Journal on New Biological Reports **2**(3): 241-245 (2013) **ISSN 2319 – 1104 (Online)**

Taxonomic description of a new species of the genus *Hydrocanthus* (Coleoptera: Noteridae) from the Loktak Lake of Manipur, North East India

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(Received on: 28 October, 2013; accepted on: 10 November, 2013)

ABSTRACT

A study was conducted during 2012-2013 in the Loktak lake of Manipur. One species under family Noteridae of genus *Hydrocanthus* were reported for the first time from Loktak lake of Manipur and also from India. Important morphological features are figured, including male genitalia (aedaegus). Further study may increase the number of species of this beetle from the Loktak lake of Manipur.

Key Words: Noteridae, *Hydrocanthus*, new species, Loktak lake.

INTRODUCTION

The family Noteridae is one of the families of the order Coleoptera having 51 known species (Nilsson and Vondel 2005). Noteridae are distributed throughout the world in wide variety of habitats. North American Noteridae are typically associated with filamentous algae and can be found in ponds with cat tails (Young and Frank 1985). Total 115 species were collected, 2 belongs to the family Noteridae were collected during 2003-2006form smoky mountains, in Tennessee (Staines et al. 2008). They were burrowing water beetles inhabiting shallow margins of standing or slow streams, often in muds or on plants (Saleh et al. 1992; Richoux 1994). Noteridae may be considered the only truly aquatic family of beetles presently known (Spangler 1982, 1986; Hillsengoff 1992). They breath atmospheric oxygen obtaining it by rising to the surface of the water and protruding the tip of the abdomen through the surface film, thus renewing their supply of air which is stored under the elytra. Thus, dependence upon atmospheric oxygen is probably a prime factor restricting the diving beetles to shallow water (Larson 1975; Eyre et al. 1992). The food habits of Noterids are poorly known. Wesenberg-lund (1912) assumed from the shape of the mandibles of the Noterus larvae that was entirely vegetarian. But Balfour- Browne and Balfour-Browne (1940) observed that Noterus larvae feed readily on dead chironomous larvae and dead individuals of their own kind. They also saw the larvae work their mandible on the surface of the root without appearing to get anything off. They suggested that possibly the larvae flourish on a mixed diet.

The Noterids are characterised by having distinct Noterid platform plate between the second and third pairs of legs, smooth oval bodies brown to dark reddish colour legs are short and stout adapted for digging. The mandibles have enlarged molar portion, the tergits are not flat, expanded projections. The members of Noteridae tend to be broadest near the base of the pronotum and they are relatively convex dorsally and ventrally flattened (Young 1985).

STUDY AREA

A study was conducted during 2012-2013 in the fresh water Loktak lake of Manipur. The geographical coordinates of the study area are 24° 25' N to 24° 40' N latitude and 93° 45' E to 93° 55' E longitude in the Southern part of the Imphal Valley of Manipur. It has 12 Km long and 8Km broad with 96 Km area during 1970's. However, due to the development of the Ithai Barrage, the water area of the Loktak has been

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up to 286 km^2.This lake is located at the Bishnupur district of Manipur 45 km away from the proper town Imphal. For the orientation of male aedeagus, we have followed the criteria proposed in Young (1985), Ciegler (2003), Epler (2010). The aedeagus is described and figured in its fundamental anatomical position.

METHODOLOGY

The specimens were studied in the Entomology Research Laboratory, P.G. Department of Zoology, Dhanamanjuri College of Science, Imphal. Photographs were taken after anaesthetizing the species with carbon tetrachloride. Morphometry of the beetles was taken with vernier caliper and ocular meter. All measurements are in mm. One specimen of *Hydrocanthus guignoti* is deposited in the Laboratory of Entomology, P.G.Department of Zoology, Dhanamanjuri College of Science, Imphal, Manipur (LEDMC-11-AQUA-51).

Male genitalia were removed from specimens that were first relaxed in lightly boiling water for 10 minute. An insect pin with a bent apex was inserted into the abdominal cavity to hook the base of the genital capsule. The entire capsule was then removed from the abdomen and placed in alcohol to dissect and examine. Male genitalia were then glued to a point and placed on the pin beneath the specimen.

RESULT

Hydrocanthus guignoti

Description of male

Diagnosis: *Hydrocanthus guignoti* can be distinguished from the other *Hydrocanthus* species by its relatively small size, the broad pronotum with lateral margins strongly curved, ventral platform of male shallowly impressed at prosternal- mesosternal juncture and without tubercles despite rather small size. Colour reddish brown, male genitilia diagnostic, the median lobe of aedeagus broad and slender, sickle shaped with a trace of a transverse ridge on left side is hardly visible, total length - 3.12 mm long, breadth - 1.48 mm wide. Body elongated and alternate behind.

Colouration

Head reddish brown, pronotum reddish brown, elytra detectively darken brown, then pronotum and head mearly uniformly light. Antennae, palpi yellow, legs yellow, prosternum yellow, prosternal process yellow anteriorly, dark red-brown along posterior margin, venter yellowish brown.

Description

Head, pronotum and elytron impunctate and smooth, slightly iridescent; pronotum strongly rounded laterally. Maxillary palp, shallowly notched at the apex, labial palpi large and simple with filiform antennae. Prosternal process very broad and truncated at the apex, densely setose laterally; prosternal process densely setate- punctuate throughout except narrowly along apical border; metasternum and anterior margin of prosternum together shallowly impressed with a smooth triangular area at base but no tubercles in smooth area; punctuate throughout except for basal triangular area with setate- punctures somewhat coarser and not so dense as those of prosternum and prosternal process. Fore legs with well developed curved hook spine on fore tibia, contiguous hind coxae; hind trochanter larger but not greatly modified and hind femur with well developed angular setae. Upper spur of inner pair of hind tibia serrate for about half of its length. Abdominal sternites nearly smooth with very fine micro sculpture and last visible sternite with patches of moderately coarse setate punctures on either side towards apex, but not evident depression (Fig.1).

Male genitalia

Median lobe of aedeagus broad and slender, sickle shaped with a trace of a transverse ridge on left side is hardly visible, right lateral lobes large with distinct apical lobe, left lateral lobe broad, sub triangular with fringe of setae along dorso-median margin (Fig. 2 and Fig. 3).

REMARKS

We have considered the present species as *Hydrocanthus guignoti* based on being small size and male aedeagus structure provided in Young (1985). We noticed that the male of *Hydrocanthus guignoti*

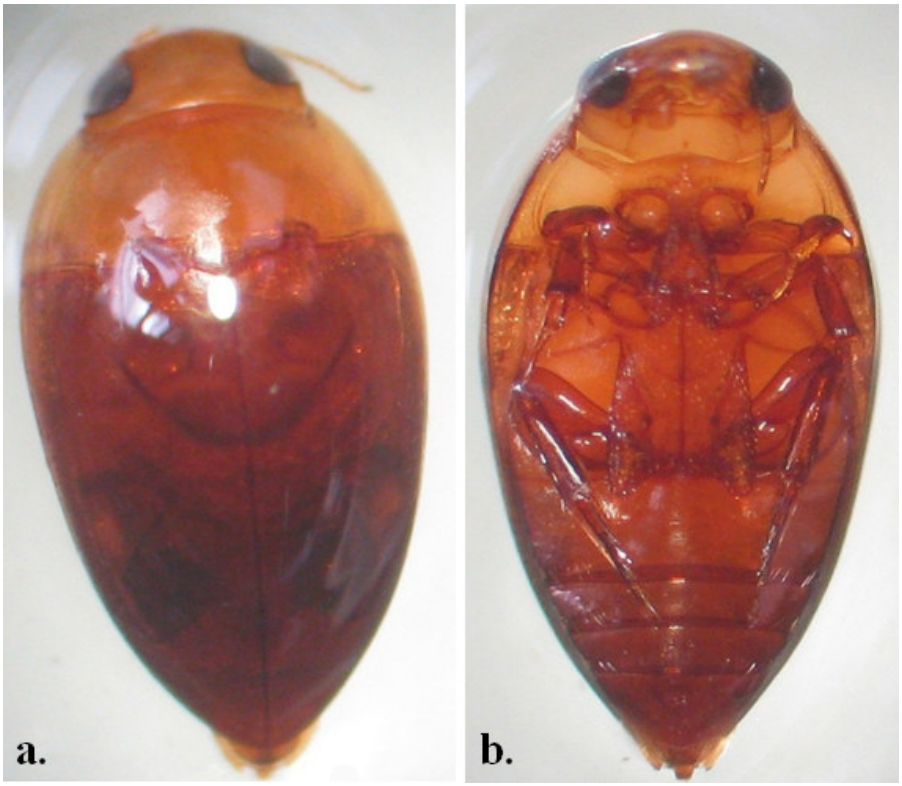

Fig. 1. Habitus of *Hydrocanthus guignoti*. a. dorsal, b. ventral

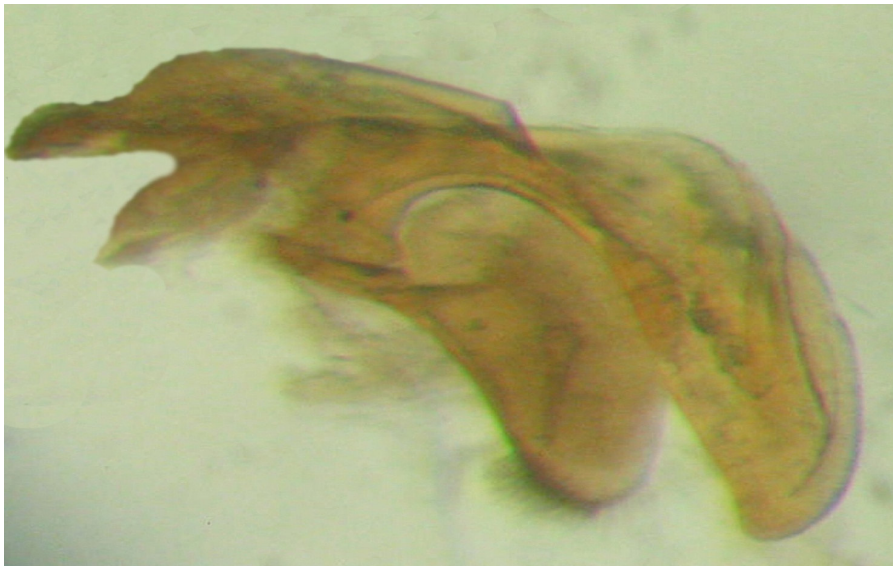

Fig. 2. Male Aedeagus of *Hydrocanthus guignoti*

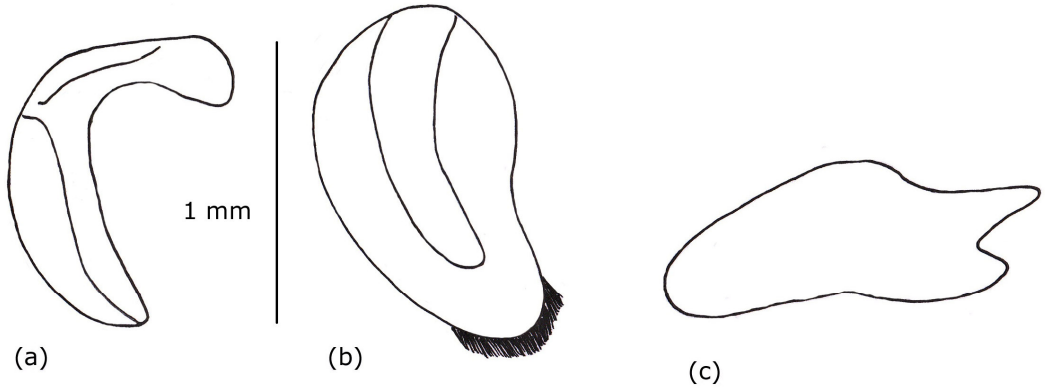

Fig. 3. a. Median lobe (left rotated); b. Left lateral lobe; c. Right lateral lobe

closely resembled that of *Hydrocanthus debilis*. On looking at the recently published literature (Toledo and Hendrich, 2006), male aedeagus of *Hydrocanthus indicus* from India different and were very much similar to *Hydrocanthus debilis* (Young 1985). The difference between the two species is in the size of the species and male aedeagus which seems to be a weak character to differentiate between the two species. As stated by Young (1985) that male *Hydrocanthus guignoti* can be differentiated by *Hydrocanthus debilis* by having larger and relatively broader than *debilis*. Similar is the case with illustrations provided for male aedeagus of both the species, basic structure is very similar. Based on the literature available on both the species, it is likely that these two are same species with slight geographical variations in the size or even it could be differences in the drawings by different authors. Therefore, a revision of this genus is requested based on the type specimens. Only one species *Hydrocanthus indicus* was reported from Assam (Toledo and Hendrich 2006) and no relevant literature and record about *Hydrocanthus guignoti*. Therefore, this species is a first report from Manipur as well as from India

ACKNOWLEDGEMENTS

The authors are grateful to the Principal, D.M. College of Science, Imphal and Head, Department of Zoology, D.M. College of Science, Imphal for giving laboratory facilities. The authors also remain thanks to the Ministry of Environment & Forest for giving the financial assistance.

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