SUPPLEMENTARY DESCRIPTION OF LEPTOGALUMNA (AEGYPTOGALUMNA) MASTIGOPHORA (AL-ASSIUTY, ABDEL-HAMID, SEIF ET EL-DEEB, 1985) COMB. N. (ACARI, ORIBATIDA, GALUMNIDAE)

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ABSTRACT: The type species of the monotypic oribatid mite genus Aegyptogalumna Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985 (Galumnidae) is redescribed on the basis of specimens from Spain. We discuss the taxonomic status of the genus and propose to consider it a subgenus of Leptogalumna Balogh, 1960: Leptogalumna (Aegyptogalumna) mastigophora (Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985) comb. n.

KEY WORDS: oribatid mites, Galumnidae, Leptogalumna (Aegyptogalumna), taxonomic status, diagnosis, supplementary description

INTRODUCTION

The genus Aegyptogalumna (Acari, Oribatida, Galumnidae) was proposed by Al-Assiuty, Abdel-Hamid, Seif and El-Deeb (1985) with Aegyptogalumna mastigophora Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985 as type species. Currently, this genus is monotypic, with the single species distributed in Egypt and Spain (Subías 2004, updated 2014). Later, Mahunka and Akrami (2001) described Pilogalumna saboorii Mahunka et Akrami, 2001 based on specimens from Iran, but Subías (2004) considered it a junior subjective synonym of A. mastigophora (see Remark section).

As discussed below, Aegyptogalumna is morphologically very similar to Leptogalumna Balogh, 1960 and one of our objectives is propose a more conservative ranking as a subgenus of the latter and to provide new diagnoses of Leptogalumna and its subgenera. The original descriptions of A. mastigophora and P. saboorii are incomplete in that they lack detailed measurement and information about leg setation and the gnathosoma. Therefore, our second goal is to redescribe and illustrate Leptogalumna (Aegyptogalumna) mastigophora (Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985) comb. n. based on new material from Spain.

MATERIAL AND METHODS

Six specimens (five females and one male) of L. (A.) mastigophora with the following collection data were studied: Spain, Mérida, Badajoz Province, 35°55’N, 06°20’E, cereal meadow, soil from depth, 27.II.2013, collected by J.P. Zaballos and S. Pérez.

Specimens were mounted in lactic acid on temporary cavity slides for measurement and illustration. The body length was measured in lateral view, from the tip of the rostrum to the posterior edge of the ventral plate. Notogastral width refers to the maximum width in dorsal aspect. Lengths of body setae were measured in lateral aspect. All body measurements are presented in micrometers. Formulas for leg setation are given in parentheses according to the sequence trochanter–femur–genu–tibia–tarsus (famulus included). Formulas for leg solenidia are given in square brackets according to the sequence genu–tibia–tarsus. General terminology used in this paper follows that of F. Grandjean (summarized by Norton and Behan-Pelletier 2009). Drawings were made with a drawing tube using the Carl Zeiss transmission light microscope “Axioskop-2 Plus”. Images were obtained by the AxioCam ICc3 camera using the Carl Zeiss transmission light microscope “Axio Lab.A1”.

SUPPLEMENTARY DESCRIPTION

Leptogalumna (Aegyptogalumna) mastigophora (Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985) comb. n.

Figs 1–11

Measurements. Based on six specimens (five females, one male): body length 340–385; maximum notogastral width 225–258.

Integument (Fig. 11). Color light brown, surface smooth. Pteromorphs with slightly visible radiating wrinkles.

Prodorsum (Figs 1, 3, 10). Rostrum rounded. Sublamellar line (S) strong. Rostral (ro, 16–20)
and lamellar (le, 10–12) setae simple, thin, smooth. Interlamellar setae (in, 49–53) setiform, barbed. Bothridial setae (ss, 90–94) setiform, thickened, ciliate bilaterally; dorsal side with numerous cilia, ventral side with rare cilia. Exobothridial setae absent without vestige. Porose areas Ad oval (12–20 × 6–8).

Notogaster (Figs 1, 3, 4, 11). Anterior notogastral margin developed, almost straight transversally. Dorsophragmata (D) of short, wide. Notogastral setae represented by 10 pairs of thin, smooth setae (10–16), usually with short attenuate tip. Four pairs of porose areas well visible, with distinct margins: Aa oval, longitudinally oriented (16–20 × 10–12), A1 rounded (6–10), A2 rounded (8–10) or oval (8–10 × 6–8), A3 rounded (10–12) or oval (10–12 × 6–8). Setae la inserted posteriorly to Aa. Median pore absent. All lyrifissures distinct; im located between la and lp. Opisthontal gland openings (gla) located laterally to A1 and h3.

Gnathosoma (Figs 5–7). Morphology of subcapitulum, palps and chelicerae typical for Galumnidae (for example, Engelbrecht 1972; Er-
Supplementary description of *Leptogalumna (Aegyptogalumna) mastigophora* (Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985), adult: 5 — subcapitulum, ventral view; 6 — palp; 7 — chelicera; 8 — genital plate, left; 9 — tarsus and tibia of leg IV, left, antiaxial view. Scale bar 20 μm.

Milov et al. 2010; Ermilov and Anichkin 2014). Subcapitular setae setiform, slightly barbed; a (20–24) longer than m (16–18) and h (12–16). Two pairs of adoral setae (or, 12–16) setiform, hook-like distally, barbed. Palps (73–82) with setation 0–2–1–3–9(+ω). Solenidion attached to eupathidium, both located on dorsal tubercle. Chelicerae (102–110) with two setiform, barbed setae; cha (32–36) longer than chb (20–24). Trägårdh’s organ (Tg) long, tapered.

Epimeral and lateral podosomal regions (Fig. 2). Apodemes 1, 2, sejugal and 3 well visible. Four pairs of simple, thin, smooth epimeral setae observed; setal formula: 1–0–1–2. Setae 3c (36–45) longer than 1a, 4a and 4b (12–14). Pedotecta II (Pd II) scale-like, rounded anteriorly in ventral view. Discidia (dis) triangular, distally pointed. Circumpedal carinae indistinct.

Anogenital region (Figs 2, 4, 8). Six pairs of genital (g, 16–20; g, 12–18), one pair of aggenital (ag, 12–14), two pairs of anal (an, 12–16) and three pairs of adanal (ad, 12–16) setae simple, thin, smooth. Anterior edge of genital plate with two setae, rarely with one (all setae inserted in one row on genital plate in this case). Adanal lyrifissures (iad) in paraanal or weakly inverse apoanal positions. Adanal setae ad, inserted laterally to iad. Postanal porose area elongate oval, transversally oriented (24–32 × 6–8).

Legs (Fig. 9). Morphology of leg segments, setae and solenidia typical for Galumnidae (for
example, Engelbrecht 1972; Ermilov et al. 2010; Ermilov and Anichkin 2014). Claws smooth on dorsal side. Formulas of leg setation and solenidia: I (1–4–3–4–20) [1–2–2–2], II (1–4–3–4–15) [1–1–2–2], III (1–2–1–3–15) [1–1–0–0], IV (1–2–2–3–12) [0–1–0–0]; homology of setae and solenidia indicated in Table 1. Solenidion φ on tibia IV inserted in the middle part.

**Remarks.** The specimens of *L. (A.) mastigophora* from Spain are similar in general appearance to those from Egypt according to the original description (Al-Assiuty et al. 1985) and to those from Iran according to the description of *P. saboorii* (Mahunka and Akrami 2001). However, the Iranian specimens are slightly larger than Spanish and Egyptian specimens (372–395 × 263–270 versus 340–385 × 225–258 and 340 × 244, accordingly).

**Table 1.**

Leg setation and solenidia of *Leptogalumna (Aegyptogalumna) mastigophora* (Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985)

<table>
<thead>
<tr>
<th>Leg</th>
<th>Trochanter</th>
<th>Femur</th>
<th>Genu</th>
<th>Tibia</th>
<th>Tarsus</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>v'</td>
<td>d, (l), bv''</td>
<td>(l), v', σ</td>
<td>(l), (v), φ, ω</td>
<td>(fi), (tc), (ti), (p), (u), (α), s, (pv), v', (pl), l'', ψ, ω, ω_2</td>
</tr>
<tr>
<td>II</td>
<td>v'</td>
<td>d, (l), bv''</td>
<td>(l), v', σ</td>
<td>(l), (v), φ</td>
<td>(fi), (tc), (ti), (p), (u), (α), s, (pv), ω, ω_2</td>
</tr>
<tr>
<td>III</td>
<td>v'</td>
<td>d, ev'</td>
<td>l', σ</td>
<td>l', (v), φ</td>
<td>(fi), (tc), (ti), (p), (u), (α), s, (pv)</td>
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<tr>
<td>IV</td>
<td>v'</td>
<td>d, ev'</td>
<td>d, l'</td>
<td>l', (v), φ</td>
<td>φ''', (tc), (p), (α), (α), s, (pv)</td>
</tr>
</tbody>
</table>

Roman letters refer to normal setae (ε to famulus), Greek letters to solenidia. Single prime (') marks setae on anterior and double prime ("') setae on posterior side of the given leg segment. Parentheses refer to a pair of setae.

was not correctly. All morphological characters of *P. saboorii* testify it should be placed into *Leptogalumna (Aegyptogalumna)* (see diagnoses for genus and subgenus below).

We did not study the type material of *P. saboorii*, however the data of publications (Al-Assiuty et al. 1985; Mahunka and Akrami 2001) and our redescription of *L. (A.) mastigophora* allow making clear comparison between both species. Based on these data, we have not found any differences between *P. saboorii* and *L. (A.) mastigophora*, therefore we support Subías’s opinion (2004, updated 2013), who considered the former species a junior subjective synonym of the latter species.

*Aegyptogalumna* is morphologically very similar to the genus *Leptogalumna*, but differs from the latter by having three claws on all legs versus one claw (in *Leptogalumna*). The number of claws on legs can vary within genera in Brachypylina, therefore use of this character as a generic or subgeneric character is problematic. However, among Galumnidae, the number of claws demonstrates stability in genera/subgenera, therefore, in our opinion, it can be used as a subgeneric character. For example: *Galumna (Bigalumna)* Mahunka et Mahunka-Papp, 2009 (see Mahunka and Ma-
Supplementary description of *Leptogalumna (Aegyptogalumna) mastigophora*

hunka-Papp 2009) has two claws compared to the three in other members of the nominate subgenus *Galumna* Heyden, 1826. *Neoctenogalumna (Paractenogalumna)* Ermilov, Starý, Sandmann, Marian et Maraun, 2013 has one claw compared to three in the nominate subgenus *Neoctenogalumna* Ermilov, Starý, Sandmann, Marian et Maraun, 2013 (see Ermilov et al. 2013).

Hence, following the logic of the above examples, we propose to include *Aegyptogalumna* as a subgenus of *Leptogalumna*. The result is in the following taxonomic proposals: *Leptogalumna (Aegyptogalumna)* stat. n., *Leptogalumna (Aegyptogalumna) mastigophora* comb. n.

**Genus Leptogalumna Balogh, 1960**

*Type species: Leptogalumna ciliata* Balogh, 1960

*New diagnosis* (based on data from Balogh 1960; Balogh and Balogh 1992). Body elongated to oval; lamellar lines absent; sublamellar lines present, curving backwards; bothridial setae setiform, long, densely ciliate; anterior notogastral margin complete, transversally straight; dorsophragmata short and wide or long and elongated; 10 pairs of short, thin notogastral setae developed, pteromorphs with one seta; notogaster with four pairs of porose areas, *Aa* represented by one pair; median pore absent; adanal lyrifissures located near anal aperture, in paraanal or inverse apoanal position; leg tarsi with one or three claws; sexual dimorphism absent.

**Subgenus Leptogalumna (Leptogalumna) Balogh, 1960**

*Type species: Leptogalumna ciliata* Balogh, 1960

*Diagnosis.* Body elongated (length 2 times as wide, approximately); dorsophragmata long, elongated and parallel; leg tarsi with one claw.

**Subgenus Leptogalumna (Aegyptogalumna) Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985**

*Type species: Aegyptogalumna mastigophora* Al-Assiuty, Abdel-Hamid, Seif et El-Deeb, 1985

*Diagnosis.* Body oval (length 1.5 times as wide, approximately); dorsophragmata short and wide; leg tarsi with three claws.

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**REFERENCES**


