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STUDIES ON SPIROBOLOID MILLIPEDS. XI. ON THE STATUS OF SPIROBOLUS NATTERERI HUMBERT & DESAUSSURE, 1870, AND SOME SPECIES TRADITIONALLY ASSOCIATED WITH IT (RHINOCRICIDAE)[1]

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ABSTRACT

Examination of the holotype of Spirobolus Nattereri *Humbert & DeSaussure (1870) reveals that ever since the interpretation of this name by Brolemann in 1902 it has been associa- the with a totally unrelated species, which is renamed* Rhinocricus schubarti *(type locality Bahia, Brasil). The true* nattereri, *the gonopods of which are illustrated for the first time, occurs in southern Mato Grosso and Goiás, and is a senior synonym of* Rhinocricus nidicola *Schubart, 1951.*

Like so many other millipeds described without reference to gonopod structure during the last century, *Spirobolus Nattereri* has been a source of confusion and error for over a hundred years.

Validated by a brief description printed in 1870, the name was based upon a single male specimen taken at Caiçara, Brasil, by the famous Austrian collector Johann Natterer and sent by him to the Naturhistorisches Museum in Vienna. Two years later the specimen was described in detail and its external features depicted in several elegant lithographic drawings (Humbert & DeSaussure, 1872). Regrettably, here too the genitalia were passed over without attention.

In 1889, C. O. von Porat applied the name to two specimens in the Brussels Museum said to have come from Buenos Aires, and although his description of these animals coincides closely with that of Humbert & DeSaussure, it is now generally appreciated that spiroboloids virtually identical in external form may differ considerably in gonopod structure. If the specimens studied by Porat did originate in Argentine, that is additional reason to doubt their conspecificity with the type of *nattereri*.

The role of this name as a source of error began in 1902, when H. W. Brolemann attached it to a series of rhinocricids from Bahia in the collection of the former "Museu Paulista", giving a good description and excellent figures (although those of the gonopods were misleading, as discussed in a subsequent paragraph). Judged from Brolemann's tabular data on size and segment number, this Bahian species has 63 to 67 segments in the adult stage, and from 119 to 125

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pairs of legs. The type of *nattereri* was stated to have, however, 54 segments, and Brolemann might have regarded such a difference as one of specific value save that one of his specimens had only 52. Considering its small size (63 mm) and low leg count (95 pairs), it is reasonable to think that this animal was immature and therefore misleading. In any event, Brolemann's interpretation of *nattereri* became the standard for the species and has not been questioned down to the present.

In 1902 Brolemann also proposed a new variety called *Rhinocricus nattereri varians* for specimens from São Paulo, distinguished from the nominate form by differences in color, size, segment number, shape of the epiproct, and minor details of gonopod shape. The number of segments was appreciably lower than for the misidentified *"nattereri"*: 58-60 in adults opposed to 63-67, with a corresponding reduction in pairs of legs, 107-111 as against 119-125.

After an eclipse of some 35 years, the name *nattereri* reappeared in a paper by K. W. Verhoeff (1938) in connection with the description of a new Brasilian rhinocricid, *Rhinocricus nattereri padbergi.* This form ("vielleicht um eine von *nattereri* zu trennende Art") was distinguished chiefly by its unusually elongated and only slightly curved telopodite of the posterior gonopod – the corresponding structure in both nominate *nattereri* and *varians* being figured by Brolemann as being shorter and curved nearly into a semicircle. Incredibly, although Verhoeff correctly suspected that the curvature was only an artifact resulting from treatment in caustic solution, he nonetheless proceeded to use it as a primary "key character" by which to justify his new taxon *padbergi.*

Otto Schubart was more conscientious in this respect, and in his summary of Brasilian rhinocricids published in 1951 included a short essay "Sobre a preparação dos gonopodios" which emphasized the importance of not treating these appendages in potassium hydroxide. He moreover noted the impracticability of separating *nattereri, varians,* and *padbergi* by gonopod structure, there being no appreciable differences.

Schubart's paper represented a major step forward in the knowledge of Brasilian rhinocricids, in that it gave new drawings for some of Brolemann's species, described a number of new ones, and provided keys and brief treatments of all rhinocricids known from the state of São Paulo. It is only to be regretted that he relied in the first line upon the length of the epiproct (considerably, slightly, or not surpassing the paraprocts) in forming species-groups, which are very heterogeneous as a result. Still the value of this work as a basic reference cannot be denigrated.

Amongst the members of Group I appear both *R. padbergi* and *R. varians,* both elevated to full specific rank (the first-named had already been so exalted by Schubart himself in 1944), probably because the relatively short epiproct of *"nattereri"* (sensu Brolemann) qualified it for placement in Group II. Schubart gave new drawings of the gonopods made from a syntype male of *varians,* and proposed to distinguish it from *padbergi* chiefly because of differences in color and size of the scobinae. Schubart also redescribed Brolemann's material of *"nattereri"* and provided good drawings of unmacerated gonopods.

Where, during all this time, was the original type of *nattereri?* Safely on a shelf in the Vienna Museum, where it had been totally disregarded by Graf Attems even when he worked up E. Bresslau's Brasilian myriapods (reported in 1943, with the concept of *nattereri* still drawn from Brolemann's paper rather than from the immediately accessible type!). In 1975, as the result of personal dissatisfaction with various facets of the foregoing transactions involving the name *nattereri,* I took the occasion to examine the specimen - fortunately an adult male - and discovered it to be strikingly different from the Bahia species which had carried its name since 1902.

Unfortunately, this examination had been postponed until the last day of my visit to the Vienna collection, and last-minute urgency resulted in failure to examine the scobinae. However, drawings of the gonopods were made, and appear here as Figures 1 and 2.

Rhinocricus nattereri (Humbert & DeSaussure)
(Figs. 1, 2)

Spirobolus Nattereri Humbert & DeSaussure, 1870: 176; 1872: 77, pl. III, fig. 11 (Holotype male, Naturh. Mus. Wien, from Caiçara, Brasil).
Rhinocricus nidicola Schubart, 1951: 268, figs. 37, 38 (Holotype male, MZUSP, from the Rio Salobra near Miranda, Mato Grosso, Brasil). New Synonymy!

Composite diagnosis: Medium sized rhinocricids (length to 82 mm, diameter to 7.2 mm) with 54 to 56 segments. Color blackish, metazona with posterior edge yellowish-brown. Antennae with numerous sensory cones. Scobinae small, beginning on segment 8, extending back nearly to segment 50. Segments virtually smooth. Epiproct prolonged into a triangular point slightly exceeding the compressed mesal margins of paraprocts. Sternal plate of anterior gonopods subtriangular, almost equilateral, sides slightly convex, apex blunt, equally or very slightly surpassing the broadly rounded apices of coxal lobes; telopodite small, mostly concealed by the coxa in anterior aspect, apically uncate (Fig. 1). Telopodite of posterior gonopods moderately elongate and slender, solenomerite originating at distal two-thirds of length, slender, nearly straight, apically a little spatulate; outer branch terminating in a fine, acutely triangular projection, with a prominent rounded subterminal lobe (Fig. 2).

R. nattereri is so far known only from the interior of Brasil, Mato Grosso and Goiás (the latter state justified in a subsequent paragraph).

The telopodite of the posterior gonopod is notable in that the solenomerite is the longer of the two distal branches (reminiscent of the condition typical of *Argentocricus*), while the outer branch is provided with a prominent rounded subterminal lobe. The anterior gonopods, moreover, are highly singular in form because of the *broadly rounded* apices of the coxal lobes. Generally, throughout the family, these lobes are acute or even spiniform when seen in anterior aspect, a form so pervasive that a departure such as seen in *nattereri* is remarkable.

By an interesting coincidence, Schubart himself described a Brasilian species with almost identical gonopods in his 1951 paper, just one page ahead of his treatment of *"nattereri."* This is *R. nidicola,* based on a series taken in the southern part of Mato Grosso. The description of body form agrees in all points with that of *nattereri,* and the only perceptible difference in gonopod structure is that the tip of the telopodite of the posterior gonopod is recurved proximad in *nidicola* (perhaps the result of dehydration during preparation). There can be little doubt that the two names are based upon the same species of milliped.

The type localities are fully compatible. Natterer's Caiçara (16°03'5, 57°43'W) is on the northern part of the "pantanal" of Mato Grosso (across the Rio Paraguai from Cáceres). Schubart's locality (20°11'S, 56°31'W) is on the southern part of the same region.

The present restriction of the name *nattereri* leaves the species from Bahia misidentified as *nattereri* by Brolemann presently innominate, and I here propose a new name appropriately memorializing the great contributions to Brasilian myriapodology made by the late Dr. Schubart.

Rhinocricus schubarti, sp. n.

Rhinocricus nattereri (nec Humbert & DeSaussure) Brolemann, 1902: 191, figs. 238-242 (material from Bahia). – Verhoeff, 1938: 278 (name only). – Schubart, 1951: 269, figs. 39, 40 (redescription of Bahia specimens).

Holotype: Adult male (MZUSP) from Bahia, Brasil, 8 August 1896; this is the largest male listed by Brolemann, with 67 segments and 125 pairs of legs. Other members of this series are topoparatypes (2♂♂, 6♀♀).

Diagnosis: A medium-sized Brasilian rhinocricid (length 60-100 mm, diameter, 5 to 7 mm), with 63 to 67 segments; epiproct slightly exceeding mesal edges of paraprocts; scobinae unusually small, separated by a distance equal to three times the width of one scobina; pseudosuture fine, eusuture more prominent. Solenomerite with laciniate edge; telopodite apically broadly rounded and spatulate, with a very feeble terminal filament. For shape of anterior gonopods, refer to Schubart's Fig. 40 (1951).

Comment: As asserted by Brolemann in 1902 and subsequently confirmed by Schubart, this species appears most closely related, among known Brasilian species, to *R. varians* Brolemann from São Paulo; perhaps the two taxa are only subspecifically distinct. This point cannot be settled without examination of samples from intervening localities and is moreover complicated by the status of *padbergi,* thought by Schubart to be a synanthropic form of uncertain origin.

It may be unnecessary to remind that the present use of *Rhinocricus* for these Brasilian species is, strictly speaking, incorrect since that generic name is applicable only to a small group of species endemic to Cuba and Puerto Rico. Until the conflicting claims of *Anadenobolus* Silvestri, 1897, and *Thyroproctus* Pocock, 1894, have been mediated, the great majority of the Neotropical rhinocricids remain in a sort of generic limbo and are placed in *Rhinocricus* solely as a measure of expediency.

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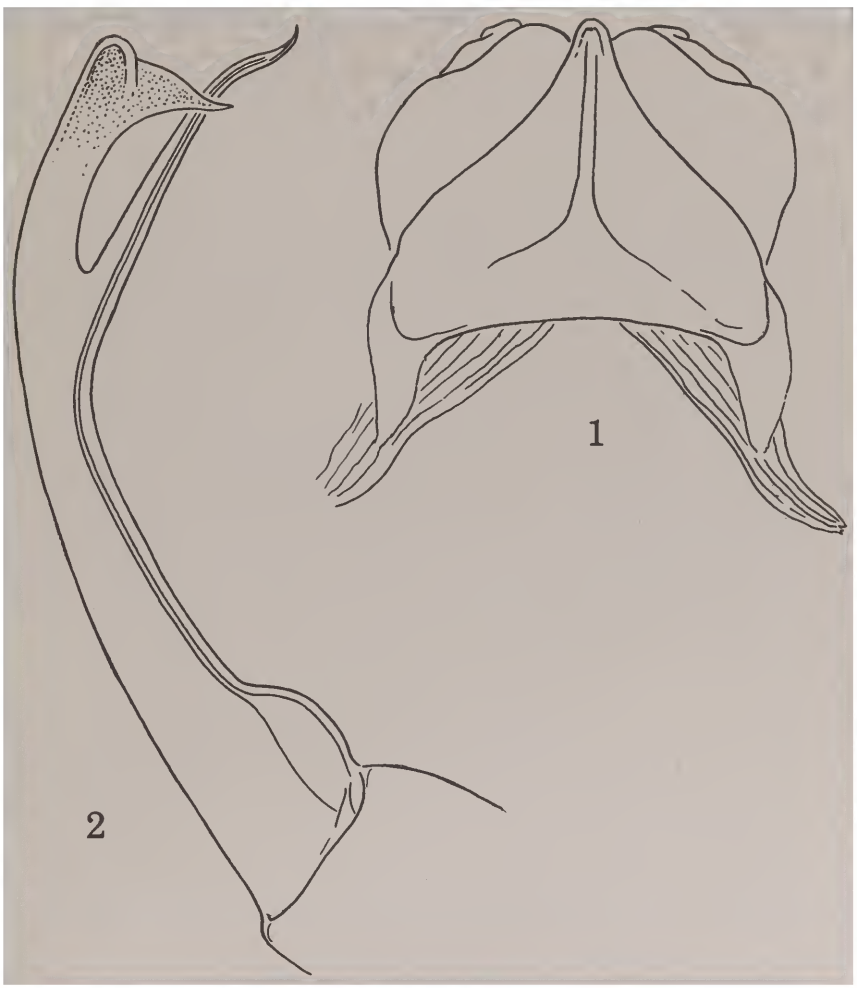

Rhinocricus nattereri (Humbert & DeSaussure), gonopods of male holotype. 1, anterior gonopod, oral aspect. 2, telopodite of posterior gonopod, drawn at a higher magnification than Fig. 1.