

Archispirostreptus syriacus (de Saussure, 1859), the largest and perhaps the most conspicuous millipede in the fauna of Israel

Archispirostreptus syriacus (de Saussure, 1859), самый крупный и, возможно, самый примечательный вид многоножек-диплопод в фауне Израиля

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ABSTRACT. The millipede, *Archispirostreptus syriacus* (de Saussure, 1859) is recorded and illustrated, based on fresh samples from Jerusalem. Its convoluted taxonomic history is presented in the form of a complete catalogue. Brief notes are also provided both on morphological variability and bionomy.

РЕЗЮМЕ. Многоножка *Archispirostreptus syriacus* (de Saussure, 1859) отмечена и проиллюстрирована на основе свежих сборов из Иерусалима. Ее сложная таксономическая история представлена в виде полного каталога. Также даны краткие заметки по морфологической изменчивости и биологии.

Introduction

The millipede genus *Archispirostreptus* Silvestri, 1894 is presently known to comprise ten accepted species, mostly Afrotropical and covering South, East, Central and West Africa; only one congener, *A. syriacus* (de Saussure, 1859), seems to be endemic to the Near East: Saudi Arabia, Yemen, Jordan, and Israel together with the West Bank [Mwabvu *et al.*, 2010]. As regards Syria in the present sense, both Porat [1893] and Shelley [2009] emphasized no definite records being available from that country despite the specific epithet reading *syriacus*.

The taxonomy of *A. syriacus* appears to be particularly convoluted, this apparently being because only very few meaningful morphological illustrations have previously been available. The taxonomy of this remarkable species is presented below in a catalogue way. Notes on its morphological variations and bionomy are also given.

The present note has been prompted by the very fresh sample of *A. syriacus* from Jerusalem taken by my friend Anatoly B. Babenko, Moscow, Russia.

Materials and methods

The material underlying the present contribution is in 75% ethanol, donated to the collection of the Zoological Museum of the Moscow State University (ZMUM), Moscow. Photographs were taken at the Paleontological Institute, Russian Academy of Sciences (PIN), Moscow, using a Flexacam C1 camera mounted on a Leica M165C stereo microscope with built-in LasX software. Image processing was performed utilizing Adobe Photoshop CC software.

The terminology of the gonopodal structures follows that of Mwabvu *et al.* [2010].

In the catalogue section, D stands for a description or descriptive notes, K for the appearance in a key, N for nomenclatural issues, E for ecological observations, R for a new record or new records, and L for merely listing.

Taxonomy

Archispirostreptus syriacus (de Saussure, 1859) Figs 1–3.

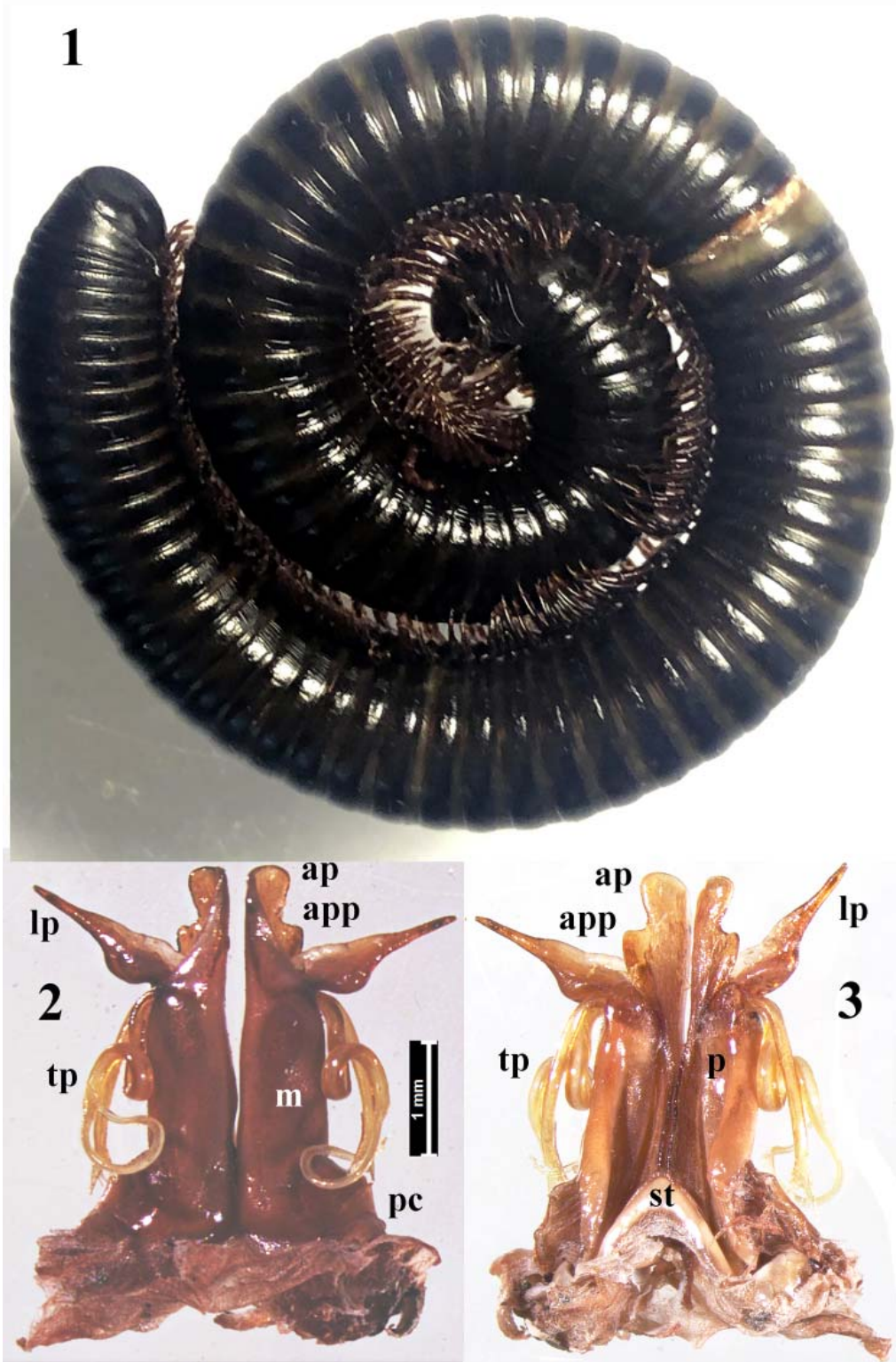
Julus syriacus de Saussure, 1859: 329 (D), type locality: Syria.

Spirostreptus (Nodopyge) christianus Karsch, 1881: 47 (D), type locality: Jerusalem; synonymized by Krabbe (1982).

Spirostreptus syriacus — Porat, 1893: 77, fig. 6 (D, R); Silvestri, 1895: 3 (R); Verhoeff, 1923: 135 (D, R).

Spirostreptus Syriacus (sic!) and *Spirostreptus christianus* — Attems, 1914: 174, 175 (L).

Graphidostreptus tumuliporus judaicus Attems, 1927: 255 (D), type locality: Bethlehem; synonymized by Krabbe (1982).



Figs 1–3. Photographs of *Archispirostreptus syriacus* (de Saussure, 1859), ♂♂ from Jerusalem, courtesy Roman A. Rakitov. 1 — habitus, coiled animal in lateral view; 2, 3 — both gonopods, posterior and anterior views, respectively. Abbreviations: **ap** — apical metaplical process; **app** — apical metaplical projection; **lp** — lateral metaplical process; **m** — metaplica; **p** — proplica; **pc** — paracoxite; **st** — sternite; **tp** — telopodite. Scale bar: taken not to scale (1) and 1.0 mm (2, 3).

Рис. 1–3. Фотографии *Archispirostreptus syriacus* (de Saussure, 1859), ♂♂ из Иерусалима, любезно сделаны Романом А. Ракитовым. 1 — общий вид, свернутое в спираль животное, сбоку; 2, 3 — оба гонопода, соответственно сзади и спереди. Обозначения: **ap** — апикальный отросток метаплики; **app** — апикальный вырост метаплики; **lp** — боковой отросток метаплики; **m** — метаплика; **p** — проплика; **pc** — параксит; **st** — стернит; **tp** — телоподит. Масштаб: снят без масштаба (1) и 1,0 мм (2, 3).

Graphidostreptus tumuliporus judaicus — Bodenheimer, 1937: 233 (L); Schubart, 1947: 117 (L);

Archispirostreptus tumuliporus judaicus — Krabbe, 1982: 264, fig. 194 (D, R).

Archispirostreptus tumuliporus judaicus and *A. syriacus* — Berkovitz, Warburg, 1988: 869 (E, R, L).

Archispirostreptus transmarinus Hoffman, 1965: 18, figs 1–3 (D), type locality: Sanaa, Yemen; synonymized by Mwabvu et al. (2010).

Spirostreptus christianus — Moritz, Fischer, 1974: 378 (L).
Archispirostreptus transmarinus — Krabbe, Enghoff, 1978: 248 (L). Krabbe, 1982: 272, fig. 193 (D, R).

Archispirostreptus syriacus and *A. transmarinus* — Shelley, 2009: 2, fig. 1 (R).

Archispirostreptus syriacus — Berkovitz, Warburg, 1983: 625 (E, R); 1985: 37, figs 1, 2 (E, R); Mwabvu et al., 2010: fig. 9 (D, K, N, R).

MATERIAL. 2 ♂♂, 1 ♀ (ZMUM), Israel, Jerusalem, Kidron Valley, paved path between Gethsemanes Garden and Old City, 31.7786°N, 35.2379°E, 4.VI.2024, A. Babenko leg.

MORPHOLOGICAL NOTES. *Archispirostreptus syriacus* is by far the largest millipede in the fauna of Israel, adults attaining 125–140 mm in length and 8–10 mm in width/diameter. Males tend to be slightly smaller in size and more slender than females. Colouration typically dark grey to blackish, pattern being only slightly cingulated due to only a little lighter prozona (Fig. 1). Adults with 59–68 body rings, both collum and telson included.

According to Mwabvu et al. [2010], the gonopods of the Near East *A. syriacus* (Figs 2, 3) differ from those of the remaining accepted nine Afrotropical congeners primarily in showing a subtriangular sternite (**st**), coupled with a distinct apical metapical projection (**app**) lying laterally at the base of the apical metapical process (**ap**) and distal to a particularly strong and slender lateral metapical process (**lp**).

NOTES ON BIONOMY. This species appears remarkable not only because of its vast geographic distribution in the Near East (Saudi Arabia, Yemen, Jordan, and Israel together with the West Bank), but also in its showing highly peculiar biological traits. Periodic ephemeral swarming and outbreaks are especially apparent in *A. syriacus* in Israel. Thus, already Théodore Barrois (1857–1920), a renowned French naturalist, during his trip to Palestine and Syria in March to June 1890 noted great numbers of *A. syriacus* in the dry oases north of the Dead Sea up to Lake Tiberias/Kinneret (= Sea of Galilee) in the north, but no *A. syriacus* occurring either in Syria or Lebanon [Porat, 1893]. As summarized and mapped by Shelley [2009], *A. syriacus* in Israel occurs around the Sea of Galilee, Jerusalem and vicinity, the northern extremity of the Negev Desert, and the West Bank.

Two populations have been studied particularly thoroughly: one at Megiddo ruins and the other at the village of Brosh [Berkovitz, Warburg, 1983, 1985, 1988]. In the more mesic environment at Megiddo, the *A. syriacus* population passes through 11 larval stages, maturity being reached in eight years and followed by three adult stadia, vs 12 larval and four adult stages, maturity being attained in six years in the more xeric conditions at Brosh. The eggs laid at Megiddo during July and August appear to be considerably smaller and less caloric in value than those laid at Brosh in May.

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