

The Diplopoda (Myriapoda) of Madagascar described by Henri de Saussure and Leo Zehntner

Authors: Hollier, John, and Wesener, Thomas

Source: Revue suisse de Zoologie, 124(1) : 53-65

Published By: Muséum d'histoire naturelle, Genève

URL: <https://doi.org/10.5281/zenodo.322665>

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

The Diplopoda (Myriapoda) of Madagascar described by Henri de Saussure and Leo Zehntner

John Hollier¹ & Thomas Wesener²

¹ Muséum d'histoire naturelle, C.P. 6434, CH-1211 Genève 6, Switzerland. E-mail: john.hollier@ville-ge.ch

² Zoologisches Forschungsmuseum Alexander Koenig, Leibniz Institute for Animal Biodiversity, Adenauerallee 160, D-53113 Bonn, Germany. E-mail: T.Wesener@zfmk.de

Abstract: Henri de Saussure and Leo Zehntner described 76 species of millipede in three publications on the fauna of Madagascar (including additions from other islands). These species are listed alphabetically; the holdings of the Muséum d'histoire naturelle de Genève and the whereabouts of type specimens identified in other institutions are discussed, and the currently valid combination is given for each species. *Spiroboles sikorae* is transferred to the genus *Hylekobolus*.

Keywords: Millipedes - Grandidier - Voeltzkow - Sikora - Geneva - Paris - type catalogue.

INTRODUCTION

The early Diplopoda collections of the Muséum d'histoire naturelle de Genève (MHNG) were greatly enriched by the material brought back from the expeditions of Henri de Saussure to Mexico and the Antilles in 1854-1856 and of Aloïs Humbert to Sri Lanka (then Ceylon) in 1858-1860.

Saussure published accounts of the species he had collected on his expedition (Saussure, 1859a, b, 1860). Humbert also published a monograph on the species he had collected (Humbert, 1865). They then collaborated on further publications, concentrating primarily on the fauna of the Americas (Humbert & Saussure, 1869a, b, 1870; Saussure & Humbert, 1872). Late in his career, assisted by Leo Zehntner, Saussure returned to the Myriapoda to bring Humbert's unfinished monograph on the Diplopoda of the Geneva region to publication (Humbert, 1893). Zehntner had been engaged as assistant in the MHNG in 1890, working there for four years. He returned for six months in 1900 to work as Saussure's personal assistant and went on to have a distinguished career as an applied entomologist in Java and Brazil (Hauser, 1972).

It was presumably this resumption of interest in the group that led to Saussure being asked to study the material collected for Grandidier's Madagascar series (associated with Muséum national d'Histoire naturelle in Paris) and by Voeltzkow's expedition to that island (associated with the Senckenberg Naturmuseum, Frankfurt). Since these publications form a distinct entity in both faunistic and stylistic terms, they are here considered first, and an

account of Humbert and Saussure's earlier works will be published elsewhere. In the publications considered here Saussure and Zehntner described 76 species of millipede, nearly all from Madagascar, the few exceptions coming from Zanzibar and the Seychelles.

Saussure & Zehntner's Madagascar publications are often cited with the date 1902 (see Krabbe, 1982 for example) but are actually three publications with different dates (Jeekel, 1971). The article on Voeltzkow's expedition (Saussure & Zehntner, 1901) appeared in September 1901 even though the fascicle in which it was published bears the date 1902. The first twelve plates associated with the volume in Grandidier's Madagascar series were published in 1897 and represent the first valid publication of the species names although not accompanied by a description (Saussure & Zehntner, 1897). The last three plates (13-15) appear to have been published together with the text (Saussure & Zehntner, 1902), contrary to the information on the title page preceding the plates which was also delivered with the text in 1902.

Many of the specimens are accompanied by identification labels giving only limited locality information; in many cases there are two such labels, one in pencil, in the handwriting of Zehntner or Jean Carl (MHNG assistant, curator and then assistant director between 1900 and 1943, and a distinguished Diplopoda taxonomist in his own right). Given that the labels appear to be contemporary with the descriptions, specimens with such labels are presumed to be types even if this is not explicitly stated on the label.

The nomenclature generally follows Enghoff (2003); changes made in subsequent revisions are mentioned in the text. The generic placement of some names remains uncertain and we follow Enghoff in placing some genus names in inverted commas or with a question mark.

ARRANGEMENT AND FORMAT

The species are listed alphabetically. The format for each is:

specific epithet Author, publication: page [*Original generic placement*].

Provenance as given in the original description, depository. Type series.

Number of specimens in the MHNG, label data of type specimens. Type specimens identified in other collections. Other information.

Currently valid combination

The following abbreviations are used in the list:

BMNH The Natural History Museum, London
MHNG Muséum d'histoire naturelle de Genève
MNHN Muséum national d'Histoire naturelle, Paris
NHMW Naturhistorisches Museum, Vienna
SMF Senckenberg Naturmuseum, Frankfurt
TW Thomas Wesener

The specimens in the MNHN have two series of specimen identification numbers; those in the online database that have the prefix MY and those previously applied in the collections that have the prefix CB, HC or HB. These are both cited where we have both numbers.

CATALOGUE

alluaudi Saussure & Zehntner, 1902: 58-60, pl. 15, fig. 8 [*Sphaerotherium*].

Madagascar. Fort Dauphin (leg. Alluaud, Musée de Paris). Unspecified number of ♂ and ♀.

The MHNG collection contains one ♀ specimen in alcohol under the name *Sphaerotherium alluaudi*. The identification labels have only "Madagascar" for the locality but the specimen is probably part of the type series. A ♂ specimen in the MNHN was designated as lectotype by Wesener & Sierwald (2005a: 8). There are also two ♀ paralectotypes in the MNHN (MNHN CB006/MY2925).

Zoosphaerium alluaudi (Saussure & Zehntner, 1902)

ambulator Saussure & Zehntner, 1897: pl. 7, fig. 8, pl. 9, fig. 31 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 243-246, pl. 14, fig. 12) gave a description of both sexes and the locality information "Madagascar. Robillard (Musée de Genève), M. Catat

(Muséum de Paris), Province d'Imerina (Sikora)." They also mention a specimen from Mauritius as a variety, but this should not be considered a syntype. The MHNG collection contains four specimens in alcohol in two jars under the name *Spirostreptus amubulator*. Both jars contain identification labels with "Madagascar" written on them. The jar with two ♂ and one ♀ also contains a tube with dissected parts including gonopods and the label "Sph. ambulator n." All of these specimens are presumably syntypes. The specimen from Mauritius, also stated to be in the MHNG in the original description could not be found. According to Krabbe (1982) there is type material in the MNHN, but the species is not listed in their online database.

A junior synonym of *Sechelleptus argus* (Attems, 1896)

anale Saussure & Zehntner, 1897: pl. 4, fig. 4 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 30-32) gave the description of the ♀ and the locality information "Antananarivo (British Museum, 2 ♀ adultes et des jeunes)." They also reported a ♀ from "Madagascar. Côte Sud-Ouest (Alfred Grandidier)." No specimens found in the MHNG. As the specimens from the BMNH are considered lost, the female specimen from the MNHN (MNHN CB007/MY2917) was selected as the lectotype by Wesener & Wägele (2008: 76).

Zoosphaerium anale (Saussure & Zehntner, 1897)

anomalum Saussure & Zehntner, 1902: 56, pl. 15, fig. 7 [*Sphaerotherium*].

Madagascar. Isaka (Muséum de Paris, récolté par M. Alluaud). One ♂.

No specimens found in the MHNG. The holotype is in the MNHN (MNHN CB009/MY2919) according to their online database and Wesener & Wägele (2008).

Zoosphaerium anomalum (Saussure & Zehntner, 1902)

antimena Saussure & Zehntner, 1901: 453-454, fig. 33 [*Spirostreptus*].

Insulis Nossibé et Sacatia leg. Voeltzkow. One broken ♂ and an unspecified number of ♀.

The MHNG collection contains two specimens in alcohol under the name *Spirostreptus antimena*. There is no data label but the identification labels have "Madagascar, Dr Voeltzkow" written on them, indicating that they are syntypes. There is also a vial with dissected gonopods in the jar. According to Krabbe (1982) there is type material in the SMF but their online database does not list this species.

Eumekius antimena (Saussure & Zehntner, 1897)

betaminena Saussure & Zehntner, 1897: pl. 10, fig. 38 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 274-276) gave a description of both sexes and the locality information "Madagascar.

Antananarivo (Sikora)". The MHNG collection contains parts of at least three specimens in alcohol under the name *Spirostreptus betaminena*. There is no data label, but the identification labels have "Madagascar" written on them. There is also a vial with the dissected gonopods of two specimens and the label "*Spirostreptus betaminena* S + Z ♂." These specimens are presumably syntypes.
Sechelleptus betaminena (Saussure & Zehntner, 1897)

betsilea Saussure & Zehntner, 1897: pl. 10, fig. 43 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901: 455-456, figs 47-49) gave a description of both sexes and the locality information "Madagascar occidentalis, Mayunga leg. Voeltzkow (Musée de Genève)". Saussure & Zehntner (1902: 263) stated that the specimens were deposited in the MHNG. The MHNG collection contains parts of at least three specimens in alcohol under the name *Spirostreptus betsileus*. There is no data label but the identification labels have "Madagascar occident." written on them. There is also a vial with dissected gonopods in the jar. These specimens are presumably all syntypes.

Charactopygus betsilea (Saussure & Zehntner, 1897)

bicolor Saussure & Zehntner, 1902: 227, pl. 15, fig. 14 [*Spirostreptus*].

There is no description to accompany the illustration, and in the text the name is simply presented as a junior synonym of *Spirostreptus fulgens* Saussure & Zehntner, 1901 before the description of the species. This strongly suggests that the plate was created some time before it was published in 1902. There are no specimens under this name in the MHNG.

A junior synonym of *Sechelleptus fulgens* (Saussure & Zehntner, 1901)

bivalvis Saussure & Zehntner, 1897: pl. 7, fig. 17 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 192-194) gave a description, the locality information "Madagascar. (leg. Dr Keller, musée de Genève)" and stated that they had one ♀. No specimens found in the MHNG. The whereabouts of the holotype is unknown. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

"*Spirostreptus*" *bivalvis* Saussure & Zehntner, 1897

blandum Saussure & Zehntner, 1902: 63-65, pl. 15, figs 9-10 [*Sphaerotherium*].

Madagascar. Col de Sakavalana (Muséum de Paris, Alluaud), Andrahomana. Three ♂.

The MHNG collection contains one specimen in alcohol under the name *Sphaerotherium blandum*. Both of the identification labels in the jar have "Madagascar" written on them. The jar also contains a vial with dissected telopods and the label "Sph. blandum n." indicating

that the specimen is part of the type series. According to their online database the MNHN have the two syntypes collected by Alluaud (MY2921 and MY2922); the mature male at the MNHN (CB011) was referred to as the holotype and the immature male as paratype by Wesener & Wägele (2008: 63); the male used for their redescription was designated as lectotype by Wesener (2016: 83).

Zoosphaerium blandum (Saussure & Zehntner, 1902)

caelebs Saussure & Zehntner, 1897: pl. 2, fig. 7, pl. 9, fig. 27 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 255-258) gave the description of the ♂, stating that they had one immature specimen, and the locality information "Madagascar (Muséum de Paris)". No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN, but it is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

"*Spirostreptus*" *caelebs* Saussure & Zehntner, 1897

campanulatum Saussure & Zehntner, 1897: pl. 4, fig. 6 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 28-30) gave a description and the locality information "Madagascar. Côte Sud-Ouest (Alfred Grandidier 1 ♂)". The MNHN online database lists the holotype (MY2926). The MHNG collection contains a card mount associated with the label "*Sphaerotherium campanulatum* S & Z ♂ Madagascar" but the mount has a ♀ second pair of legs showing the vulvas, and is clearly not part of the type series.

Zoosphaerium campanulatum (Saussure & Zehntner, 1897)

collaris Saussure & Zehntner, 1897: pl. 11, fig. 45 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 119-121), placing the species in the genus *Rhinocricus*, gave a description of the ♀ and the locality information "Madagascar, 3 ♀ récoltées par A. Grandidier (Muséum de Paris)." However, the original description gives measurements for four individuals. The MHNG collection contains one pinned specimen under the name *Rhinocricus collaris*. This specimen has the labels "Madagascar, Grandidier", "*Spirobolus collaris* S & Z ♀" and "No=39" indicating that it is a syntype. The MNHN has two female syntype specimens (Wesener *et al.*, 2009b: 119) under the number MNHN HB015. The genus *Rhinocricus* is the type genus of the family Rhinocricidae, a family never subsequently recorded from Madagascar (Marek *et al.*, 2003). As all known specimens are females, the real generic and family placement of this species remains uncertain.

"*Rhinocricus*" *collaris* (Saussure & Zehntner, 1897)

colossus Saussure & Zehntner, 1897: pl. 7, fig. 9, pl. 10, fig. 39 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 240-243) gave a description of the ♀ and the locality information “Madagascar. Une seule femelle capturée sur la côte Ouest de l’île par Alfred Grandidier.” No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN but it is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” **colossus** Saussure & Zehntner, 1897

convolutus Saussure & Zehntner, 1897: pl. 2, fig. 10, pl. 6, fig. 3 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901) gave a description of both sexes and the locality information “Madagascar (Grandidier et Voeltzkow)”. The MHNG collection contains two specimens (one ♂ and one ♀) in alcohol under the name *Spirostreptus convolutus*. One of the identification labels reads “*Spirostreptus convolutus* Sss. et Zt., Type!, Madagascar, Dr Voeltzkow leg.” indicating that they are syntypes. The Grandidier specimen(s) are presumably in the MNHN but are not listed in their online database. No specimens are listed in the SMF online database.

A junior synonym of *Sechelleptus pyrhoneus* (Gerstäcker, 1873)

coquerellianum Saussure & Zehntner, 1897: pl. 1, fig. 2, pl. 5, fig. 11, [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 42-45, pl. 15, fig. 1) gave a description and the locality information “Madagascar. (Muséum de Paris, 2 ♀ de grande taille, 1 ♀ and 2 ♂ moins grand, collectés par Coquerel)” for the type series. After the description they also discussed a number of smaller or damaged specimens, including some in the MHNG, but these probably cannot be considered syntypes. The MHNG collection contains four pinned specimens and two in alcohol under the name *Sphaerotherium coquerellianum*. The pinned specimens are accompanied by a card mount with one the ♀ second pair of legs showing the vulva, glued to it and “*Sphaerotherium coquerellianum*, ♀ 2° piece” written on it. The leg is much too large to be associated with the specimens present and must be part of one of the syntypes. The other dry specimens are probably amongst the small specimens mentioned but not syntypes. The identification labels in the jar have “Madagascar” written on them and these specimens may be part of the type series. The material at the MNHN contained six ♂ type specimens (MNHN CB034), one of which was selected as a lectotype by Wesener & Wägele (2008: 22). Additional material at the MNHN that was potentially part of the type series are one ♂ and eight ♀ (MNHN CB035) all leg. Grandidier (n°

217), and one ♂ and one ♀ (MNHN CB036), all of these specimens having been labelled in the same handwriting. *Zoosphaerium coquerellianum* (Saussure & Zehntner, 1897)

corallipes Saussure & Zehntner, 1902: 143-146, pl. 15, fig. 3 [*Spirobolus*].

Madagascar. Fort Dauphin (Muséum de Paris, M. Ch. Alluaud). Three ♂ and one ♀.

The MHNG collection contains one specimen in alcohol under the name *Spirobolus corallipes*. One of the identification labels has the locality “♂ Madagaskar Fort Dauphin” written on it, indicating that it is part of the type series. There is a vial with dissected parts including gonopods in the jar. There is a label indicating that the specimen was studied by Hoffman, and that he identified the genus as *Aphistogoniulus*. Wesener *et al.* (2009a: 36) designated a ♂ in the MNHN as lectotype, and one ♀ and one immature as paralectotypes (MNHN HB020).

Aphistogoniulus corallipes (Saussure & Zehntner, 1902)

coriaceus Saussure & Zehntner, 1901: 450, fig. 34 [*Spirostreptus*].

Insula Nossibé, lectus Voeltzkow. Unspecified number of ♂ and ♀.

Saussure & Zehntner (1902: 215-217, pl. 14, fig. 11) gave the same information. The MHNG collection contains two specimens in alcohol under the name *Spirostreptus coriaceus*. There is no data label but the identification labels have “Nosibé” written on them and the specimens are presumably syntypes. The MNHN online database lists two syntypes (MY1829), although the specimens are reported to have been collected by Grandidier. According to Krabbe (1982) there are type specimens in the SMF, although these are not listed in their online database.

Sechelleptus coriaceus (Saussure & Zehntner, 1901)

curvicauda Saussure & Zehntner, 1897: pl. 8 fig. 24 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 126) placed this name in synonymy with *S. urophorus* Pocock, 1893. They state that the illustrations were based on three ♀ collected by Lantz in the Seychelles and deposited in the MNHN. Nevertheless, the MHNG collection contains one specimen in alcohol under the name *Spirobolus urophorus* with two identification labels that indicate that it is a syntype of *S. curvicauda*. The MNHN online database lists one specimen (MY9803) which is presumably another syntype although not explicitly stated to be one. A junior synonym of *Eucarlia urophorus* (Pocock, 1893)

dauphini Saussure & Zehntner, 1902: 228-230, pl. 15, fig. 15 [*Spirostreptus*].

Madagascar. Fort Dauphin (M. Alluaud). Unspecified number of ♂ and ♀.

The MHNG contains one specimen in alcohol under the

name *Spirostreptus dauphini*. There is no data label, but one of the identification labels has “Madagascar, Fort Dauphin” written on it, indicating that it is a syntype. There is also a vial containing the gonopods in the tube. According to Krabbe (1982) there are type specimens in the MNHN but their online database does not list this species.

Sechelleptus dauphini (Saussure & Zehntner, 1902)

digitale Saussure & Zehntner, 1897: pl. 5, fig. 16 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 55-56) give the description of the ♂ and the locality information “Madagascar. Tananarive (Muséum de Paris, M. Catat).” No specimens found in the MHNG. The MNHN have a ♂ specimen (MNHN CB019) referred to as the holotype by Wesener & Wägele (2008: 10).

A junior synonym of *Zoosphaerium neptunus* (Butler, 1872)

dorsopunctatus Saussure & Zehntner, 1901: 441-442, figs 12-13 [*Spirobolus*].

Insula Nossibé. Fragments of unspecified number of ♂ and ♀.

No specimens found in the MHNG. The whereabouts of the type specimens is unknown. Shelley & Lehtinen (1999) placed this name in synonymy with the common tropical tramp species *Trigoniulus corallinus* (Gervais). A junior synonym of *Trigoniulus corallinus* (Gervais, 1841)

dorsovittatus Saussure & Zehntner, 1901: 446-447, figs 28-32 [*Pygodon*].

Ile Nossibé, récoltés par le Dr A. Voeltzkow. Two ♂ and two ♀.

Saussure & Zehntner (1902: 167-170; pl. 13, fig. 7) gave the similar information but did not specify the number of specimens. The MHNG collection contains two specimens in alcohol under the name *Pygodon dorsovittatus*. There is no data label but the identification labels in the jar have “Nosibé, Voeltzkow” written on them, indicating that they are part of the type series. The head, several segments and the gonopods of the ♂ are in a vial in the jar. Wesener & Enghoff (2009: 85) designated the ♂ as lectotype and the ♀ as paralectotype.

Spiromimus dorsovittatus (Saussure & Zehntner, 1901)

exaratus Saussure & Zehntner, 1902: 279, pl. 15, fig. 18 [*Spirostreptus*].

Madagascar, sommet de Ivohitsombé. Ch. Alluaud, Muséum de Paris. One immature ♂.

No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN, but it is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” *exaratus* Saussure & Zehntner, 1902

fangaroka Saussure & Zehntner, 1901: 452-453, fig. 35 [*Spirostreptus*].

Insula Nossibé, leg. Voeltzkow. Unspecified number of ♂ and ♀.

The MHNG collection contains parts of at least two specimens in alcohol under the name *Spirostreptus fangaroka*. The specimens are together in a vial, and there is a second vial containing gonopods in the jar. The two identification labels in the jar have the localities “Madagascar” or “Nosibé” written on them, and the specimens are presumably syntypes. According to Krabbe (1982) there is type material in the NHMW.

Isophyllostreptus fangaroka (Saussure & Zehntner, 1901)

fraternum Saussure & Zehntner, 1897: pl. 5, fig. 10 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 50-51) gave a description of the ♀, stating that they had one specimen, and the locality information “Madagascar (Muséum de Paris, M. Catat).” No specimens found in the MHNG. According to their online database and Wesener & Wägele (2008: 71) the holotype is in the MNHN (CB024/MY2940). The name is a junior homonym of *S. fraternum* Butler, 1872 and has therefore been replaced.

Zoosphaerium fraternarium Jeekel, 1999 (replacement name)

fulgens Saussure & Zehntner, 1897: pl. 10, fig. 40 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901: 449; fig. 37) gave a description of the ♀ and the locality information “Madagascar occidentalis (Dr Voeltzkow).” The MHNG collection contains three specimens in alcohol under the name *Spirostreptus fulgens*. One of the identification labels has “♀ Madagascar” written on it, but the other has “♂♀ Madagascar” and the jar also contains two vials with dissected parts; one with gonopods, the other with a gnathochilarium (which was mentioned in the description as the Unterlippe). It is probable that the ♀ specimen with dissected mouthparts is a syntype. According to Krabbe (1982) there is type material in the SMF, but it is not listed in their online database.

Sechelleptus fulgens (Saussure & Zehntner, 1897)

globiclunis Saussure & Zehntner, 1897: pl. 7, fig. 13 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 227-228) gave a description of the ♀ and the locality information “Madagascar. Alfred Grandidier (Muséum de Paris).” No specimens found in the MHNG.

According to Krabbe (1982) there is type material in the MNHN, but this is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” *globiclunis* Saussure & Zehntner, 1897

globulus Saussure & Zehntner, 1897: pl. 4, fig. 3 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 34-36) gave a description of the ♂ and the locality information “Nosy Bé (Muséum de Paris).” The MHNG collection contains one specimen in alcohol under the name *Sphaerotherium globulus*. There is also a vial containing the ends of the telopods in the jar. Both identification labels in the jar have “♂ Nosibé” written on them, indicating that the specimen is a syntype. The MNHN has one ♂ specimen (MNHN CB025/MY2941), that was identified as conspecific with *Z. voeltzkowianum* (Saussure & Zehntner, 1897) by Wesener & Wägele (2008: 43), and designated as lectotype by Wesener (2016: 83).

A junior synonym of *Zoosphaerium voeltzkowianum* (Saussure & Zehntner, 1897)

grandidieri Saussure & Zehntner, 1897: pl. 9, fig. 33 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 141-143) gave a description of both sexes and the locality information “Madagascar. 1 ♂ jeune et 2 ♀ récoltés par M. Grandidier”. The MHNG collection contains parts of two specimens in alcohol under the name *Spirobolus grandidieri*. Both identification labels have “♂♀ Madagascar” written on them, and there is also a printed label reading “TYPE”, indicating that they are syntypes. The MNHN has one ♀ specimen labelled “type” (MNHN HC001).

Spirobolus (*Trigoniulus*) *grandidieri* Saussure & Zehntner, 1897

grandidieri Saussure & Zehntner, 1897: pl. 10, fig. 41 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 232-234) gave a description of the ♀, stating that they had one specimen, and the locality information “Madagascar. Alfred Grandidier.” No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN, but it is not listed in their online database.

A junior synonym of *Seychelleptus pyrhoneus* (Gerstäcker, 1873)

hova Saussure & Zehntner, 1897: pl. 5, fig. 23 [*Polydesmus*].

Illustration without description.

Saussure and Zehntner (1901: 436-437) placed the species in the subgenus *Polydesmus* (*Pterodesmus*), gave a cursory description and the locality information “Nosibé”. Saussure & Zehntner (1902: 91-93) placed the species in the subgenus *Polydesmus* (*Tubercularium*), and gave a description of both sexes and the locality “Madagascar (Sikora) 1 ♀ et plusieurs ♂. D’autres ♀ de Nosibé récoltés par le docteur Voeltzkow”. Since the original illustrations of 1897 included ♂ characters, the

specimens collected by Sikora must be part of the type series. The MHNG collection contains six specimens in alcohol in two jars under the name *Tubercularium hova*. The identification labels in the first jar, with four specimens in three vials, have “Madagascar (Sikora)” written on them. The identification labels in the second jar, with two specimens in separate vials, have “Nosibé, Dr Voeltzkow” written on them. These specimens are all syntypes. Golovatch & Hoffman (1989) refer to syntypes in the SMF, but these are not listed in the SMF online database.

Dalodesmus hova (Saussure & Zehntner, 1897)

hova Saussure & Zehntner, 1897: pl. 11, fig. 44 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 146-150) gave a description of both sexes and the locality information “Madagascar. Divers ♂ and 1 ♀ récoltés par M. Grandidier. D’autres mâles récoltés par M. Lanz et par M. Catat (Muséum de Paris). The MHNG collection contains four specimens in alcohol in two jars under the name *Spirobolus hova*. One contains one specimen and a vial containing the gonopods. The identification labels have “♂ Madagascar” written on them, and there is a separate label reading “Type.” This specimen is presumably one of the type series. There is also a label indicating that Hoffman studied the specimen and considered that the specimens belonged to the genus *Aphistogoniulus*. The other jar contains much more recently collected and identified specimens which are obviously not part of the type series. Wesener *et al.* (2009: 34) designated a ♂ specimen in the MNHN as lectotype.

Aphistogoniulus hova (Saussure & Zehntner, 1897)

hova Saussure & Zehntner, 1897: pl. 4, fig. 7, pl. 7, fig. 11 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901: 454-455, figs 43-46) gave a description of the ♂ and the locality information “Madagascar (Sikora); Nosibé (Voeltzkow).” The MHNG collection contains five specimens in alcohol in two jars under the name *Spirostreptus hova*. One jar, containing three specimens, has “Nosibé, Dr Voeltzkow” written on the identification labels, indicating that they are syntypes. The other contains an identification label indicating that the specimens were determined by Carl and are thus not part of the type series. According to Krabbe (1982) there is type material in the SMF but it is not listed in their online database.

A junior synonym of *Charactopygus atratus* (Karsch, 1881)

imbecillum Saussure & Zehntner, 1897: pl. 5, fig. 20 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 60-61) gave a description

of both sexes and the locality information “Nosy Bé (Muséum de Paris).” The MHNG collection contains two specimens in alcohol under the name *Sphaerotherium imbecillum*. The jar also contains a vial with the ends of the telopods and a label “*Sphaerotherium imbecillum* Sss. & Z. ♂”. Both identification labels in the jar have only “Madagascar” written on them, but there is no reason to suppose that these are not syntypes. There are two ♂ syntypes in the MNHN (MNHN CB031). This name, together with *Z. globulus*, was placed as a junior synonym of *Z. voeltzkowianum* by Wesener & Wägele (2008: 43); the MNHN specimen used for their redescription was designated as lectotype by Wesener (2016: 83).

A junior synonym of *Zoosphaerium voeltzkowianum* (Saussure & Zehntner, 1897)

labialis Saussure & Zehntner, 1897: pl. 10, fig. 42 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 268-269) gave a description of the ♀ and the locality information “Nosy Bé. Espèce récoltée par M. Humblot (Muséum de Paris).” The number of specimens is not given, but in discussing the variation they mentioned “les petits individus” indicating more than one. The MHNG collection contains two specimens in alcohol under the name *Spirostreptus labialis*. The identification labels in the jar have “Nosibé” written on them and the specimens are presumably syntypes. According to Krabbe (1982) there is type material in the MNHN, but this is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” *labialis* (Saussure & Zehntner, 1897)

leprosus Saussure & Zehntner, 1897: pl. 7, fig. 14 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 239-240) gave a description of the ♀ and the locality information “Madagascar. Fianarantsoa, 1 ♀ et un second individu incomplet (Musée de Genève).” No specimens found in the MHNG. The whereabouts of the type specimens is unknown. This is not *S. leprosus sensu* Attems (1914) who, according to Jeekel (1999), misidentified a specimen of *S. macilentus*. *Sechelleptus leprosus* (Saussure & Zehntner, 1897)

libidinosum Saussure & Zehntner, 1897: pl. 4, fig. s, pl. 15, fig. 2 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 69-72) gave a description and stated that they had several specimens of both sexes from “Madagascar, collectés par Alfred Grandidier, par Coquerel (Muséum de Paris) et par Sikora (Musée de Genève)” as well as some immature specimens “de la côte occidentale récoltés par M. Voeltzkow.” The MHNG collection contains nine pinned specimens. The six larger specimens have a label reading “Madagascar” on the pin,

and one ♂ and one ♀ have identification labels. They are accompanied by two card mounts, one with telopods glued to it, the other with a ♀ second pair of legs, each with an identification label. The three smaller specimens are each labelled “WEST MADAGASC.” and “VOELTZKOW” and have identification labels. One ♂ has a card mount on the pin with the telopods glued to it and one ♀ has a card mount on the pin with the second pair of legs glued to it. There is a third card mount with a ♀ second pair of legs glued to it and an identification label, but it is not clear which specimen this belongs with. There are also ten specimens in alcohol in two jars under the name of *Sphaerotherium libidinosum*. One jar with four specimens has “Madagascar” written on the identification labels. The other with seven specimens, one separated in a vial, a vial containing parts of a pair of telopods, also has “Madagascar” written on the identification labels. All of these specimens are presumably part of the type series. There are also a number of more recently collected and identified specimens in alcohol under the name *Zoosphaerium libidinosum*; these are clearly not part of the type series. The MNHN online database lists 13 syntypes in three lots (MY2965, MY2966 and MY2969), one ♂ (MNHN CB034) was selected as the lectotype by Wesener & Wägele (2008: 22), while five other ♂ became paralectotypes. Two additional vials (MNHN CB035 & 036) with one ♂ and eight ♀ and one ♂ and one ♀, respectively, were also determined as paralectotypes.

Zoosphaerium libidinosum (Saussure & Zehntner, 1897)

macilentus Saussure & Zehntner, 1897: pl. 6, fig. 4 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 220-222) gave a description of the ♂ and the locality information “Ile Maurice. Robillard (Musée de Genève).” The MHNG collection contains one specimen in alcohol under the name *Spirostreptus macilentus*. The jar also contains a vial with the gonopods in it. One of the identification labels has “Ile Maurice” written on it and the other has “Madagaskar.” It seems likely that the latter is a *lapsus calami* and that the specimen is a syntype.

Sechelleptus macilentus (Saussure & Zehntner, 1897)

madecassus Saussure & Zehntner, 1897: pl. 3, fig. 1, pl. 4, fig. 12 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 252-255) gave a description of both sexes and the locality information “Madagascar. 1 ♂ récolté par le Dr Coquerel; 2 ♀ des Iles Seychelles de très grande taille, récoltées par Rousseau (Muséum de Paris).” No specimens found in the MHNG. According to Krabbe (1982) the type material is in the MNHN, but it is not listed in their online database.

A junior synonym of *Sechelleptus seychellarum* (Desjardins, 1835)

malagassum Saussure & Zehntner, 1897: pl. 6, fig. 2 [*Polyzonium*].

Illustration without description.

Saussure & Zehntner (1902: 285-287) gave a description of both sexes and the locality information “Madagascar. Plusieurs ♀ et un ♂ récoltés par A. Grandidier (Muséum de Paris). Nosy Bé. Une ♀ capturée par le docteur Voeltzkow”. The MHNG collection contains three ♀ specimens in alcohol (currently on loan) under the name *Polyzonium malagassum*. These specimens are presumably part of the type series. According to their online database there are types (one ♂ and five ♀; MY2843) in the MNHN; the ♂ was selected as the lectotype by Wesener (2014: 588), who placed the name in synonymy with the widespread tropical tramp *Rhinotus purpureus* (Pocock, 1894).

A junior synonym of *Rhinotus purpureus* (Pocock, 1894)

metazonalis Saussure & Zehntner, 1902: 224, pl. 15, fig. 17 [*Spirostreptus*].

Madagascar. Col de Sakavalaba (Muséum de Paris, Ch. Alluaud). One ♂.

No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN, but it is not listed in their online database.

Sechelleptus metazonalis (Saussure & Zehntner, 1902)

micromelas Saussure & Zehntner, 1897: pl. 9, fig. 29 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 218-220) gave a description of the ♂ and the locality information “Madagascar. Sikora 2 ♂ (Musée de Genève)”. The MHNG collection contains two broken specimens in alcohol under the name *Spirostreptus micromelas*. There is also a vial containing a number of fragments including the front of a head, a gnathochilarium and a single gonopod. Both identification labels in the jar have “Madagascar” and one has “Sikora” written on it, indicating that the specimens are syntypes.

Spirostreptus micromelas Saussure & Zehntner, 1897

moramangae Saussure & Zehntner, 1897: pl. 9, fig. 25 [*Alloporus*].

Illustration without description.

Saussure & Zehntner (1902: 175-178) gave a description of both sexes and the locality information “Madagascar. Antananarivo, forêt de Moramanga (F. Sikora 3 ♀, 1 ♂: Musée de Genève).” The MHNG collection contains parts of at least three specimens in alcohol under the name *Alloporus moramangae*. There is a vial with dissected parts, including the gonopods, in the jar. The identification labels both have “Madagascar” written on them and the specimens are presumably syntypes.

Sechelleptus moramangae (Saussure & Zehntner, 1897)

musicus Saussure & Zehntner, 1897: pl. 6, fig. 1 [*Sphaeropoeus*].

Illustration without description.

Saussure & Zehntner (1902: 75-77) gave a description, the locality information “Madagascar, récolté par A. Grandidier” and stated that they had seen at least one ♂. The single male specimen at the MNHN (CH038), collected by A. Grandidier and lacking the telopods, was selected as the lectotype (Wesener & Sierwald, 2005b). The MHNG collection contains dissected parts including the telopods glued to a card mount with the labels “Madagascar, Grandidier” and “*Sphaeromimus musicus* S et Z ♂” on the pin and the label “musicus S et Z, org. copul. ♂, organes de stridulation, Madagascar” pinned in the box next to it; these are probably part of the lectotype. *Sphaeromimus musicus* (Saussure & Zehntner, 1897)

nigrita Saussure & Zehntner, 1897: pl. 6, fig. 6 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 210-212), using the orthography *nigritus*, gave a description of both sexes and the locality information “Madagascar. Antananarivo (F. Sikora): plusieurs individus ♀, 1 ♂ (Musée de Genève)”. The MHNG collection contains parts of more than ten specimens in alcohol under the name *Spirostreptus nigrita*. Many of the specimens are broken; four parts, presumably all from the ♂, have been placed in a vial separately from the rest. The identification labels in the jar have only “Madagascar” written on them, but the specimens are presumably syntypes.

Sechelleptus nigritus (Saussure & Zehntner, 1897)

phthisticus Saussure & Zehntner, 1902: 213-214, pl. 15, fig. 16 [*Spirostreptus*].

Madagascar. Fort Dauphin (Muséum de Paris, M. Alluaud). One ♂.

No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN but it is not listed in their online database.

Spirostreptus phthisticus Saussure & Zehntner, 1902

pictus Saussure & Zehntner, 1897: pl. 8, fig. 20 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 234-236) gave a description of the ♂, stating that they had one specimen, and the locality information “Madagascar. Tananarive, M. Catat (Muséum de Paris).” No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN, but it is not listed in their online database.

Spirostreptus pictus Saussure & Zehntner, 1897

piliger Saussure & Zehntner, 1897: pl. 5, fig. 19 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 36-38, pl. 15, fig. 4), using

the orthography *piligerum*, gave a description and the locality information “Madagascar (Muséum de Paris 2 ♂ récoltés par M. Catat. Musée de Genève 2♂)”. The MHNG collection contains two pinned specimens and one specimen in alcohol under the name *Sphaerotherium piliger*. Both pinned specimens have identification labels but no data labels, and both have a card mount on the pin with dissected parts glued to it; in one case the head and telopods, in the other parts of the telopods. The jar containing the specimen in alcohol contains identification labels with “Madagascar” written on them. These are presumably all part of the type series. The only male specimen in the MNHN (MY2973/CB040) was referred to as the holotype by Wesener & Wägele (2008: 57) and was designated as lectotype by Wesener (2016: 84).

Zoosphaerium piligerum (Saussure & Zehntner, 1897)

platylabum Saussure & Zehntner, 1897: pl. 5, fig. 9, pl. 15, fig. 5 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 54-55) gave a description of the ♂ and the locality information “Madagascar. Tananarive (Muséum de Paris, M. Catat).” The MHNG collection contains a pair of telopods in alcohol under the name *Sphaerotherium platylabum*. A label in the vial containing the parts reads “S. platylabum S. et Z., org. copul.” It seems very likely that this is part of the specimen in the MNHN (CB041/ MY2974) referred to as the holotype by Wesener & Wägele (2008: 50), who noted that the anterior telopods were missing.

Zoosphaerium platylabum (Saussure & Zehntner, 1897)

praslina Saussure & Zehntner, 1897: pl. 10, fig. 37 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 124-126), using the orthography *S. (Spiromanes) praslinus*, gave a description, the locality information “Iles Seychelles - Port Praslin, récoltés par M. Alluaud (Muséum de Paris)” and stated that they had seen two ♂ and two ♀. No specimens found in the MHNG. The MNHN online database indicates three specimens (MY9480) which are presumably syntypes although not explicitly stated to be. As the only available male type specimen is immature, Mauriès (1980) compared it to a juvenile *Spirostrophus naresi*, a synonym of the widespread tramp *Leptogoniulus sorornus* (Butler, 1876) and found that they are allospecific.

Spirobolus praslinus Saussure & Zehntner, 1897

priapus Saussure & Zehntner, 1897 pl. 4, fig. 5 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 61-63) gave a description of both sexes but no indication of the type locality or collector. No specimens found in the MHNG. The single ♀ specimen at the MNHN (CB042/MY2975) was

designated as lectotype by Wesener & Wägele (2008: 30).

Zoosphaerium priapus (Saussure & Zehntner, 1897)

prozonalis Saussure & Zehntner, 1902: 231 [*Spirostreptus*].

Madagascar (Musée de Genève). One ♀.

The MHNG collection contains one ♀ specimen in alcohol under the name *Spirostreptus prozonalis*. The jar contains a data label “Ouest-Madagascar, M Voeltzkow.” This specimen is presumably the holotype. The generic placement of this species is uncertain.

“Spirostreptus” prozonalis Saussure & Zehntner, 1902

pygidiale Saussure & Zehntner, 1897: pl. 5, fig. 8, pl. 14, fig. 22 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1902: 32-33) gave a description, the locality information “Madagascar. Fianarantsoa (A. Grandidier, plusieurs individus de la partie orientale). Tananarive (Muséum de Paris, M. Catat). Ile Maurice (Robillard, musée de Genève)” and indicated that they had seen many specimens. The MHNG collection contains 12 pinned specimens under the name *Sphaerotherium pygidiale*. There are four specimens labelled “Ile Maurice Robillard”, and four pinned specimens without locality labels on the pins but with “Madagascar (doubles Grandid.)” written on the species name label in the box. Two card mounts on separate pins with dissected parts glued to them are placed with these specimens, each with an identification label; one is correctly labelled as the second pair of legs of a ♀, showing the vulvas, the other is of the same part but incorrectly labelled as ♂. These specimens are clearly part of the type series. There are four more specimens, one of which has the label “Madagascar, Robillard”, which have been identified (although only two have identification labels) as a ♂ variety, presumably the one mentioned in the description of 1902. These specimens should not be regarded as syntypes. There are also two specimens in alcohol under the name *Sphaerotherium pygidiale*, accompanied by a vial containing five pairs of telopods, some broken. The identification labels in the jar have “Madagascar” written on them and the specimens are presumably part of the type series. The MNHN online database lists five syntypes in three lots (MY2976, MY2977 and MY2978) in their collection, of which one ♂ (MNHN CB043) was designated as the lectotype by Wesener & Wägele (2008: 10).

A junior synonym of *Zoosphaerium neptunus* (Butler, 1872)

radamae Saussure & Zehntner, 1897: pl. 9, fig. 32 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 269-272) gave a description of both sexes and the locality information “Madagascar,

Antananarivo, Ankarata (altitude 2,000 pieds) [F. Sikora] (Musée de Genève).” The MHNG collection contains body parts of at least ten specimens in alcohol under the name *Spirostreptus radamae*. The specimens are in one tube, and a separate vial contains gonopods and a gnathochilarium labelled as ♂ and a gnathochilarium labelled as ♀, the two sexes being separated by a cotton wool plug. The identification labels have only “Madagascar” written on them but these specimens are presumably syntypes.

Charactopygus radamae (Saussure & Zehntner, 1897)

rubripes Saussure & Zehntner, 1897: pl. 11, fig. 48 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 154-155; pl. 13, fig. 6) gave a description of both sexes and the locality information “Madagascar. Forêts d’Andrangoloaka (Fr. Sikora). Plusieurs individus adultes ♂ et ♀.” The MHNG collection contains six specimens in alcohol under the name *Spirobolus rubripes*. The specimens are in one tube, with a second vial containing a partially dissected head and a pair of gonopods. Two identification labels in the jar have “Madagascar (Sikora)” written on them, indicating that they are part of the type series. Wesener *et al.* (2009b: 40) designated a ♂ specimen in MNHN as the lectotype and one ♂ and two ♀ as paralectotypes (MY9723).

Zehntnerobolus rubripes (Saussure & Zehntner, 1897)

sakalava Saussure & Zehntner, 1897: pl. 5, fig. 22 [*Polydesmus*].

Illustration without description.

Saussure & Zehntner (1901: 437; figs 8-10) placed the species in the subgenus *Polydesmus* (*Pterodesmus*), gave a cursory description and the locality information “Nossibé”. Saussure & Zehntner (1902: 93, pl. 14, fig. 20) placed the species in the subgenus *Polydesmus* (*Tubercularium*), gave a description of the ♂ and the locality information “Ile de Nosy Bé (Voeltzkow), 1 ♂. Madagascar (Grandidier), 1 ♀ mutilée”. The MHNG collection contains one ♀ in alcohol under the name *Phymatodesmus sakalava*. The specimen is broken and the identification label in the vial in which it is contained has “♀ Madagascar (Sikora)” written on it. This specimen is probably not a syntype, but the species is not listed in the online databases of the SMF or the MNHN and a *lapsus calami* cannot be ruled out.

Eutubercularium sakalava (Saussure & Zehntner, 1897)

sakalava Saussure & Zehntner, 1897: pl. 11, fig. 46 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 138-140; pl. 13, fig. 1) gave a description of the ♀ and a juvenile ♂, the latter as a variation which means that it should not be considered a syntype. They also gave the locality information “Madagascar. Forêt de Moyamanga (F. Sikora).” The

MHNG collection contains two specimens in alcohol under the name *Spirobolus sakalava*. The ♀ specimen is loose in the jar, the ♂ is in a vial. The identification labels have only “Madagascar” written on them, but there is little doubt that these specimens are part of the type series, and there is a label reading “TYPE” in the jar. Wesener *et al.* (2009a: 38) designated the ♀ specimen in the MNHN (MY6573) as lectotype.

Aphistogoniulus sakalava (Saussure & Zehntner, 1897)

sakalava Saussure & Zehntner, 1897: pl. 9, fig. 28 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901: 456-457, figs 50-52) gave a description of both sexes and the locality information “Madagascar occidentalis (♀ ♂ a Voeltzkow lecti).” No specimens found in the MHNG. According to Krabbe (1982) the type material is in the SMF, but it is not listed in their online database.

Charactopygus sakalava (Saussure & Zehntner, 1897)

sansibaricum Saussure & Zehntner, 1901: 437-438, fig. 11 [*Strongylosoma*].

Zanzibar, Kokotoni, leg. Voeltzkow. Two ♂.

The MHNG contains one specimen in alcohol under the name *Strongylosoma sansibarica*. The specimen is in a vial, and there is also a micro vial containing two gonopods. The identification labels in the jar have “Zanzibar Dr Voeltzkow” written on them, indicating that the specimen is a syntype. An undated typed label states that Hoffman examined the specimen, regarding it as a type but was uncertain of the generic placement. The other syntype is presumably in the SMF but it is not listed in their online database.

Strongylosoma sansibaricum Saussure & Zehntner, 1902

scabricollis Saussure & Zehntner, 1897: pl. 8, fig. 23 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 199-200) gave a description of both sexes and the locality information “Madagascar - M. Catat et M. Lantz (Muséum de Paris)”. No specimens found in the MHNG. According to Krabbe (1982) the type material is in the MNHN, but it is not listed in their online database.

Sechelleptus scabricollis (Saussure & Zehntner, 1897)

sculptus Saussure & Zehntner, 1897: pl. 7, fig. 10 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 201-204) gave a description of the ♂ and the locality information “Madagascar. 1 ♂ récolté par M. Lantz (Muséum de Paris)”. No specimens found in the MHNG. According to Krabbe (1982) there are type specimens in the MNHN and the NHMW. The species is not listed in the MNHN online database, or in Enghoff (2003).

Spirostreptus sculptus Saussure & Zehntner, 1897

seychellarum Saussure & Zehntner, 1897: pl. 8, fig. 21, pl. 10, fig. 36 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 122-124) gave a description, the locality information “Iles Seychelles, récoltés M. Lantz (Muséum de Paris)” and stated that they had seen three ♂ and one ♀. The generic placement was given as *Spirostreptus* in plate 8, *Spirobolus* in plate 10 and *Spirobolus* (*Spiromanes*) in the description. No specimens found in the MHNG. The MNHN online database lists three specimens (MY3516) which are presumably syntypes although not explicitly stated to be. *Spiromanes seychellarum* (Saussure & Zehntner, 1897)

sikorae Saussure & Zehntner, 1897: pl. 10, fig. 35 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1902: 136-137) gave a description of the ♀ and the locality information “Madagascar. Récoltées par F. Sikora, 2 ♀ (Musée de Genève).” The MHNG collection contains two specimens in alcohol under the name *Spirobolus sicoranus*. They are in separate tubes, and accompanied by a vial containing a gnathochilarium. The identification labels in the jar have “Madagascar” written on them. There is also a label reading “TYPE” and a 2012 TW identification label. A label in one of the tubes indicated that it was intended to designate a lectotype, but this designation has not been published. The new generic placement follows TW’s 2012 determination of the specimens.

Hylekobilus sikorae (Saussure & Zehntner, 1897) **comb. nov.**

spinipes Saussure & Zehntner, 1897: pl. 9, fig. 30 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 204-205) gave a description of the ♀ and the locality information “Madagascar. M. Catat (Muséum de Paris).” No specimens found in the MHNG. According to Krabbe (1982) the type material is in the MNHN, but it is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” *spinipes* Saussure & Zehntner, 1897

stridulator Saussure & Zehntner, 1902: 66-67, pl. 15, fig. 6 [*Sphaerotherium*].

Madagascar. Col de Sakavalana, leg. Alluaud (Muséum de Paris). One ♂.

No specimens found in the MHNG. The MNHN has a single ♂ (MY2981/CB045) identified as the holotype by Wesener & Wägele (2008: 63).

A junior synonym of *Zoosphaerium blandum* (Saussure & Zehntner, 1902)

sulcicollis Saussure & Zehntner, 1897: pl. 2, fig. 8, pl. 7, fig. 18 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 196-199) gave a description of both sexes and the locality information “Madagascar ♂♀ (Alfred Grandidier) – Petit individus (Sikora).” No specimens found in the MHNG. According to Krabbe (1982) there is type material in the MNHN, although this is not listed in their online database.

Sechelleptus sulcicollis (Saussure & Zehntner, 1897)

tricolor Saussure & Zehntner, 1902: 272-274 [*Spirostreptus*].

Madagascar, leg. Catat (Muséum de Paris). One ♀.

No specimens found in the MHNG. According to Krabbe (1982) the holotype is in the MNHN although it is not listed in their online database. The generic placement is uncertain.

?*Charactopygus tricolor* (Saussure & Zehntner, 1902)

univirgatus Saussure & Zehntner, 1897: pl. 11, fig. 47 [*Spirobolus*].

Illustration without description.

Saussure & Zehntner (1901: 444-445; figs 16-19, 56-58) placed this species in the genus *Spiromimus*. They gave a description of both sexes and the locality information “Madagascar, 1 ♀ adulta. Insula Nossibé, ♂ Dr. Voeltzkow legit.” No specimens found in the MHNG or MNHN. The syntypes are presumably in the SMF, but they are not listed in their online database.

Spiromimus univirgatus (Saussure & Zehntner, 1897)

vagabundus Saussure & Zehntner, 1897: pl. 7, fig. 7, pl. 8, fig. 22 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 179-181) placed the species in the genus *Thyropygus*. They gave a description of both sexes and the locality information “Madagascar (Muséum de Paris), ♀ ♂ jeunes. Sumatra, Lahat (Musée de Genève) 2 ♀.” The MHNG collection contains one specimen in alcohol under the name *Thyropygus vagabundus*. There is a vial containing the gnathochilarium in the jar. The identification labels in the jar have “♀ Sumatra” written on them, indicating that the specimen is a syntype. The MNHN presumably has other syntypes but these are not listed in their online database. According to Enghoff (2003) the Madagascar provenance of *T. vagabundus* is probably an error.

Thyropygus vagabundus (Saussure & Zehntner, 1897)

vermiculus Saussure & Zehntner, 1897: pl. 9, fig. 26 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1901: 457-458, figs 53-55) gave a description of both sexes and the locality information “Madagascar occidentalis. Individua plurima a Voeltzkow lecta.” The MHNG collection contains parts of at least three specimens in alcohol under the name *Spirostreptus vermiculus*. The specimens are in a tube

and there is a smaller vial containing a pair of gonopods and two gnathochilaria. One of the identification labels in the jar has “Madagascar occid.” written on it, indicating that these specimens are syntypes.

Eumekius vermiculus (Saussure & Zehntner, 1897)

versicolor Saussure & Zehntner, 1897: pl. 7, figs 15-16, pl. 8, fig. 19 [*Spirostreptus*].

Illustration without description.

Saussure & Zehntner (1902: 236-239) gave a description of both sexes and the locality information “Madagascar. ♀ ♂ jeunes récoltés par M. Catat (Muséum de Paris): plusieurs ♀ et un jeune ♂ récoltés par le Dr Keller (Musée de Genève).” The MHNG contains one ♀ specimen in alcohol under the name *Spirostreptus versicolor*. The jar also contains a vial containing the gnathochilarium. The identification labels in the jar have “Madagascar” written on them, and the specimen is presumably a syntype. The whereabouts of the other specimens collected by Keller is unknown. According to Krabbe (1982) there is type material in the MNHN, but this is not listed in their online database.

Spirostreptus versicolor Saussure & Zehntner, 1897

voeltzkowi Saussure & Zehntner, 1901: 445-446, figs 20-26 [*Spiromimus*].

Insulae Nossibé et Satakia (Voeltzkow legit). Unspecified number of ♂ and ♀.

Saussure & Zehntner (1902: 164-166, pl. 13, fig. 5) gave the same information about the type series, but placed the species in the genus *Spirobolus* (*Spiromimus*). The MHNG collection contains six specimens in alcohol under the name *Spirobolus voeltzkowi*. Four specimens are placed in one tube with a vial containing gonopods and an identification label with “Satakia island, Voeltzkow” written on it. One specimen in its own tube has an identification label with “Satakia island Voeltzkow” written on it. One specimen in its own tube has an identification label with “Nossibé Voeltzkow” written on it, the head and several attached segments, and the gonopods are in a separate vial in the tube. These are all part of the type series. Wesener & Enghoff (2009: 84) designated the ♂ from Nossibé as the lectotype and an immature specimen in the MNHN as paralectotype (MY9804).

Spiromimus voeltzkowi Saussure & Zehntner, 1901

voeltzkowianum Saussure & Zehntner, 1897: pl. 5, fig. 21 [*Sphaerotherium*].

Illustration without description.

Saussure & Zehntner (1901: 435-436; figs 6-7 and 36) gave a description of both sexes and the locality information “Madagascar. Plusieurs individus de Nosy Bé, récoltés par le docteur Voeltzkow.” The same information is given in Saussure & Zehntner (1902: 52-53, pl. 14, fig. 8, pl. 15, fig. 3). The MHNG collection contains two pinned specimens and six specimens in alcohol (accompanied by a vial containing a broken

pair of telopods) under the name *Sphaerotherium voeltzkowianum*. One of the pinned specimens has the labels “VOELTZKOW”, “WEST MADAGASC.” and an identification label, and is clearly part of the type series. There is a card mount with the second pair of legs showing the vulvas on the pin. The other is a smaller specimen and the identification label has a question mark on it; this specimen cannot be considered a type. One of the identification labels in the jar has “Madagascar, Dr Voeltzkow” written on it, indicating that these specimens are part of the type series. The one male specimen in the MNHN was designated as lectotype (MNHN CB046) and the two females as paralectotypes by Wesener & Wägele (2008: 43). The rest of the type series is presumably in the SMF but the species is not listed in their online database. The MHNG collection also has a much more recently collected and identified specimen in alcohol under the name *Zoosphaerium voeltzkowianum* which is obviously not part of the type series.

Zoosphaerium voeltzkowianum (Saussure & Zehntner, 1897)

xanthopus Saussure & Zehntner, 1901: 450-451 [*Spirostreptus*].

Madagascar occidentalis leg. Voeltzkow. Unspecified number of ♀.

No specimens found in the MHNG. According to Krabbe (1982) the type material is in the MNHN, but it is not listed in their online database. Considered a nomen dubium by Krabbe (1982). The generic placement is uncertain.

“*Spirostreptus*” *xanthopus* Saussure & Zehntner, 1901

ACKNOWLEDGEMENTS

Thanks are due to Anita Hollier and Peter Schwendinger for comments on the text, and to Bernd Hauser for information about the history of the collection.

REFERENCES

- Enghoff H. 2003. Diplopoda, millipedes (pp. 617-627). In: Goodman S.M., Benstead J.P. (eds). The Natural History of Madagascar. University of Chicago Press, Chicago & London. xxi + 1709 pp.
- Golovatch S.L., Hoffman R.L. 1989. Identity of *Polydesmus hamatus* Brandt, 1841, a Malagasy milliped (Diplopoda Polydesmida Dalodesmidae). *Tropical Zoology* 2: 159-164.
- Hauser B. 1972. Leo Zehntner: La Saga d'un savant suisse. *Musées de Genève* 127: 3-6.
- Humbert A. 1865. Essai sur les Myriapodes de Ceylan. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* 18: 1-62.
- Humbert A. 1893. Myriapodes des environs de Genève. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* 32: 1-92, plates 1-14.

- Humbert A., Saussure H. de 1869a. Myriapoda nova Americana. *Revue et Magasin de Zoologie pure et appliquée* 21: 149-159.
- Humbert A., Saussure H. de 1869b. Description de divers Myriapodes du Musée de Vienne. *Verhandlungen der Kaiserlich-Königlichen Zoologisch-Botanischen Gesellschaft in Wien* 19: 669-693.
- Humbert A., Saussure H. de 1870. Myriapoda nove americana. Description de divers Myriapodes nouveaux du Musée de Vienne. *Revue et Magasin de Zoologie pure et appliquée* 22: 172-177, 202-205.
- Jeekel C.A.W. 1971. Nomenclator generum et familiarum Diplopodorum: A list of the genus and family-group names in the Class Diplopoda from the 10th edition of Linnaeus, 1758, to the end of 1957. *Monografieën van de Nederlandse Entomologische Vereniging* 5: i-xii, 1-412.
- Jeekel C.A.W. 1999. A new *Sechelleptus* from Madagascar, with a key to the species of the genus (Diplopoda-Spirostreptida). *Myriapod Memoranda* 1: 45-57.
- Krabbe E. 1982. Systematik der Spirostrepidae (Diplopoda, Spirostreptomorpha). *Abhandlungen des Naturwissenschaftlichen Vereins in Hamburg* 24: 1-467.
- Marek P.E., Bond J.E., Sierwald P. 2003. Rhinocricidae systematics II: a species catalogue of the Rhinocricidae (Diplopoda: Spirobolida) with synonymies. *Zootaxa* 308: 1-108.
- Mauriès J.-P. 1980. Contributions à l'étude de la faune terrestre des îles granitiques de l'archipel des Séchelles (Mission P.L.G. Benoit - J.J. Van Mol 1972). *Myriapoda - Diplopoda. Revue zoologique africaine* 94(1): 138-168.
- Saussure H. de 1859a. Note sur la famille des Polydesmides, principalement au point de vue des espèces américaines. *Linnaea Entomologica* 13: 318-27.
- Saussure H. de 1859b. Diagnose de divers Myriapodes nouveaux. *Linnaea Entomologica* 13: 328-332.
- Saussure H. de 1860. Essai d'une faune des myriapodes du Mexique. *Mémoires de la Société de Physique et d'Histoire Naturelle de Genève* 15: 261-391.
- Saussure H. de, Humbert A. 1872. Etudes sur les Myriapodes. In: Milne Edwards H. (ed.). Mission scientifique au Mexique et dans l'Amérique Centrale, ouvrage publié par ordre du Ministre de l'Instruction Publique. Recherches Zoologiques, publiées sous la direction de M. Milne Edwards, Membre de l'Institut. Sixième partie, seconde section. Paris, Imprimerie Nationale. 211 pp.
- Saussure H. de, Zehntner L. 1897. Myriapodes de Madagascar. *Histoire physique, naturelle et politique de Madagascar* 27(53): plates 1-12.
- Saussure H. de, Zehntner L. 1901. Myriopoden aus Madagaskar und Zanzibar. *Abhandlungen der Senckenbergischen Naturforschenden Gesellschaft* 26: 425-460, plates 39-40.
- Saussure H. de, Zehntner L. 1902. Myriapodes de Madagascar. *Histoire physique, naturelle et politique de Madagascar* 27(53): i-viii, 1-356, plates 13-15.
- Shelley R.M., Lehtinen P.T. 1999. Diagnoses, synonymies and occurrences of the pantropical millipeds, *Leptogoniulus sorornus* (Butler) and *Trigoniulus corallinus* (Gervais) (Spirobolida: Pachybolidae: Trigoniulinae). *Journal of Natural History* 33(9): 1379-1401.
- Wesener T. 2014. Redescription of '*Polyzonium*' *malagassum*, a new synonym of *Rhinotus purpureus* (Pocock, 1894), with notes about the occurrence of the order Polyzoneiida on Madagascar (Diplopoda). *Zootaxa* 3790(4): 587-594.
- Wesener T. 2016. The Giant Pill-Millipedes, order Sphaerotheriida – An annotated species catalogue with morphological atlas and list of apomorphies. *Bonn zoological Bulletin - Supplementum* 63: 1-104.
- Wesener T., Enghoff H. 2009. Revision of the millipede subfamily Spiromiminae, a Malagasy group with Indian connections? (Diplopoda Spirobolida Pachybolidae). *Tropical Zoology* 22: 71-120.
- Wesener T., Sierwald P. 2005a. New giant pill-millipede species from the littoral forest of Madagascar (Diplopoda, Sphaerotheriida, *Zoosphaerium*). *Zootaxa* 1097: 1-60.
- Wesener T., Sierwald P. 2005b. The giant pill-millipedes of Madagascar: Revision of the genus *Sphaeromimus*, with a review of the morphological terminology (Diplopoda, Sphaerotheriida, Sphaerotheriidae). *Proceedings of the California Academy of Sciences Fourth Series*, 56(29): 557-599.
- Wesener T., Wägele J.-W. 2008. The giant pill-millipedes of Madagascar: revision of the genus *Zoosphaerium* (Myriapoda, Diplopoda, Sphaerotheriida). *Zoosystema* 30(1): 5-85.
- Wesener T., Enghoff H., Hoffman R.L., Wägele J.-W., Sierwald, P. 2009a. Revision of the endemic giant fire millipedes of Madagascar, genus *Aphistogoniulus* (Diplopoda: Spirobolida: Pachybolidae). *International Journal of Myriapodology* 1: 15-52.
- Wesener T., Enghoff H., Sierwald P. 2009b. Review of the Spirobolida on Madagascar, with the description of twelve new genera, including three genera of "fire millipedes" (Diplopoda). *ZooKeys* 19: 1-128.