brownish keeled millipede
Schubartina formicinus Lawrence, 1958	Ant keeled millipede
Family Gomphodesmidae	**Soil millipedes (Fig. 3)**
Ulodesmus anodontus Lawrence, 1953	Toothless soil millipede
Ulodesmus biconus biconus Attems, 1928	Two-coned soil millipede
Ulodesmus biconus ramidens Lawrence, 1953	Branch-toothed two-coned soil millipede
Ulodesmus bispinosus Attems, 1928	Two-spined soil millipede
Ulodesmus cultrifer Lawrence, 1963	Weaponed soil millipede
Ulodesmus denticulatus Verhoeff, 1939	Denticulate soil millipede
Ulodesmus fossor Lawrence, 1958	Trench soil millipede
Ulodesmus lawrencei Verhoeff, 1939	Lawrence's soil millipede
Ulodesmus major Lawrence, 1953	Major soil millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Ulodesmus margatensis Attems, 1934	Margate soil millipede
Ulodesmus micramma bothae Lawrence, 1962	Botha's small sandy soil millipede
Ulodesmus micramma micramma Lawrence, 1962	Small sandy soil millipede
Ulodesmus micramma zuluensis Lawrence, 1962	Zululand small sandy soil millipede
Ulodesmus munroi Lawrence, 1963	Munro's soil millipede
Ulodesmus natalensis microdens Lawrence, 1953	Small-toothed Natal soil millipede
Ulodesmus natalensis natalensis Lawrence, 1953	Natal soil millipede
Ulodesmus pluridens Lawrence, 1953	Many-toothed soil millipede
Ulodesmus robustus Lawrence, 1958	Robust soil millipede
Ulodesmus schubarti Lawrence, 1958	Schubart's soil millipede
Ulodesmus securifer minor Lawrence, 1953	Little axe-armed soil millipede
Ulodesmus securifer securifer Attems, 1928	Axe-armed soil millipede
Ulodesmus simplex Lawrence, 1953	Simple soil millipede
Ulodesmus spiralipes Verhoeff, 1939	Spiral-gonopod soil millipede
Family Paradoxosomatidae	**Paradoxical keeled millipedes**
Habrodesmus alatipes Lawrence, 1953	Winged-gonopod keeled millipede
Family Pyrgodesmidae	**Nurse keeled millipedes**
Attemsodesmus minutus Lawrence, 1953	Minute Attems's keeled millipede
Family Vaalogonopodidae	**Dull keeled millipedes**
Phygoxerotes coronatus Lawrence, 1953	Crowned dull keeled millipede
Phygoxerotes myrmecophilus Lawrence, 1953	Ant-loving dull keeled millipede
Phygoxerotes nodulosus Verhoeff, 1939	Nodular dull keeled millipede
Phygoxerotes proximus Lawrence, 1958	Nearest dull keeled millipede
Order Polyxenida	
Family Polyxenidae	**Bristly millipedes**
Propolyxenus lawrencei Condé, 1949	Lawrence's bristly millipede
Typhloxenus mirificus Condé, 1955	Remarkable bristly millipede
Typhloxenus modestus Condé, 1959	Modest bristly millipede
Order Polyzoniida	
Family Siphonotidae	**Sucking millipedes**
Rynchomecogaster lawrencei Verhoeff, 1939	Lawrence's sucking millipede
Order Siphonophorida	
Family Nematozoniidae	**Sucking millipedes**
Nematozonium elongatissimum Verhoeff, 1940	Most elongate sucking millipede
Nematozonium filum Verhoeff, 1939	Thread-like sucking millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Order Sphaerotheriida	
Family Sphaerotheriidae	**Pill millipedes (Fig. 4)**
Sphaerotherium dorsale (Gervais, 1847)	Dorsally-ridged pill millipede
Sphaerotherium dorsaloides Silvestri, 1910	Small dorsally-ridged millipede
Sphaerotherium giganteum Porat, 1872	Giant pill millipede (Fig. 4)
Sphaerotherium hanstromi Schubart , 1958	Hanstrom's pill millipede
Sphaerotherium mahaium Schubart, 1958	Mahai pill millipede
Sphaerotherium millepunctatum Attems, 1928	Thousand-punctured pill millipede
Sphaerotherium obtusum Koch, 1847	Blunt pill millipede
Sphaerotherium perbrincki Schubart, 1958	Perbrinck's pill millipede
Sphaerotherium punctulatum Brandt, 1841	Dotted pill millipede
Sphaerotherium rotundatum Brandt, 1833	Rounded pill millipede
Sphaerotherium rudebecki Schubart, 1958	Rudebeck's pill millipede
Sphaerotherium subdorsale Silvestri, 1910	Lesser ridged pill millipede
Sphaerotherium tenuitarse Silvestri, 1910	Thin-footed pill millipede
Sphaerotherium tomentosum Schubart, 1958	Tomentose pill millipede
Sphaerotherium zuluense Schubart, 1958	Zululand pill millipede
Order Spirobolida	
Family Pachybolidae	**Red millipedes (Fig. 5)**
Centrobolus anulatus (Attems, 1934)	Ringed red millipede
Centrobolus bifidus (Lawrence, 1967)	Bifid red millipede (Fig. 5)
Centrobolus decoratus (Lawrence, 1967)	Decorated red millipede
Centrobolus fulgidus (Lawrence, 1967)	Shining red millipede
Centrobolus inscriptus (Attems, 1928)	Inscribed red millipede
Centrobolus lawrencei (Schubart, 1966)	Lawrence's red millipede
Centrobolus richardi (Lawrence, 1967)	Richard's Bay red millipede
Centrobolus ruber ruber (Attems, 1928)	Bright red millipede
Centrobolus ruber vulpinus (Attems, 1928)	Fox red millipede
Centrobolus rubricollis (Schubart, 1966)	Red-necked millipede
Centrobolus rugulosus (Lawrence, 1967)	Wrinkled red millipede
Centrobolus sanguinipes (Lawrence, 1967)	Blood-red-footed red millipede
Centrobolus tricolor (Lawrence, 1967)	Three-coloured red millipede
Centrobolus vastus (Attems, 1934)	Desolate red millipede
Order Spirostreptida	
Family Harpagophoridae	**Large spined millipedes (Fig. 6)**
Zinophora brevilobata (Attems, 1928)	Short-lobed large spined millipede (Fig. 6)
Zinophora brevispina (Lawrence, 1965)	Short-spined large spined millipede
Zinophora laminata (Lawrence, 1965)	Laminate large spined millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Zinophora levis (Attems, 1928)	Light large spined millipede
Zinophora mudenensis Redman, 2003	Muden large spined millipede
Zinophora pearlae Redman, 2003	Pearlrose's large spined millipede
Zinophora thukela Redman, 2003	Thukela large spined millipede
Order Spirostreptida	
Family Odontopygidae	**Slender and two- spined millipedes (Fig. 7)**
Chaleponcus discalceatus (Attems, 1934)	Barefooted two-spined millipede
Chaleponcus durbanicus (Attems, 1914)	Durban two-spined millipede
Chaleponcus spathulatus Kraus, 1966	Spatulate two-spined millipede
Patinatius ambiguus Kraus, 1966	Ambiguous slender spined millipede
Patinatius attemsi Kraus, 1960	Attems's slender spined millipede
Patinatius bidentatus bidentatus Kraus, 1960	Two-toothed slender spined millipede
Patinatius bidentatus simulator Kraus, 1966	Resembling two-toothed slender spined millipede
Patinatius natalicus (Kraus, 1960)	Natal slender spined millipede
Patinatius richmondus Kraus, 1966	Richmond slender spined millipede
Patinatius rusticus (Attems, 1934)	Rural slender spined millipede
Patinatius terreus (Attems, 1934)	Earthy slender spined millipede
Spinotarsus anguliferus Kraus, 1960	Angled slender spined millipede
Spinotarsus apertus Kraus, 1960	Open slender spined millipede
Spinotarsus avirostris Kraus, 1960	Bird-beaked slender spined millipede
Spinotarsus bruggenorum Kraus, 1966	Bruggen's slender spined millipede
Spinotarsus bullatinus Kraus, 1960	Bubbled slender spined millipede
Spinotarsus bullatoides Kraus, 1966	Puckered slender spined millipede
Spinotarsus bullatus (Attems, 1926)	Horned slender spined millipede
Spinotarsus colosseus (Attems, 1928)	Colossal slender spined millipede
Spinotarsus costatus (Attems, 1934)	Costate slender spined millipede
Spinotarsus cuspidosus Kraus, 1960	Cusped slender spined millipede
Spinotarsus debilis (Attems, 1928)	Weak slender spined millipede
Spinotarsus destructus Kraus, 1960	Destroyed slender spined millipede
Spinotarsus dingaanus Schubart, 1966	Dingaan's slender spined millipede
Spinotarsus drummondicus Kraus, 1966	Drummond slender spined millipede
Spinotarsus durbanensis Kraus, 1966	Durban slender spined millipede
Spinotarsus elatior Kraus, 1960	Tall slender spined millipede
Spinotarsus elegans Kraus, 1960	Elegant slender spined millipede
Spinotarsus glabrus Kraus, 1960	Shiny slender spined millipede
Spinotarsus glomeratus Kraus, 1960	Glomerate slender spined millipede
Spinotarsus gracilis (Attems, 1934)	Thin slender spined millipede
Spinotarsus grandis grandis Kraus, 1960	Great slender spined millipede
Spinotarsus grandis zonatus Kraus, 1960	Zoned great slender spined millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Spinotarsus hluhluwensis (Schubart, 1966)	Hluhluwe slender spined millipede
Spinotarsus hospitii Kraus, 1960	Hosted slender spined millipede
Spinotarsus inermis (Attems, 1934)	Unarmed slender spined millipede
Spinotarsus ingwavuma Kraus, 1960	Ingwavuma slender spined millipede
Spinotarsus kranskopensis Kraus, 1960	Kranskop slender spined millipede
Spinotarsus krausi Schubart, 1966	Kraus's slender spined millipede
Spinotarsus lawrencei Kraus, 1960	Lawrence's slender spined millipede
Spinotarsus lobatus Kraus, 1960	Lobed slender spined millipede
Spinotarsus lobuliferus Kraus, 1960	Lobulate slender spined millipede
Spinotarsus magnus Kraus, 1960	Great slender spined millipede
Spinotarsus malleolus Kraus, 1960	Hammered slender spined millipede
Spinotarsus maritzburgensis Kraus, 1960	Maritzburg slender spined millipede
Spinotarsus mazongwanus Kraus, 1966	Mazongwaan slender spined millipede
Spinotarsus mertensi Kraus, 1966	Mertens's slender spined millipede
Spinotarsus parvus Kraus, 1960	Little slender spined millipede
Spinotarsus rostrum Kraus, 1960	Beaked slender spined millipede
Spinotarsus silvarum Kraus, 1960	Forest slender spined millipede (Fig. 7)
Spinotarsus silvicolens Kraus, 1960	Woodland slender spined millipede
Spinotarsus striatus Kraus, 1960	Striate slender spined millipede
Spinotarsus striolatus Attems, 1928	Striped slender spined millipede
Spinotarsus swartkopensis Kraus, 1966	Swartkop slender spined millipede
Spinotarsus triangulosellus Kraus, 1966	Small triangular slender spined millipede
Spinotarsus triangulosus Kraus, 1960	Triangular slender spined millipede
Spinotarsus tridens Kraus, 1966	Trident slender spined millipede
Spinotarsus tristis Kraus, 1960	Dull slender spined millipede
Spinotarsus tubulosus Kraus, 1960	Hollow slender spined millipede
Spinotarsus tugela Kraus, 1960	Tugela slender spined millipede
Spinotarsus umgeni Kraus, 1966	Umgeni slender spined millipede
Spinotarsus unicus Kraus, 1960	Unique slender spined millipede
Spinotarsus zuluinus (Attems, 1934)	Zululand slender spined millipede
Family Spirostreptidae	**Black and shagreened millipedes (Figs 8, 9, 10)**
Camaricoproctus disparatidens Lawrence, 1965	Disparate-toothed shagreened millipede
Camaricoproctus planidens Lawrence, 1965	Flat-toothed shagreened millipede
Camaricoproctus torquidens Lawrence, 1965	Twisted-toothed shagreened millipede
Camaricoproctus transvaalicus Lawrence, 1966	Transvaal shagreened millipede
Camaricoproctus tumididens Lawrence, 1965	Tumid-toothed shagreened millipede
Doratogonus avius Hamer, 2000	Solitary black millipede
Doratogonus bilobatus (Schubart, 1966)	Bilobed black millipede
Doratogonus cristulatus (Porat, 1872)	Cristulate black millipede

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TABLE 1 (*continued*)
English names for millipedes occurring in KwaZulu-Natal.

Scientific Name	**English Name**
Doratogonus falcatus (Attems, 1928)	Sickle-shaped black millipede
Doratogonus flavifilis (Peters, 1855)	Yellow-banded black millipede
Doratogonus hoffmani Hamer, 2000	Hoffman's black millipede
Doratogonus infragilis Hamer, 2000	Strong black millipede
Doratogonus krausi (Lawrence, 1965)	Kraus's black millipede
Doratogonus major (Lawrence, 1965)	Major black millipede
Doratogonus meridionalis Hamer, 2000	Southern black millipede
Doratogonus minor Hamer, 2000	Minor black millipede
Doratogonus montanus Hamer, 2000	Montane black millipede
Doratogonus natalensis (Attems, 1928)	Natal black millipede
Doratogonus peregrinus (Lawrence, 1965)	Wandering black millipede
Doratogonus praealtus Hamer, 2000	High-altitude black millipede
Doratogonus precarius Hamer, 2000	Precarious black millipede
Doratogonus rattrayi Hamer, 2009	Rattray's black millipede (Fig. 9)
Doratogonus rubipodus Hamer, 2000	Ruby-footed black millipede
Doratogonus septentrionalis Hamer, 2000	Northern black millipede
Doratogonus stephensi Hamer, 2000	Stephens's black millipede
Doratogonus xanthopus (Attems, 1914)	Yellow-footed black millipede
Doratogonus zuluensis Hamer, 2000	Zululand black millipede
Orthoporoides corrugatus (Attems, 1934)	Corrugated black millipede (Fig. 10)
Orthoporoides laccatus (Attems, 1934)	Milky black millipede
Orthoporoides pontifex (Attems, 1928)	Leading black millipede
Orthoporoides pyrhocephalus (L. Kock, 1865)	Fire-headed black millipede
Orthoporoides zulu (Chamberlin, 1947)	Zulu black millipede



Figs 1, 2. Order Polydesmida: Family Dalodesmidae (Keeled millipedes): (1) Complex keeled millipede, *Allawrencius complex* Lawrence, 1953; (2) Lumpy keeled millipede, *Gnomeskelus tuberosus* (subspecies unknown).

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Fig. 3. Order Polydesmida: Family Gomphodesmidae (Soil millipedes): *Ulodesmus* sp.

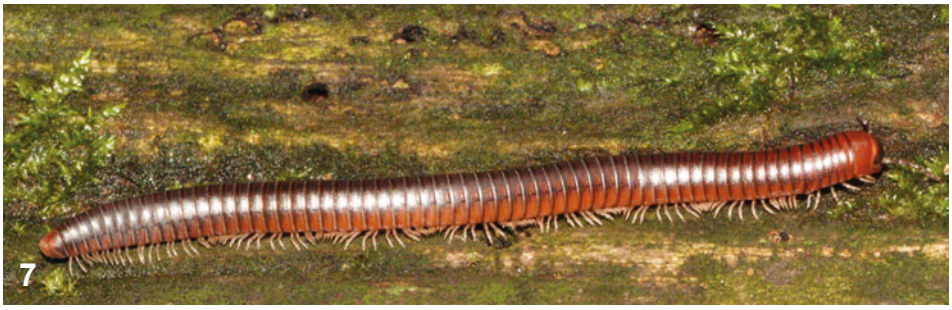


Fig. 4. Order Sphaerotheriida: Family Sphaerotheriidae (Pill millipedes): Giant pill millipede, *Sphaerotherium giganteum* Porat, 1872.

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Fig. 5. Order Spirobolida: Family Pachybolidae (Red millipedes): Bifid red millipede, *Centrobolus bifidus* (Lawrence, 1967).







Figs 6–8. Order Spirostreptida: (6) Family Harpagophoridae (Large spined millipedes): Short-lobed large spined millipede, *Zinophora brevilobata* (Attems, 1928); (7) Family Odontopygidae (Slender and two- spined millipedes): Forest slender spined millipede, *Spinotarsus silvarum* Kraus, 1960; (8) Family Spirostreptidae: *Camaricoproctus* sp.

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Figs 9, 10. Order Spirostreptida: Family Spirostreptidae (Black and shagreened millipedes): (9) Rattray's black millipede, *Doratogonus rattrayi* Hamer, 2009; (10) Corrugated black millipede, *Orthoporoides corrugatus* (Attems, 1934).

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