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On the identity of two enigmatic Hispaniolan millipeds (Spirobolida: Rhinocricidae)

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ABSTRACT

The types of two old spiroboloid taxa from Hispaniola are reviewed in the context of modern classifications. *Julus haitensis* Gervais, 1847 (Museum National d'Histoire National, Paris) and *Julus domingensis* DeSaussure & Humbert, 1872 (Museum d'Histoire Naturelle, Genève) can be referred to more recently described species: *J. haitensis* is the senior synonym of *Rhinocricus latespargor* Loomis, 1941, and becomes type of the new genus *Haitobolus* (Rhinocricidae) which includes also *R. lethifer* Loomis, 1936. *J. domingensis* is placed in *Alcimobolus* (Rhinocricidae) as the senior synonym of *A. angustipes* Loomis, 1936.

INTRODUCTION

Several of the earliest names proposed for West Indian millipeds have remained more or less uncertain because the original descriptions did not describe or illustrate male genitalia, upon which both specific and generic categories later came to be based. Some, in the absence of type material, can only be settled by some arbitrary ("best-guess") solution, as Loomis (1936) proposed in the case of *Julus indus* (sensu Palisot de Beauvois, 1805-1821, not Linnaeus 1758): matching the original description with material taken from or near the type area. In other cases, type specimens have been available but were not consulted by the first generation of synthesizers, in this case, Pocock, Chamberlin, and Loomis. Two species in this second category have haunted the literature on Antillean millipeds for many decades: *Julus haitensis* Gervais, 1847, and *Spirobolus domingensis* DeSaussure & Humbert, 1872.

The first name was based on a large male spiroboloid from "Saint-Domingue"

in the collections of the MNHN (Paris). It was later (1860) used by DeSaussure for specimens from the same island but which differed from Gervais' description in several ways. In the same paper DeSaussure himself (1860: 106) suspected his own identification, and a decade later (1872) the new name *Spirobolus domingensis* was proposed by DeSaussure & Humbert for the two syntypes preserved in the Geneva museum.

Pocock (1894) and Chamberlin (1918) referred *domingensis* to *Rhinocricus*, without having seen actual specimens. In his key to the West Indian species of that genus, Pocock (1894: 486) placed *domingensis* in the same couplet with his new species *R. maltzani*, and for that reason, Loomis (1936) tentatively included it along with *maltzani* in *Nesobolus*.Apparently neither this name nor *haitensis* has been mentioned subsequent to 1936.

MATERIAL AND SYSTEMATICS

In connection with previous studies on Gervaisian types, one of us (JPM) examined the specimens labeled as *haitensis* in the collection of the MNHN which consisted of two samples:

1) Two (lectotype male and lectoparatype female - Collection Myriapodes H.159) identified by Gervais. The male is fragmented and incomplete, lacking the head and consisting of only 41 segments (of the 54 indicated by Gervais), maximum diameter 10 mm. Fortunately the gonopods are present in good condition.The female, although likewise fragmented, is complete, with a length of 163 mm and diameter of 13 mm; the number of segments (54) and ocelli are as given by Gervais. Both individuals are labelled "Iulus Haitensis Gerv. Haiti M. Ricord".

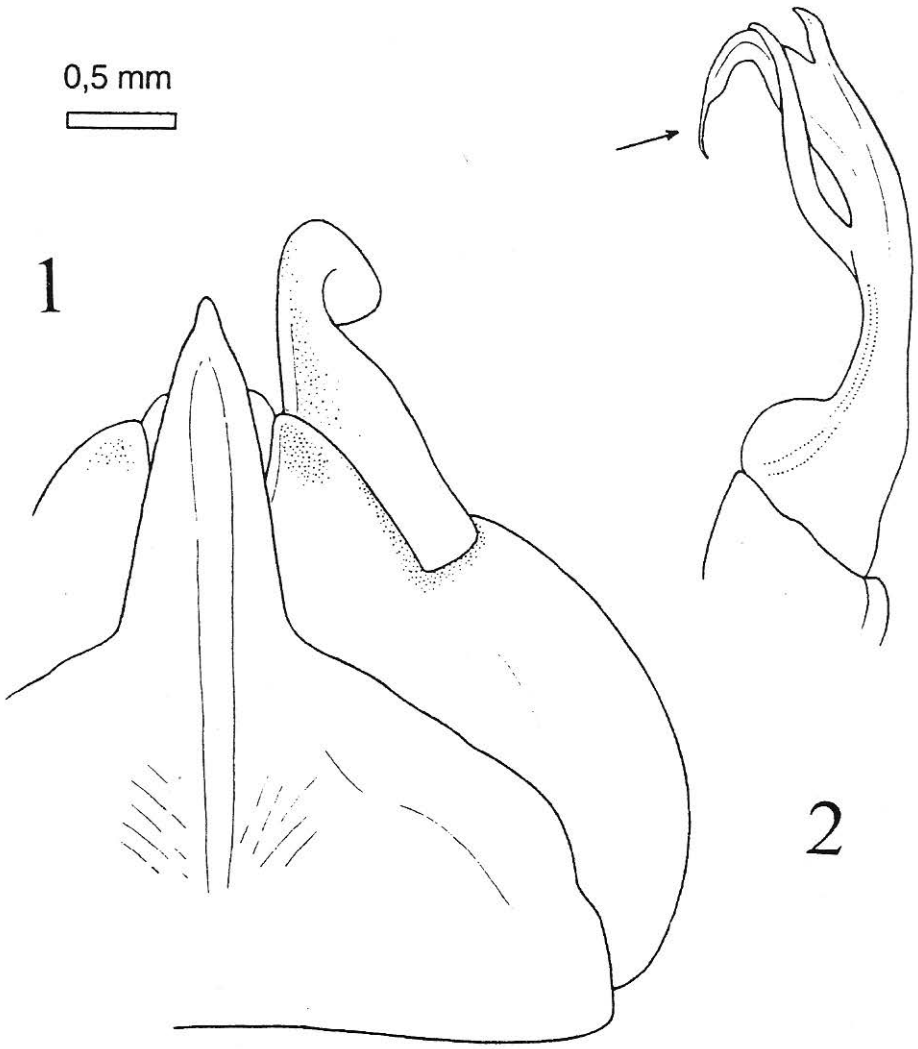
Examination of the male shows that it is conspecific with Loomis's type series of *Rhinocricus latespargor*. The gonopods (Figs. 1, 2) appear identical with those figured by Loomis, even to the minute distal attenuation of the subterminal telopodite branch, indicated by the arrow on Fig. 2.

The species appears to be very closely related to the equally large *Rhinocricus lethifer* (Loomis, 1936), also endemic to the southern peninsula of Haiti. These two rhinocricids share a distinctive form in the posterior gonopod, quite different from that in the more speciose Caribbean genus *Anadenobolus*. Besides their great size and gonopodal characters, both species share the remarkable behavioral and physiological ability of ejecting their defensive allomones in fine jets, up to a meter in length. We believe that these two species warrant sequestration in a distinct genus, proposed in a subsequent paragraph.

2) Another pair (Collection Myriapodes H.128) identified after 1861 as *haitensis* sensu DeSaussure by an anonymous worker: perhaps Gervais or a successor at the museum, or even by DeSaussure himself. The male is 93 mm in length with a

diameter of 9 mm, it has 46 segments with conspicuous scobinae on segments 14 to 20. It is labeled "Saint-Domingue Sallé 1-61 (locality, collector, year of registration at the museum). Although the gonopods were not removed, it is obvious that they are identical with those figured by Loomis (1936: fig. 23) for his *Alcimobolus angustipes*. The female also has 46 segments and is 95 mm long and 10.5 mm in diameter; it is labeled "Haiti -Saint-Domingue 1-61" without indication of collector or donor.

In suspecting that this later *Iulus haitensis* (sensu DeSaussure, 1860) could be conspecific with *Spirobolus domingensis*, we examined the male holotype of that



Figs. 1,2. *Haitobolus haitensis* (Gervais), gonopods of lectotype. 1, Anterior gonopods, anterior aspect. 2, Posterior gonopod.

taxon, deposited in the Muséum d'Histoire Naturelle de Genève, kindly loaned by Dr. Bernd Hauser, curator of Arthropods and Lower Insects in that institution.

The gonopods of this specimen had been removed, presumably by J. Carl (*fide* Hauser, personal comm.). As shown by our figures 3 and 4, these agree very closely with those published by Loomis (1936) for *angustipes*, and there is correspondence with external features as well: 46 body segments with weak scobinae on 15 to 20; length 84 mm, diameter 8.6 mm. There can be no doubt that the names *domingensis* and *angustipes* are based upon the same species of millipcd.

The foregoing information is summarized in the following formal taxonomic presentations:

Haitobolus, new genus

Type species: *Julus haitensis* Gervais, 1847, by present designation. The genus also includes the closely related *Rhinocricus lethifer* Loomis, 1936.

Diagnosis: Extremely large rhinocricids (length to 180 mm in length, with diameter up to 22.5 mm), characterized by the form of the posterior gonopod (Fig. 2); telopodite basally narrow, distally widened and divided into three branches by successive divisions: the first giving rise to the slender, sinuously curved solenomere, the more distal producing two branches of which the subterminal is longer and more slender.

Antennae with numerous apical sensory cones. Lateral lobes of collum angular-rounded. Body with 53-55 segments.

The ability of two included species to eject their defensive secretion for a remarkable distance may be considered a behaviorial apomorphy not observed in other West Indian rhinocricids.

Range: Apparently restricted to the southern peninsula of Haiti.

Haitobolus haitensis (Gervais), new combination
Figures 1-2

Julus haitensis Gervais, 1847, in: Hist. Nat. Ins. Apt., 4: 191. ♂ Lectotype (Mus. Hist. Nat. Paris, Myriapodes H.159) labeled "Haïti", without further locality (Gervais stated, p. 192, "De l'île Saint-Domingue (Haiti), par M. Alexander Ricord").

Julus haitensis Gervais, 1859, *in* Castelnau: Animaux nouveaux et rares de l'Amerique du Sud: 23, pl.III, figs. 1a-c (quotation of original description, with drawings added).

Rhinocricus haitensis: Pocock, 1894, Journ. Linnean Soc. London, 24: 494 (quotation of Gervais' account).

Cubocricus haitensis: Loomis, 1936, Bull. Mus. Comp. Zool., 80: 56 (quotation and notes).

Rhinocricus latespargor Loomis, 1941, Journ. Washington Acad. Sci., 31: 190, figs. 8, 9. ♂ holotype (USNM) from a site between Camp Perrin and Rivière Glace, Haiti. **New Synonymy**!

Loomis diagnosed this species by its great size and striking black and yellow coloration, mentioning several points of similarity in body form (but not gonopods!) with his *R. lethifer*. His description was followed by comments about the ability of the species to eject its defensive allomones while walking, thus independent of muscle pressure during coiling. Such a capability is rare in millipeds, noted also in New Guinea rhinocricids, in the Balkan callipodid genus *Apfelbeckia*, and the pachybolid *Aulacobolus ejaculans* Carl of southern India.

Haitobolus lethifer (Loomis), new combination

Rhinocricus lethifer Loomis, 1936, Bull. Mus. Comp. Zool., 80: 67, fig. 28; pl. 1, figs. 2, 3. ♂ holotype (USNM) from site between Petit Goave and Miragoane, southern Haiti.

Genus **Alcimobolus** Loomis

Diagnosis: Anterior gonopods remarkable in the unusual elongation of both coxal and telopodal elements. Medial projection of sternal plate strongly constricted basally; coxae with deep concavity at base on anterior side. Posterior gonopod simple, falcate, long and slender.

Body short, 110 mm in length and 13 mm in diameter, and stout (W/L ratio ca. 12%); with 44-45 segments. Antennae with numerous apical sensory cones. Lateral ends of collum broadly rounded.

Range: Endemic to the island of Hispaniola (Dominican Republic).

Species: One

Alcimobolus domingensis (DeSaussure & Humbert), new combination!
Figures 3-4

Julus (Julus) haïtensis DeSaussure, 1860, Mém. Soc. Phys. Hist. nat. Genève, 15: 363 [misidentification of specimens from "L'île de St-Domingue"].

Spirobolus domingensis DeSaussure & Humbert, 1872, Miss. Sci. Mexique, Zool., 6(2): 177. New name for *Julus haitensis* DeSaussure, based on two ♂♂ in the Geneva museum labeled, in vial, "Haiti, M. de S." without further locality.

DeSaussure collected in Haiti in January 1855, *en route* to Mexico; possibly his collecting sites can eventually be localized.

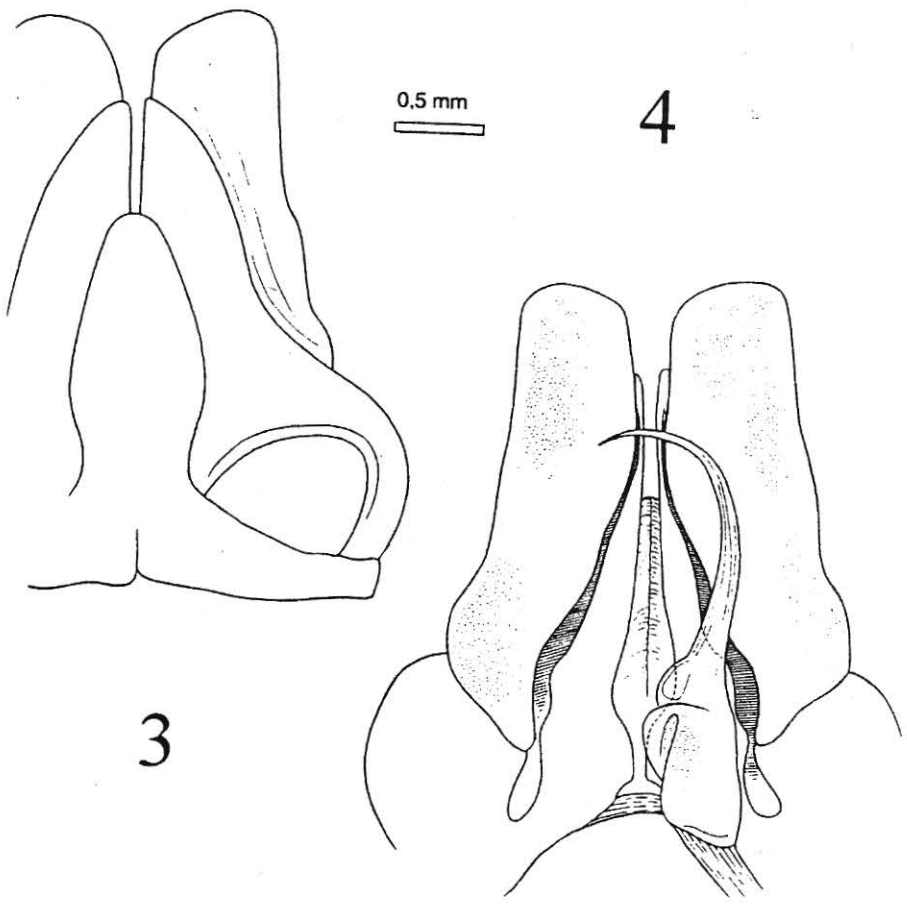
Rhinocricus domingensis: Pocock, 1894, Journ. Linnean Soc. London, 24: 495

Nesobolus domingensis: Loomis, 1936, Bull. Mus. Comp. Zool., 80: 61.

Alcimobolus angustipes Loomis, 1936, Bull. Mus. Comp. Zool., 80: 57, fig. 23a-b. ♂ holotype (MCZ) from San Lorenzo, Bahia de Samaná, República Dominicana. **New Synonymy**!

Alcimobolus angustipes: Loomis, 1941, Bull. Mus. Comp. Zool., 88: 41 (cites additional localities Villa Altagracia, Monte Diego de Ocampo, Pico Isabel de Torres (Puerto Plata), and Rio San Juan, in the Dominican Republic).

Cubocricus angustipes: Chamberlin, 1947, Proc. Acad. Nat. Sci. Philadelphia, 99: 44. (records one ♂ and one ♀ with 48 and 50 segments respectively) labelled "San Domingo, Cal." in error.



Figs. 3,4. *Alcimobolus domingensis* (DeSaussure & Humbert), gonopods of holotype. 3, Anterior gonopods, anterior aspect. 4, Both pairs of gonopods, posterior aspect.

The species is apparently widespread in the Dominican Republic but was never rediscovered in Haiti during the extensive collecting by Cook and Loomis from 1917 to 1934, despite the use of the name "Haiti" with the samples identified by DeSaussure (1860). In the previous century, French-speaking authors used the name Haiti to designate the entire island of Hispaniola, and not, as today, only the country occupying its western part.

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REFERENCES

Chamberlin, R. V. 1918. The Chilopoda and Diplopoda of the West Indies. Bull. Mus. Comp. Zool., 62: 151-262.

Chamberlin, R. V. 1947. Some records and descriptions of diplopods chiefly in the collections of the Academy. Proc. Acad. Nat. Sci. Philadelphia, 99: 21-58, figs. 1-73.

Gervais, F. L. P. 1847. Myriapodes, in: Walckenaer & Gervais, Histoire Naturelle des Insectes Apteres, 4: 1-333. Nouvelles suites á Buffon, Paris.

Gervais, F. L. P. 1859. Myriapodes et Scorpions, *in*: F. De Castelnau (ed.), Animaux nouveaux ou rares recueillis pendant l'expedition dans les parties centrales de l'Amerique du Sud par ordre du gouvernment français pendant les années 1843 à 1847. Paris, P. Bertrand: 1-39, planches 1-6.

Loomis, H. F.1936. The millipeds of Hispaniola. Bull. Mus. Comp. Zool., 80: 1-133, figs. 1-75, pls. 1-3.

Loomis, H. F. 1941. Millipeds from the southern Peninsula of Haiti. Journ. Washington Acad. Sci., 31: 188-195, figs. 1-17.

Pocock, R. I., 1894. Contributions to our knowledge of the arthropod fauna of the West Indies. Part III. Diplopoda and Malacopoda, with a supplement on the Arachnida of the class Pedipalpi. Journ. Linnean Soc. Lond, 24: 473-544, pls. 37-40.

DeSaussure, H. 1860. Essai d'une faune des Myriapodes du Mexique, avec la description de quelques espèces des autres parties de l'Amerique. Mém. Soc. Phys. Hist. nat. Genève, 15: 259-393, pls. I-VII.

DeSaussure, H. & A. Humbert, 1872. Études sur les Myriapodes, in: Miss. Scient. Mexique, Zool., pt. 6, sec.2: 3-211, pls. 1-VII.

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