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***Laccotrephes robustior* sp.n. (Hemiptera: Heteroptera: Nepidae), a new large water scorpion from India**

Herbert ZETTEL

Abstract

Laccotrephes robustior sp.n. of the *L. grossus* species group is described. With a body length (without siphon) of 44 mm the new species is among the largest water scorpions on earth. *Laccotrephes robustior* sp.n. is presently known only in one historical male specimen from Darjeeling, West Bengal, India, repositied in the Muséum national d'Histoire naturelle, Paris.

Key words: Nepidae, Nepinae, *Laccotrephes*, water scorpion, new species, India

Zusammenfassung

Laccotrephes robustior sp.n. aus der *L. grossus*-Artengruppe wird beschrieben. Mit einer Körperlänge von 44 mm (gemessen ohne Atmungsrohr) gehört die neue Spezies zu den größten Wasserskorpionen der Erde. *Laccotrephes robustior* sp.n. ist derzeit nur in einem einzigen historischen Exemplar aus Darjeeling im indischen Bundesstaat West Bengal bekannt, welches im Muséum national d'Histoire naturelle, Paris, aufbewahrt wird.

Introduction

There are about 60 water scorpions of the genus *Laccotrephes* STÅL, 1866 restricted to the tropics and subtropics of the Old World and Australasia. The last revision of the genus (FERRARI 1888) is outdated, the African species were catalogued by POISSON (1965). A small entity, the *L. grossus* group, was treated by POLHEMUS & KEFFER (1999); it belongs to the *L. ater* group sensu KEFFER (2004), which is defined by the males' genital structures. During a research visit to the Muséum national d'Histoire naturelle, Paris, in 2006 I was able to study the nepid collection intensively and I discovered a very unusual Indian specimen of the *L. grossus* group which is here described as new to science.

Taxonomy of *Laccotrephes robustior* sp.n. (Figs. 1 - 9)

Type material. Holotype (male; Fig. 1) from India, West Bengal, Darjeeling, mountains, 1886, leg. Harmand (labels see Fig. 3), in the Muséum national d'Histoire naturelle, Paris.

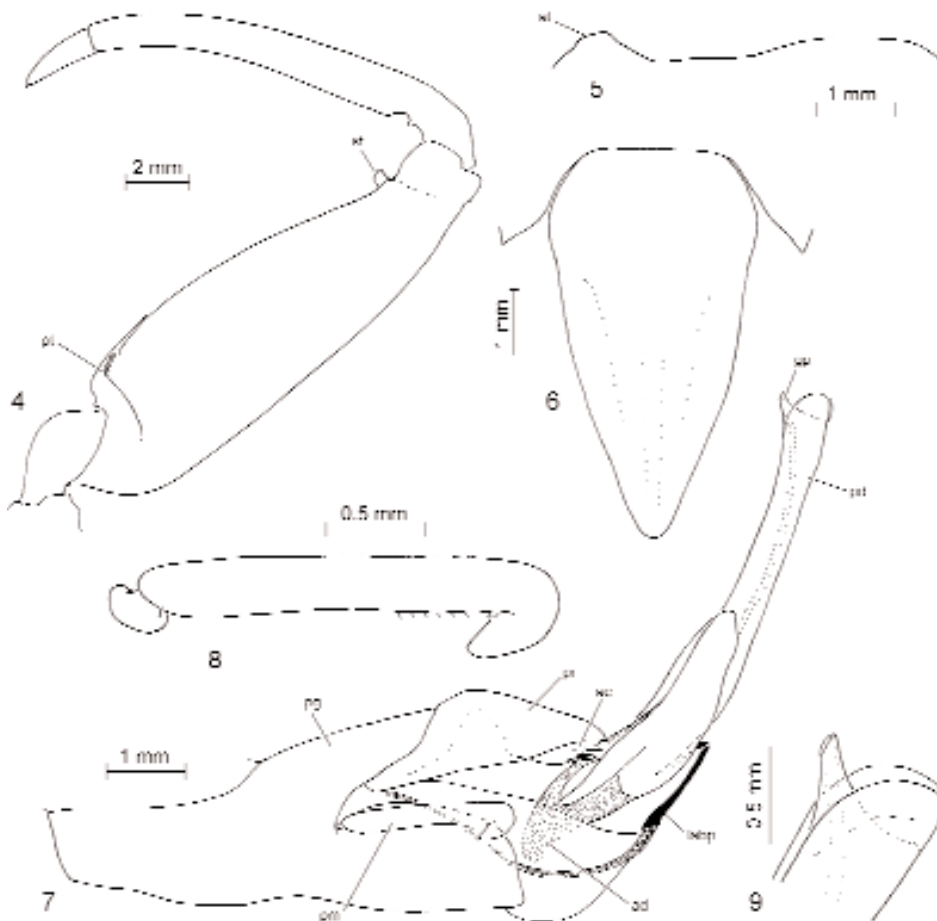
Description. Dimensions: Body length 44.4 mm; length of siphon 40.0 mm; maximum body width 13.7 mm; head width 4.5 mm; maximum pronotum width 12.8 mm; metatibia length 15.6 mm.



Figs. 1 - 3: *Laccotrephes robustior* sp.n., male holotype. (1) Habitus, dorsal aspect (body length 44.4 mm); (2) antenna (maximum length of second antennomere 1.79 mm); (3) labels.

Colour (Fig. 1): Light to dark brown. Eyes blackish brown. Dorsum of abdomen below wings light red (except apex blackish). Legs light brown; femora and protibia with indistinct dark annulation.

Structural characteristics: Head, pronotum, scutellum, proximal fifth of hemelytron and its costal margin with tufts of short bristles. Head small, 1.2 times as wide as long, behind eyes 1.1 mm long. Dorsomedian carina well developed, with distinct transverse



Figs. 4 - 9: *Laccotrephes robustior* sp.n., male holotype. (4) Right foreleg, dorsal aspect (pt – proximal tooth, st – subapical tooth); (5) ventral outline of prosternum, lateral aspect, anterior to the left, venter up (at – anterior tubercle); (6) sternite 7 ventral aspect; (7) genitalia, phallus pulled out, pilosity of pygophore omitted (ac – anal cone, ad – anterior diverticulum, gp – gonoporus, labp – lateral arm of basal plate, pd – posterior diverticulum, pg – pygophore, pm – left paramere, pr – proctiger); (8) left paramere; (9) apex of posterior diverticulum and gonoporus.

depression at level of anterior fifth of eyes, anterior part of carina higher than posterior one. Eyes comparatively small, length of eye 1.8 mm, width of eye 1.2 mm (both in dorsal aspect), minimum distance between eyes 1.7 mm (= 0.4 times head width). Clypeus and lora well recognizable, maxillary plates large, meeting in front of clypeus. Antenna (Fig. 2): maximum lengths of antennomeres 2 and 3 = 1.79 and 1.70 mm, widths of their finger-shaped parts, 0.23 and 0.26 mm, respectively; both finger-shaped parts set with numerous short setae of about half to three fourths of their width, that of antennomere 3 with more or less double row of ca. 45 long, curved setae, longest seta about 1.5 times as long as finger width.

Pronotum: median length 7.1 mm, maximum length 10.8 mm; along midline, anterior part 1.8 times as long as posterior part; anterior width just behind maximum curvature ca. 9.5 mm; anterior submedian tubercles prominent, rounded; submedian carinae broad and high, roof-shaped; transverse groove interrupted by median and submedian carinae, lateral parts deeper and wider than medial parts; posteriomedian carina slightly extended onto anterior part of pronotum; lateral margins of pronotum slightly concave; humeral angles round, dorsally carinate. Prosternal carina (Fig. 5) slightly raised posteriorly and with distinct blunt tubercle anteriorly; fringe of setae not meeting posteriorly. Hayfork-shaped carinae on mesocutellum well developed except medioanterior part evanescent.

Length of leg segments relative to metatibia (= 15.6 mm): profemur 107, protibia 81, protarsus 15, mesofemur 69, mesotibia 56, mesotarsus 21, middle leg claw 11, metafemur 98, metatibia 100, metatarsus 33, hind leg claw 11. Profemur (Fig. 4) large and strongly incrassate, 3.6 times as long as wide in normal view (16.5 mm / 4.6 mm); even when viewed from extensor side, medial part of femur strongly enlarged (3.7 mm); profemur with distinct, but relatively small proximal tooth and with well developed subapical tooth situated in femoral groove. Protibia (Fig. 4) with strong tooth and concavity near base of flexor side.

Forewings sparsely set with long, fine setae, except on clavus. Abdomen almost parallel-sided anteriorly, slightly convex posteriorly. Sternite 7 (genital operculum; Fig. 6) narrow, shield-shaped.

Male genitalia as typical for the *L. ater* group sensu KEFFER (2004): Pygophore (Fig. 7) elongate, anterior part (in front of paramere insertion) slightly longer than posterior part. Proctiger (Fig. 7) sharply acuminate in lateral aspect; anal cone densely pilose. Paramere (Fig. 8) elongate, with recurved apex triangular, subapically with minute tooth. Phallus (Figs. 7, 9) slightly longer than genital capsule, anterior diverticulum short, posterior diverticulum long, its paired apical laminae rounded and relatively stout; free part of gonoporus short and stout.

Distribution. Northern India, Darjeeling area, only known from the type locality.

Etymology. The specific epithet means “sturdier” and refers to the large body of the holotype specimen.

Discussion

Laccotrephes robustior sp.n. belongs to KEFFER's (2004) *Laccotrephes ater* group, and more specifically to the *L. grossus* species group sensu POLHEMUS & KEFFER (1999). Except for *L. grossus* (FABRICIUS, 1787), which is morphologically distant, the species of the *L. grossus* group have allopatric distributions from northeastern India to Australia.

There are two similar, large species described from the Oriental Region to compare with *L. robustior* sp.n. *Laccotrephes robustus* STÅL, 1871 is endemic to the Philippines, where it is widespread (POLHEMUS & KEFFER 1999, NIESER et al., in press). The second species, *Laccotrephes pfeiferiae* was considered a synonym of *L. robustus* for a long time, but recognized as a good species by POLHEMUS & KEFFER (1999). Consequently, *L. robustus* was reported from throughout tropical Asia, but in fact many old records of *L. robustus* belong to *L. pfeiferiae*. Reliable records of *L. pfeiferiae* are from Thailand, West Malaysia, Sumatra, Java, and Borneo (NIESER & POLHEMUS 1998, CHEN & al. 2005). According to

POLHEMUS & KEFFER (1999) and NIESER et al. (in press), the most important differences between *L. robustus* and *L. pfeiferiae* are the setiferation of the third antennomere (ca. 60 - 80 very long setae in several rows in *L. pfeiferiae*; ca. 35 - 50 slightly shorter setae in 1 - 2 rows in *L. robustus*), the deep transverse depression of the median head carina in *L. robustus* (not or hardly developed in *L. pfeiferiae*), and the posteriorly more elevated prosternal carina in *L. robustus* (almost flat in *L. pfeiferiae*).

In those distinguishing characteristics, especially in the setiferation of the antenna (Fig. 2) and the median carina of the head, *L. robustior* sp.n. is closer to *L. robustus* than to *L. pfeiferiae*. The relatively long posterior swelling of the prosternal carina distinguishes *L. robustior* sp.n. from both *L. robustus* and *L. pfeiferiae*, although this feature is somewhat variable in these two species. The most diagnostic characteristic of *L. robustior* sp.n. is the strongly enlarged profemur of the male; the dilatation in extensor aspect distinguishes *L. robustior* sp.n. from all other Oriental *Laccotrephes* species. Compared with *L. robustus*, *L. robustior* sp.n. has a relatively longer profemur (longer than metatibia, but shorter than metatibia in *L. robustus*), a relatively shorter siphon (shorter than body length, but longer than body length in *L. robustus*), more highly raised pronotum, and distinctly thickened meso- and metafemora.

With regard to body length, *Laccotrephes robustior* sp.n. is among the largest Asian species. The holotype has a body length of 44.4 mm. Other very large species are *L. robustus* (FERRARI 1888: 38 - 41 mm; NIESER et al., in press: 32.5 - 39.6 mm); *L. pfeiferiae* (FERRARI 1888: 42 mm; LUNDBLAD 1933 [as "*L. robustus*"]: up to 43 mm), and *L. celebensis* (POLHEMUS & KEFFER 1999: 25 - 43 mm). The largest *Laccotrephes*, with body lengths reaching up to 47 mm, are populations from northern Thailand and northern Vietnam, which are preliminarily identified as *L. pfeiferiae* but may represent an undescribed sibling species. *Laccotrephes grossus*, *L. sondaicus* POLHEMUS & KEFFER, 1999, *L. papuus* MONTANDON, 1900, and *L. tristis* (STÅL, 1854), are considerably smaller than the above named species.

POLHEMUS & KEFFER (1999) and KEFFER (2004) stated that the males' genitalia are of little use to identify the species of the *L. grossus* group, except for the apex of the posterior diverticulum (KEFFER 2004). This structure is almost identical in *L. robustior* sp.n. (Fig. 9), *L. robustus*, and *L. pfeiferiae* (compare with illustrations in NIESER & al., in press).

THIRUMALAI (2007) reports *L. pfeiferiae* from Nagaland. In an earlier version of the manuscript (Thirumalai, 2006 in litteris), this populations was referred to *L. robustus*, and I conclude that its specific identity is not very clear. From the geographical point of view, this record may possibly belong to *L. robustior* sp.n.

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Author's address: Dr. Herbert ZETTEL, International Research Institute of Entomology, Natural History Museum, Burgring 7, A-1010 Vienna, Austria

E-Mail: herbert.zettel@nhm-wien.ac.at

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