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Two new species of *Neptosternus* SHARP 1882 from Southern India (Coleoptera: Dytiscidae)

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Abstract: *Neptosternus boukali* sp. n. and *Neptosternus kerala* sp. n. are described from Southern India. They are compared with *N. starmuehlneri* WEWALKA 1973 from Sri Lanka. From the latter both species differ due to their distinctively colored elytra and the form of the penis. A modified key to the ten Indian species of the genus is presented.

Key words: Coleoptera, Dytiscidae, *Neptosternus*, new species, Southern India.

Introduction

The present paper is based on the material collected in 1994 by the Czech entomologists David Boukal and Zbynek Kejval in Kerala, Southern India. The first published results on Dytiscidae dealt with new species of the genera *Geodessus* BRANCUCCI 1979 (BALKE & HENDRICH 1996) and *Copelatus* ERICHSON 1832 (HENDRICH & BALKE 1998). The object of this paper is to describe two new species of the rheobiotic genus *Neptosternus* SHARP 1882 and to give some notes on the habitat of the species. A modified key to the Indian and Sri Lankan species is provided.

The genus *Neptosternus* is confined to the Afrotropical and Oriental regions. It includes 82 species. The Southeast Asian representatives were most recently revised by HENDRICH & BALKE (1997). The fauna of that region had been updated subsequently (BALKE et al. 1997 and BALKE & HENDRICH 1998). A total of 54 species are now known from Southeast Asia. VAZIRANI (1963 & 1968) published the first keys to the Indian and Sri Lankan species. WEWALKA (1973) described another species from Sri Lanka. HOLMEN & VAZIRANI (1990) provided a revised key to that fauna, describing two new species from Sri Lanka. Together with the two new species described herein ten *Neptosternus* are now known from India and Sri Lanka.

Material and Methods

Specimens mentioned in this work are deposited in several collections which are abbreviated in the text as follows:

CBH..... Collection Michael Balke and Lars Hendrich, Berlin, Germany

NMW..... Naturhistorisches Museum Wien, Vienna, Austria

OLML..... Oberösterreichisches Landesmuseum, Linz, Austria

Habitus drawings were made with an Olympus VMZ supported by colour slides, the median lobes were traced from SEMs. The style of the descriptive notes follows HENDRICH & BALKE (1995), BALKE et al. (1997) and BALKE & HENDRICH (1998).

Taxonomy

The genus *Neptosternus* SHARP is characterized by two apomorphies: prosternal process trifid (plesiomorphic character state: simple); posterior angles of pronotum greatly produced backwards and acute (plesiomorphic character state: not produced backwards, rounded).

Neptosternus boukali sp. n.

Holotype: ♂ : „S-INDIA, Kerala (13), Pambaiyar River 10 km N Pathanamthitta, 76°50'E 9°21'N, 1. Jan.1994, leg. Boukal & Kejval“ (NMW). **Paratypes:** 5 specimens, same data as holotype (CBH, NMW).

Etymology: Named for our friend and colleague David Boukal, Ceske Budejovice, Czech Republic, collector of the type material.

Description: Measurements (N = 6). Total length of beetle 3,65 - 3,9 mm (holotype 3,7 mm); length without head 3,3 - 3,5 mm (holotype 3,3 mm); greatest width of beetle 1,95 - 2,1 mm (holotype 2,0 mm).

Diagnosis: Very large, ovate species; body only slightly arched in lateral view.

Colour: Upper side comparably dark; head reddish; pronotum broadly dark anteriorly and posteriorly, reddish medially; elytra black with five yellow patches (Fig. 1). Venter castaneous brown to blackish, epipleura reddish anteriorly; appendages yellowish to reddish.

Sculpture: Head covered with polygonal meshes, but medially densely punctate. Pronotum densely punctate, some larger punctures visible basomedially; along anterior margin and laterally with microreticulation of polygonal meshes. Elytra with microreticulation consisting of slightly transversely oriented polygonal meshes; fine and densely punctate; numerous very rough punctures visible discally; the discal row of serial punctures dense and well defined, 1st and 2nd lateral row less distinct, sutural row not present.

Male: Median lobe of aedeagus as in Fig. 2.

Affinities: *Neptosternus boukali* superficially resembles *N. starmuehlneri* Wewalka from Sri Lanka. However the latter is smaller and has one subbasal spot on the elytra (Fig. 5). Moreover, the median lobe (Fig. 6) is more elongate than in *N. boukali*.

Distribution: Only known from the type locality.

Habitat: *Neptosternus boukali* was obtained from a shallow, broad (30 - 40m), exposed and slow flowing river. The bottom consisted of sand and few larger stones. All specimens were collected amongst floating vegetation, in 50cm depth, in the middle of the stream (Boukal in litt.).

***Neptosternus kerala* sp. n.**

Holotype: ♂ : "S-INDIA, Kerala (13), Pambaiyar River 10 km N Pathanamthitta, 76°50'E 9°21'N, 1. Jan.1994, leg. Boukal & Kejval" (NMW). **Paratypes:** 31 specimens, same data as holotype (CBH, NMW, OLML).

Etymology: Named after the province of India from which this species was collected.

Description: Measurements (N = 10). Total length of beetle 3,1 - 3,3 mm (holotype 3,2 mm); length without head 2,7 - 2,9 mm (holotype 2,9 mm); greatest width of beetle 1,65 - 1,8 mm (holotype 1,7 mm).

Diagnosis: Large, ovate species; body only slightly arched in lateral view.

Colour: Upper side comparably light; head and pronotum yellowish; the latter dark anteriorly and posteriorly, broadly yellowish medially; elytra black with five bright yellow patches (Fig. 3). Venter reddish, epipleura yellowish anteriorly; appendages yellowish to reddish.

Sculpture: Head covered with polygonal meshes, but medially densely punctate. Pronotum densely punctate, some larger punctures visible basomedially; along anterior margin and laterally with microreticulation of polygonal meshes. Elytra with microreticulation consisting of slightly transversely oriented polygonal meshes; fine and densely punctate; numerous very rough punctures visible discally; the discal row of serial punctures dense and well defined, 1st and 2nd lateral row less distinct, sutural row not present.

Male: Median lobe of aedeagus as in Fig. 4.

Affinities: *Neptosternus kerala* superficially resembles *N. starmuehlneri* (Fig. 5) and *N. boukali* (Fig. 1). However both species are distinctly larger and their median lobes (Fig. 2 and Fig. 6) are more elongate than in *N. kerala*. Furthermore *N. boukali* has an anteriorly and posteriorly broad dark pronotum and *N. starmuehlneri* has one subbasal spot on the elytra (Fig. 5).

Distribution: Only known from the type locality.

Habitat: See *N. boukali*.

Key to the Indian *Neptosternus* species

(modified after HOLMEN & VAZIRANI 1990)

1. Pronotum dark reddish, almost black. Elytra with none of the yellow spots reaching the lateral border, length: 3,9-4,0 mm..... *N. sinharajaicus* HOLMEN & VAZIRANI
- Pronotum largely yellow, sometimes darkened along anterior and posterior margins. Elytron at least with an apical yellow spot reaching lateral border, length: 2,6-3,7.....2
2. Elytron with a separate median presutural yellow spot of variable length; this spot rarely connects with subbasal or apical spots4
- Elytral median presutural yellow spot confluent with other yellow markings laterally, forming a more or less transverse spot3
3. Elytron with two separate subbasal yellow spots, and with the median and apical spots distinctly connected along the lateral border, length: 3,0-3,1 mm .. *N. taprobanicus* SHARP
- Elytral subbasal yellow spots confluent into transverse spot; median and apical spots not distinctly connected along the lateral border, length: 3,0 mm .. *N. biharensis* VAZIRANI

4. Anterior half of elytron with a distinct, uninterrupted yellow margin near the lateral border 5
 - Lateral yellow margin absent, indistinct or interrupted in the anterior half of the elytron ..6
5. Elytral lateral yellow margin entire from base to apex, length: 3,5 mm
 - *N. circumductus* RÉGIMBART
 - Elytral yellow margin interrupted behind the middle, length: 3,5 mm
 - *N. rajasthanicus* VAZIRANI
6. Pronotum yellowish with anterior and posterior margins dark brown. Larger species, length 3,5-3,9 mm 7
 - Pronotum yellowish with anterior margin slightly darkened and posterior margin dark brown. Smaller species, length 3,1-3,3 mm 8
7. Elytron with one subbasal spot *N. starmuehlneri* WEWALKA
 - Elytron with two subbasal spots *N. boukali* sp. n.
8. Elytron with two subbasal spots and the median lateral spot reaching the lateral border *N. kerala* sp. n.
 - Pronotum yellowish, at most slightly darkened along the margins. Smaller species, length: 2,6-3,0 mm 9
9. Elytron with the subbasal spot and the median lateral spot not reaching the lateral border, length: 2,6 mm *N. horai* VAZIRANI
 - Elytron with two coalescent subbasal spots (if not coalescent: the lateral subbasal spot) and the median lateral spot reaching the lateral border, length: 2,8 - 3,0 mm
 - *N. ceylonicus* HOLMEN & VAZIRANI

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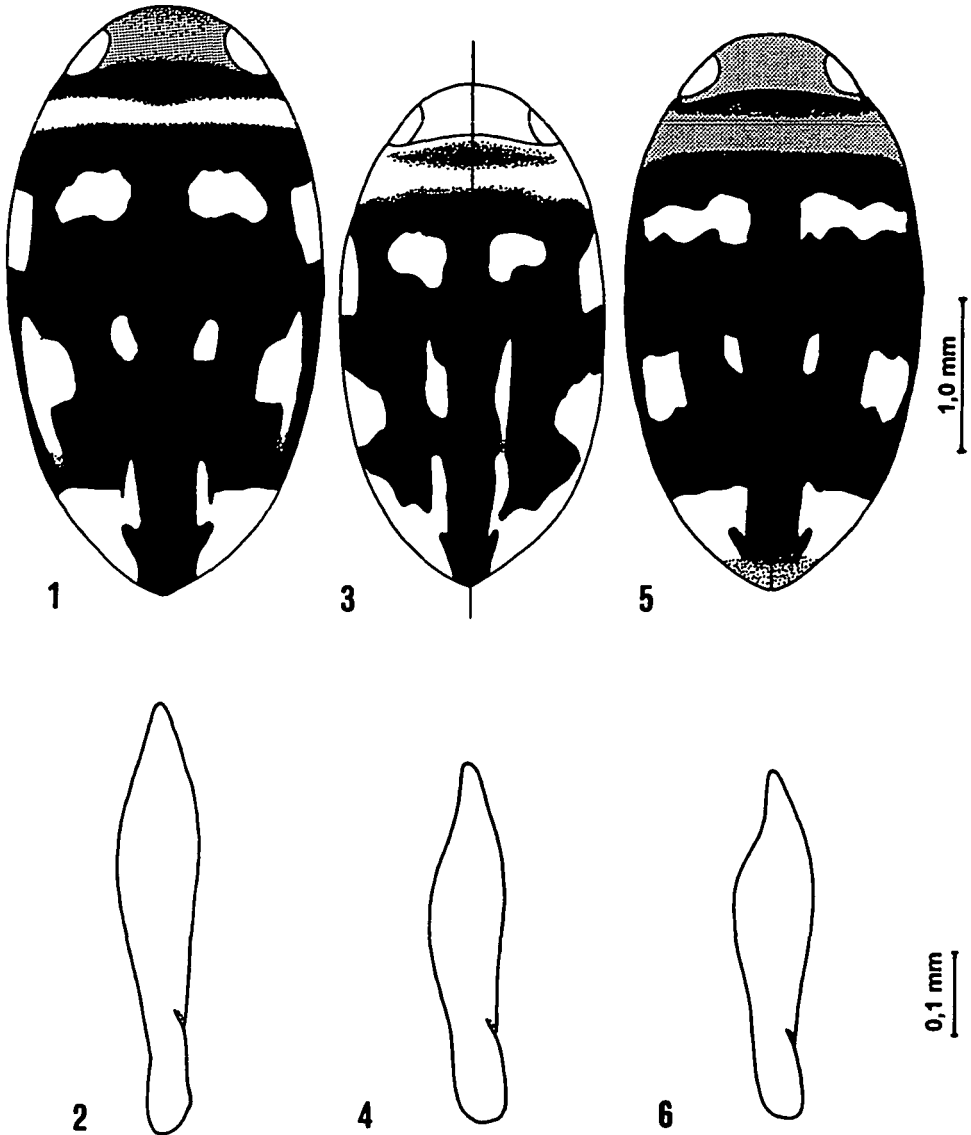


Fig. 1: Habitus and coloration of *Neptosternus boukali* sp. n. (holotype); fig. 2 – *Neptosternus boukali* sp. n., median lobe of aedeagus in ventral view; fig. 3 – Habitus and coloration of *Neptosternus kerala* sp. n.; left, darker and right, paler specimen; fig. 4 – *Neptosternus kerala* sp. n., median lobe of aedeagus in ventral view; fig. 5 – Habitus and coloration of *Neptosternus starmuehlneri* WEWALKA; fig. 6 – *Neptosternus starmuehlneri*, median lobe of aedeagus in ventral view.