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A contribution to the centipede fauna of Venezuela (Chilopoda: Scolopendromorpha)

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Abstract

The descriptions of twelve Venezuelan Scolopendromorpha, a list of species, identification key and detailed list of localities are presented. *Cryptops* (*C.*) *venezuelae* Chamberlin, 1939, known only from the holotype has been re-described and *Scolopendra conjungens* Muralewicz, 1913 reduced to a junior synonym of *Scolopendra angulata* Newport, 1844 syn. nov.

Key words: Scolopendromorpha, Venezuela, list of species, key, new synapomorphy, re-descriptions, new synonym

Introduction

The present work continues my studies of the Neotropic Scolopendromorpha (Schileyko & Minelli, 1998; Schileyko, 2002, 2006, 2009, 2013 etc).

Previous data on scolopendromorph fauna of Venezuela was mainly provided by Brölemann (1898a, 1898b), Attems (1930), Chamberlin (1939, 1941, 1942, 1950, 1958), Manfredi (1957), Bücherl (1950, 1959, 1974), González-Sponga (1997, 2000a, 2000b, 2002), Schileyko & Minelli (1998), Chagas (2003, 2013) and Shelley (2006). The last list of species of Venezuela has been provided by Bücherl (1959) comprising 25 species and 12 subspecies belonging to 7 genera.

As the result of the study of 206 specimens of the Scolopendromorpha from 21 localities from 7 states of Venezuela (Fig. 1) 11 taxa of species rank (marked by * asterisk in the list of species; see Appendix 1) and *Newportia* sp. have been identified.

The systematic part of this paper contains detailed descriptions of the species studied; all of them (except for *Newportia sp.*) have already been recorded from Venezuela.

Considering all the data the scolopendromorph fauna of Venezuela currently comprises 46 species-rank taxa belonging to 9 genera (see Appendix 1); 18 forms are Venezuelan endemics (marked by (!) in the list) and 4 species are introduced.

Material and methods

Material was collected in both rainy and dry seasons including collecting from small epiphytes on living trees ("MLT" in Material), by hand sorting of the leaves and humus on the soil surface ("LI" or "litter"), using of Tullgren apparatus/funnels ("TU"). Animals listed under "BR" and "ESP" have been taken from bromeliads and dead leaves attached to the trunks of *Espeletia* (Asteraceae) respectively. The altitude, temperature and associated plants are indicated on labels when possible; "TF" (="terra firme") means non-flooded upland forests and "selva nublada" means montane cloud forest.

In Material data are given as on the original labels; "[loc.2]" means that this animal(s) has been collected in locality 2 (see list of localities, Appendix 2). Question marks indicate uncertain/unknown data; additonal information about localities is given in square brackets. The following abbreviations are also used: "leg" for collector, "spec" for the number of individuals with sex undetermined, "ad" for adult, "sad" for subadult, "juv" for juvenile (age was determined based on size and degree of sclerotisation of some outer structures like tarsungula, spines etc).

The main part of the material studied was collected between 1978 and 1988 by Prof. Maurizio G. Paoletti (Padova University, Italy) ("MGP") who kindly donated this material to be deposited in the Zoological Museum of the Moscow State Lomonosov University (ZMMU). A few specimens were collected and donated to Prof. Paoletti by Dr. Carlos Bordón (Venezuela) and the holotype of *Scolopendra conjungens* was collected in 1891 by A. Teplow (Russia).

Registration numbers of specimens in the ZMMU collection are indicated; those of specimens, used for descriptions are underlined, e.g., N 7305. Some dozens of specimens (all from ZMMU collection) mainly from Brazil, Cuba, Peru and Dominican Republic were re-examined to clarify the limits of intraspecific variability of investigated species. All these non-Venezuelan samples are referred as "Additional material".

In the systematic part I have followed the standardized terminology proposed by Bonato *et al.* (2010).

-. Lateral margination on tergites 7(15)–21 ..... *R. longipes longipes*
24. Eyes absent ..... genus *Cryptops*, *C. (C.) venezuelae*
-. Eyes present. ..... 25.
25. Spiracle in an oval cup without flaps .....26.... genus *Otostigmus*
-. Spiracle cup divided horizontally into three flap ..... 30.
26. Tergites with well-developed keels (at least with median keel) ..... 27.
-. Tergites without well-developed keels ..... *O. (P.) goeldii*
27. Tergites with a median and longitudinal keels ..... 28.
-. Tergites with a median keel only (at least in segments of posterior body half) ..... 29.
28. Lateral margination on tergites 5–21. ..... *O. (P.) pococki*
-. Lateral margination on tergite 21 only ..... *O. (P.) expectus*
29. Sternites with short paramedian sulci .....*O. inermis*
-. Sternites without paramedian sulci.. ..... *O. (P.) carbonelli*
30. Legs with tarsal spurs ..... 31....genus *Scolopendra*
- Legs without tarsal spurs. ..... 39....genus *Cormocephalus*
31. Tergite 1 without an anterior transverse suture ..... 32.
-. Tergite 1 with an anterior transverse suture ..... 33.
32. Prefemur of legs 20 without dorsal spines ..... *S. morsitans*
-. Prefemur of legs 20 with dorsal spines ..... *S. alternans*
33. Prefemur of legs 20 with dorsal spines ..... 34.
-. Prefemur of legs 20 without dorsal spines ..... 38.
34. Prefemur of legs 20 with 1–2 ventral spines. ..... *S. armata*
-. Prefemur of legs 20 without ventral spines. ..... 35.
35. Lateral margination from tergite 15 ..... *S. mima*
-. Lateral margination commencing between tergites 3–11 ..... 36.
36. 1–8(10) antennal articles with a few setae ..... *S. gigantea*
-. 1–4(5) antennal articles with a few setae ..... 37.
37. Femur of ultimate legs with spines ..... *S. angulata*
-. Femur of ultimate legs without spines ..... *S. viridicornis viridicornis*
38. Forcipular coxosternite with transverse sulsus ..... *S. heros*
-. Forcipular coxosternite without transverse sulsus .....*S. polymorpha*
39. Prefemur of ultimate legs without any spines. ..... *C. venezuelianus*
-. Prefemur of ultimate legs with spines. ..... 40.
40. Prefemur of ultimate legs with corner spines only ..... *C. brasiliensis*
-. Prefemur of ultimate legs with ventral and/or ventrolateral spines ..... 41.
41. Coxopleuron without spines ..... 42.
-. Coxopleuron with spines. ..... 44.
42. 20 antennal articles ..... *C. glabratus*
-. Less than 20 antennal articles ..... 43.
43. 15 antennal articles ..... *C. edithae*
-. 17 antennal articles .....*C. abundantis*
44. Process of forcipular trochanteroprefemur with 4 medial tubercles ..... *C. facilis*
-. Process of forcipular trochanteroprefemur with 1–2 medial tubercles ..... 45.
45. Forcipular coxosternite with a single transverse sulcus ..... *C. impressus impressus*
-. Forcipular coxosternite with 2 or more transverse sulci ..... *C. maritimo*

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APPENDIX 1

List of Venezuelan species of Scolopendromorpha

Dinocryptops miersii Newport, 1844

* *Scolopocryptops ferrugineus ferrugineus* (L., 1767)
* *S. guacharensis* Manfredi, 1957 (!)
S. melanostoma (Newport, 1845)

Newportia avilensis González-Sponga, 1997 (!)
N. cerrocopeyensis González-Sponga, 2000 (!)
N. dentata Pocock, 1890
N. diagramma Chamberlin, 1921
* *N. ernsti ernsti* Pocock, 1891
N. longitarsis longitarsis Newport, 1844
* *N. longitarsis guadeloupensis* Demange, 1981
* *N. longitarsis stechowi* Verhoeff, 1938
N. longitarsis tropicalis Bücherl, 1959 (!)
* *N. monticola* Pocock, 1890
N. phoretha Chamberlin, 1950 (!)
N. prima González-Sponga, 1997 (!)
N. pusilla Pocock, 1893
N. sargenti Chamberlin, 1958 (!)
N. simoni Brölemann, 1898 (!)

Tidops collaris (Kraepelin, 1903)

Scolopendra alternans Leach, 1815
* *S. angulata* Newport, 1844
S. armata Kraepelin, 1903
S. gigantea L., 1758
S. heros Girard, 1853—introduced(?)
S. mima Chamberlin, 1942 (!)
S. morsitans L., 1758—introduced
S. polymorpha H.C. Wood, 1861
S. viridicornis viridicornis Newport, 1844