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Taxonomic notes on Indian *Hydrobiomorpha* Blackburn, 1888

(Coleoptera, Hydrophilidae)

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Indian species/subspecies of *Hydrobiomorpha* Blackburn, 1888 (Coleoptera: Hydrophilidae) are studied. We recognize *H. rufiventris* Nietner, *H. spinicollis nordica* Mouchamps, and *H. spinicollis oriensis* Mouchamps as occurring in India. The distributional ranges of these taxa are discussed, and key morphological features, including dorsal habitus, metasternal process and male genitalia, are illustrated and diagnosed. Additionally, we present the first confirmed record of *H. spinicollis oriensis* Mouchamps from India. *H. spinicollis nordica* Mouchamps appears to be more widely distributed in India than *H. spinicollis oriensis*, which is limited to the eastern region.

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Introduction

Hydrobiomorpha Blackburn, 1888 (Coleoptera, Hydrophilidae) is a genus of large water scavenger beetles, comprising 61 extant species distributed across the Neotropical, southern Nearctic, Afrotropical, Oriental, and Australasian regions (Mouchamps 1959, Hansen 1999, 2004, Bilton 2016, Gupta et al. 2024, Newton 2024). Mouchamps (1959) revised the genus and included three species/subspecies from India: *Hydrobiomorpha rufiventris* (Nietner, 1856), *H. spinicollis nordica* Mouchamps, 1959, and *H. spinicollis oriensis* Mouchamps, 1959. However, the precise locality of *H. spinicollis oriensis* within India remains unclear, as Mouchamps (1959) only mentioned its occurrence in the country. Since Mouchamps' (1959) revision, few publications have focused on the distribution of Indian *Hydrobiomorpha* species, with all of them reporting *H. spinicollis* (Ghosh et al. 2021, Ghosh 2022, Sheth et al. 2024). Consequently, our understanding of the distribution of *Hydrobiomorpha* species in India remains incomplete.

To address this knowledge gap, we examined the *Hydrobiomorpha* collection housed at the Zoological Survey of India, Kolkata (ZSI). The primary objectives of this study are to document and report *Hydrobiomorpha* species in India, provide insights into their distributional ranges, and illustrate key morphological features, including dorsal habitus, the metasternal keel, and male genitalia. Additionally, we present the first confirmed record of *H. spinicollis oriensis* from India.

Materials and methods

The specimens used in this study are dried and pinned, housed in the museum of the Zoological Survey of India, Kolkata (NZSI). They were examined using a Leica EZ4

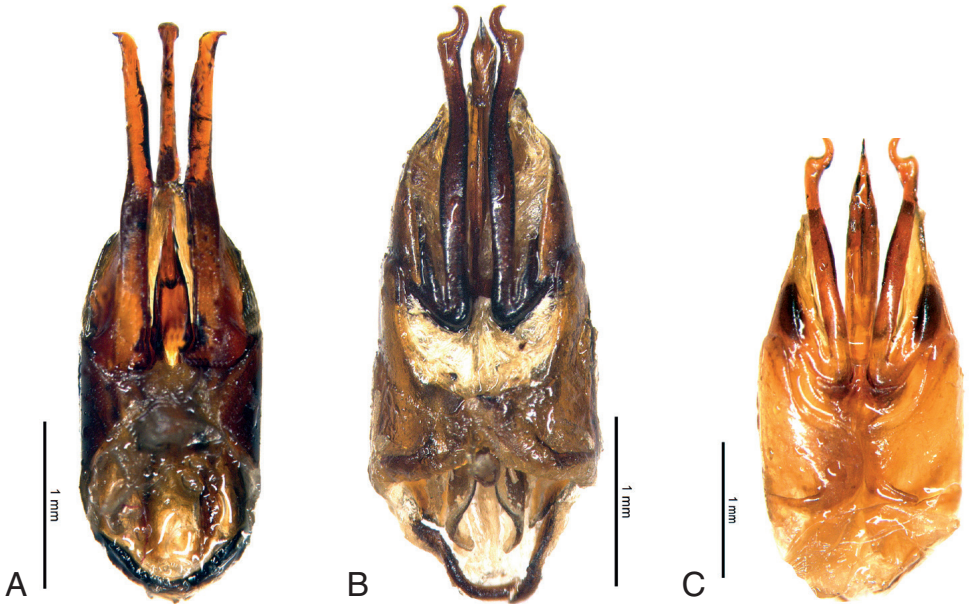

Fig. 1. *Hydrobiomorpha* species and subspecies (aedeagus in dorsal view): **A.** *Hydrobiomorpha rufiventris*; **B.** *H. spinicollis nordica*; **C.** *H. spinicollis oriensis*.

microscope, and habitus photographs were captured with a Nikon SMZ25 and edited using Adobe Photoshop 7.0. Morphological terminology largely follows Mouchamps (1959) and Bilton (2016), and specimen identification was conducted using the key provided by Mouchamps (1959).

Results

Family Hydrophilidae Latreille, 1802
Subfamily Hydrophilinae Latreille, 1802
Tribe Hydrophilini Latreille, 1802
Genus *Hydrobiomorpha* Blackburn, 1888

Hydrobiomorpha rufiventris (Nietner, 1856)

Figs 1A, 2A, 2D, 3A, 4

= *Hydrophilus horni* Régimbart, 1902: 471.

Material examined: INDIA. **Odisha**, Ganjam, Bahadapalli, Katikata, 1♂, 25.xi.2021, leg. Devanshu Gupta [NZSI]; Jajpur, Padmapur Road, 1♂, 24.xi.2021, leg. Devanshu Gupta [NZSI].

Measurements. Body length: 18.08 mm; body width: 9.16 mm; elytral length: 13.06 mm; pronotal length: 4.86 mm; pronotal width: 7.01 mm.

Diagnosis. This species can be distinguished based on the following characters: prosternal process with edge rounded, anterior angle not protruding with straight and horizontal lower edge, a well-developed spine present at end as an extension of lower edge (Fig. 2A); metasternal spine short, not extending beyond posterior margin of abdominal ventrite 1; extremity of metasternal process blunt, with a small slightly pointed projection at end (Fig. 2D); mesotibial brushes absent; aedeagus: median lobe regularly tapered, slightly swollen at apex, triangular in shape (in lateral view) (Fig. 1A), parameres elongate, narrow, sinuous at apex, with a single spine at end (Fig. 1A), median lobe and parameres more or less equal in length (Fig. 1A). Also see Mouchamps (1959: 308, fig. 11).

Distribution in India (Fig. 4)**.** Odisha (new record) and Tamil Nadu (Coimbatore) (Mouchamps 1959).

Global distribution. India, Indonesia, and Sri Lanka (Mouchamps 1959, Hansen 1999).

Comment. This species was originally described from Sri Lanka (Hansen 1999). Following Mouchamps' (1959) record of this species from Coimbatore, this recent collection marks its reappearance after nearly 75 years. This is the first record of this species from the Indian state of Odisha. The specimens were collected using a light trap method, which attracted them towards the light source.

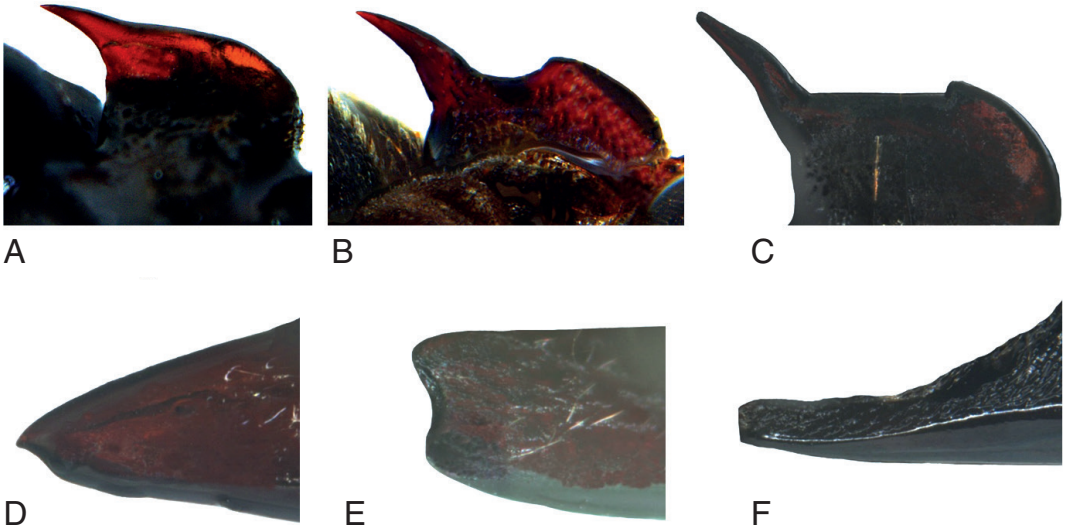

Fig. 2. *Hydrobiomorpha* species and subspecies. **A–C** (prosternal process in lateral view), **D–F** (apex of metasternal process in lateral view): **A, D.** *Hydrobiomorpha rufiventris*; **B, E.** *H. spinicollis nordica*; **C, F.** *H. spinicollis oriensis*.

Hydrobiomorpha spinicollis (Eschscholtz, 1822)

Mouchamps (1959) included 6 subspecies of *H. spinicollis* (Eschscholtz, 1822), of them, two are found in India.

Hydrobiomorpha spinicollis nordica Mouchamps, 1959

Figs 1B, 2B, 2E, 3B, 4

Material examined: INDIA. **Chhattisgarh**: Bilaspur, Bawdongri, Khudia, 20.ix.2012 (2♂, 15♀), leg. A. Raha [NZSI]; Raipur, Barnawapara Wildlife Sanctuary, 20.vii.2013 (1♀), 15.vii.2013 (9♀), 06.vii.2013 (1♀), 24.vi.2013 (2♀), 28.vi.2013 (1♀), 31.v.2013 (3♀), leg. S. Gupta [NZSI]; Koriya, Charkhol, 26.vii.2012 (2♀), leg. A. Parida [NZSI]. **Himachal Pradesh**: Kangra, 15.vii.2014 (8♀), 16.vii.2014 (12♀), leg. V.D. Hegde [NZSI]. **Maharashtra**: Gadchiroli, Allapalli Forest, 11.ix.2022 (2♀), leg. P. Mahapatra [NZSI]. **Madhya Pradesh**: Jabalpur, x.1957 (19♀), leg. P.S. Nathan [NZSI]. **Odisha**: Baisipalli Wildlife Sanctuary, Kuanria Dam, Nayagarh, 19.vii.2016 (2♀), leg. S.K. Ghosh [NZSI].

Measurements. Body length: 15.31 mm (range 15–17 mm); body width: 7.87 mm; elytral length: 11.55 mm; pronotal length: 2.58 mm; pronotal width: 5.73 mm.

Diagnosis. This species can be distinguished based on the following characters: prosternal process round in front, lower edge convex, spine strong and arched (Fig. 2B); metasternal process short and truncate at apex, apex with indentation in middle (Fig. 2E); metaventral spine not reaching mid of ventrite 1; mesotibial setigerous brushes rudiment present in form of short, not very dense apical area; aedeagus: median lobe pointed at tip, slightly swollen before apex (Fig. 1B), parameres, hooked at apex, with inward indentation between the bottom 2/3 and the top 1/3, slightly broader at the tips before the hook (Fig. 1B). Also see Mouchamps (1959: 315, figs 18, 23).

Distribution in India (Fig. 4)**.** Assam (Lakhimpur, Nameri National Park, Tezpur), Chhattisgarh (new record), Himachal Pradesh (new record), Maharashtra (new record), Madhya Pradesh (new record), Odisha (new record), Sikkim, and West Bengal (Darjeeling).

Global distribution. Bhutan, India, and Nepal.

Comment. Mouchamps (1959) originally described this subspecies based on specimens from Assam, India. Since then, it has been reported from Sikkim, West Bengal, Bhutan, and Nepal (Hansen 1999, Hebauer 2002, Hansen 2004, Fikáček et al. 2015, Przewoźny 2022). We examined a large number of specimens from various Indian locations in our collection. The majority of specimens in this genus were identified as *H. spinicollis nordica*. This suggests that this subspecies is more widespread in India than *H. spinicollis oriensis*, which is primarily confined to the eastern region. Additionally, we examined specimens reported by Ghosh et al. (2021) from

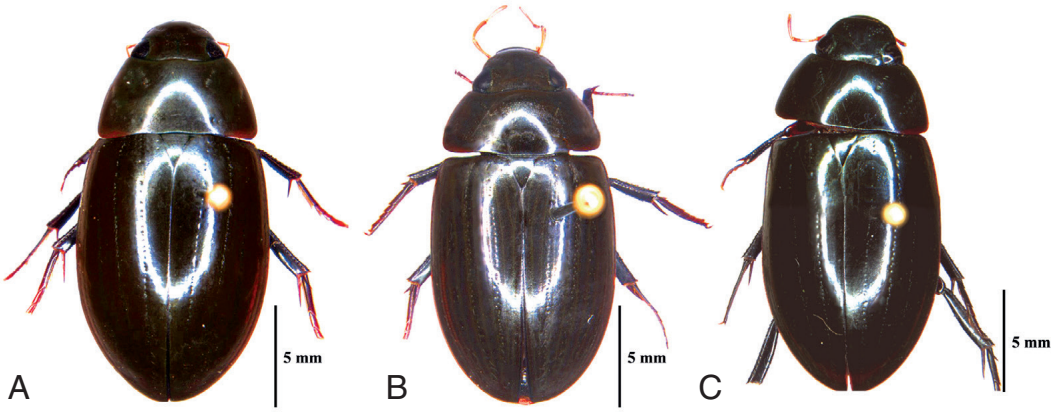

Fig. 3. Habitus (in dorsal view): **A.** *Hydrobiomorpha rufiventris*; **B.** *H. spinicollis nordica*; **C.** *H. spinicollis oriensis*.

Himachal Pradesh and Ghosh (2022) from Odisha, confirming their identification as *H. spinicollis nordica*. Furthermore, we analysed the photographs provided by Sheth et al. (2024, Image 20C-Habitus, Image 21C-Aedeagus) and assigned them to this subspecies. Following the records of Mouchamps (1959) and Hebauer (2002) from Assam, our recent collection marks the first record of this subspecies from the Indian states of Chhattisgarh, Himachal Pradesh, Maharashtra, Madhya Pradesh, and Odisha. Specimens were recently collected using the light trap method, while some were obtained from water bodies using a D-net. However, no habitat or ecological information is recorded on the data labels of the older collections.

Hydrobiomorpha spinicollis oriensis **Mouchamps, 1959**

Figs 1C, 2C, 2F, 3C, 4

Material examined: INDIA. **West Bengal**: Chandrachur, Khunia Beat, 1♂, 1♀, 06.xi.2017, leg. M.E. Hassan [NZSI].

Measurements. Body length: 18.04 mm; Body width: 8.81 mm; elytral length: 13.17 mm; pronotal length: 2.63 mm; pronotal width: 6.57 mm.

Diagnosis. This species can be distinguished based on the following characters; anterior angle of prosternal process rounded, sub-truncate, with a small protruding tubercle towards bottom (Fig. 2C); metasternal process obliquely truncate with a small protruding terminal (Fig. 2F); aedeagus: median lobe with a narrow and acicular tip, not swollen before apex (Fig. 1C), parameres, hooked at apex (Fig. 1C). See also Mouchamps (1959: 315, figs 24, 29).

Distribution in India (Fig. 4)**.** West Bengal (new record).

Global distribution. India, Indonesia, Laos, and Vietnam (Mouchamps 1959, Satô 1972, Hansen 1999).

Comment. This study makes a significant contribution to our understanding of the distribution of this subspecies in India, originally described from Vietnam (Hansen 1999). While Mouchamps (1959) mentioned its presence, the distribution of this subspecies within India remained uncertain. This study provides the first confirmed records, based on specific localities and specimens, documenting its presence in India. The specimens were collected using a light trap method, which attracted them to the light source. However, no habitat or ecological information is recorded on the data labels.

Conclusion

The paper reports the presence of *Hydrobiomorpha rufiventris* Nietner, *H. spinicollis nordica* Mouchamps, and *H. spinicollis oriensis* Mouchamps in India. Since Mouchamps' (1959) revision of the genus, records of these species in India have been scarce, suggesting either a lack of targeted research or potential shifts in their distribution (Ghosh et al. 2021, Ghosh 2022, Gupta et al. 2024, Sheth et al. 2024). The identification of *Hydrobiomorpha spinicollis oriensis* in West Bengal marks the first confirmed record of this species in the country, highlighting the need for further studies on its habitat, population dynamics, and potential conservation concerns.

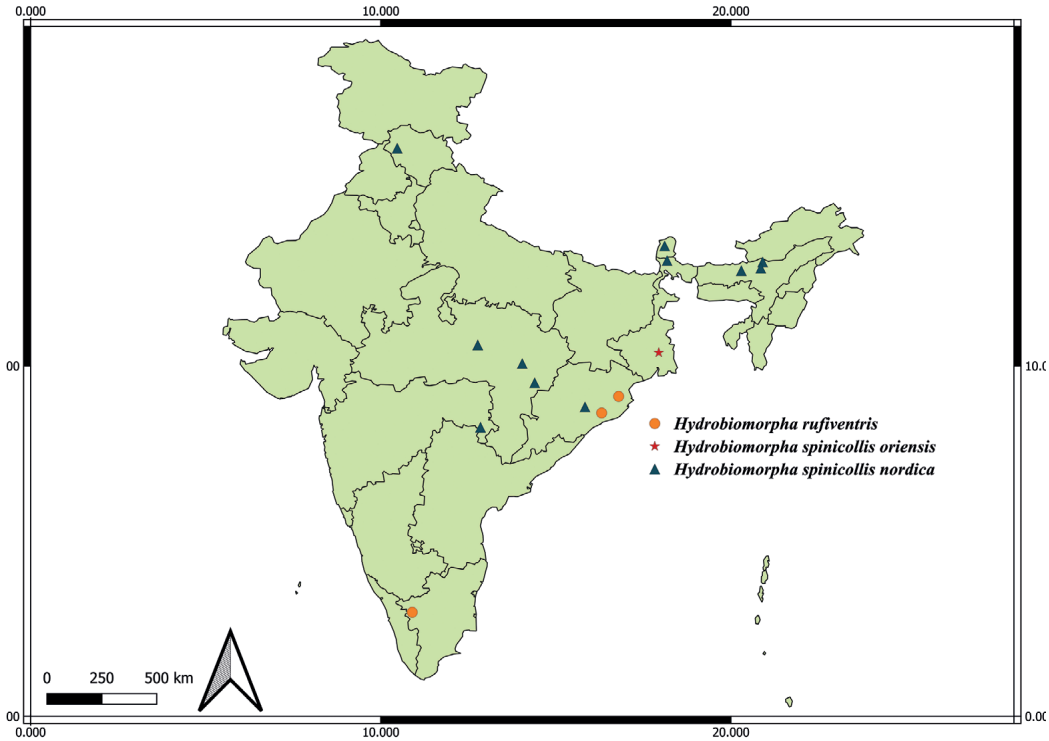

Fig. 4. Map of India showing distribution of *Hydrobiomorpha* species and subspecies.

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