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On a new species of *Neoceratobaeus* Rajmohana (Hymenoptera: Scelionidae) from India

P. Sunita and K. Rajmohana*

Zoological Survey of India, Kolkata, West Bengal 700053, India. Email: *mohana.skumar@gmail.com*

ABSTRACT: *Neoceratobaeus* Rajmohana (Hymenoptera: Scelionidae) was described from India as a monotypic genus. The present paper describes and illustrates the second species *N. dwitiyus* sp. nov. from West Bengal, India. Morphological affinities with the known species are discussed.

KEYWORDS: *Neoceratobaeus*, new species, Baeini, egg parasitoid

INTRODUCTION

Neoceratobaeus Rajmohana 2014, (Hymenoptera: Scelionidae) with type species *Neoceratobaeus gibbus* Rajmohana, 2014, has been a monotypic genus, described from India. With 7 segmented antenna ending in a large unsegmented clava in females, forewing rather spoon shaped distally and T1 having a large, backward directed and laterally compressed horn, the genus is easily diagnosed. It belongs to subfamily Scelioninae and tribe Baeini, Members of the tribe Baeini are unique among Scelonidae since they attack spider eggs (Austin *et al,* 2004; Carey *et al.* 2006). Majority of the Baeini species fall under 4 genera with 433 species known globally. *Ceratobaeus* Ashmead (165 species), *Idris* Förster (160 species), *Odontacolus* Kieffer (55 species), and *Baeus* Haliday (53 species). In India Baeini comprises 47 species under five genera - *Baeus* Haliday (1 species), *Ceratobaeus* Ashmead (12 species), *Idris* Förster (31species), *Neoceratobaeus* Rajmohana (1species) and *Odontacolus* Kieffer (2 species) (Johnson 1992, Johnson *et al.* 2018). In this paper *Neoceratobaeus dwitiyus* sp. nov. collected from West Bengal, India, the second species of the genus is described and illustrated. Morphological affinities with *N. gibbus* are discussed.

MATERIALS AND METHODS

Specimens were collected using yellow pan traps, set in a vegetable garden. 30 traps were kept for 10 hours. The collected specimens were preserved in 70% ethanol and later mounted on point-card tips. Descriptions and images were prepared using Leica M205-A stereomicroscope, with 1X objective and Leica DFC-500 digital camera and processed with LAS version 3.6 extended focus software. Morphological terminology follows Masner (1976), Austin and Field (1997) and Mikó *et al.* (2007, 2010).

Abbreviations used in the description are as follows: F1 to F4- Funicular Segments; L-Length; W-Width; H-Height; IOS- Inter Occipital Space; HW-Head Width, HH- Head Height; stgv- Stigmal vein; mv-Marginal vein; pmv- Post marginal vein; T1-T7-Metasomal tergites 1 to 7.

* Author for correspondence

Both the holotype and paratype of *N. dwitiyus* sp. nov. are deposited in the National Zoological Collection, Zoological Survey of India, Kolkata.

***Neoceratobaeus dwitiyus* sp. nov. Holotype Female (Figs. 1-6)**

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DESCRIPTION

Holotype Female. Length = 1.02 mm. Head and mesosoma black, metasoma yellow, contrasting in colour with rest of body, horn on T1 concolorus with metasoma, blackish brown only towards tip and; legs pale; eyes silvery; mandibles as well as base of antennal clava yellowish brown; wings clear and hyaline; veins brown (Figs 1, 2).

Head : (L: W): 35: 6 transverse dorsally, slightly wider than mesosoma; in anterior view subtriangular; vertex straight, upper frons, frons, vertex and occiput with coarse granulations; with fine and dense setigerous punctate; frons entirely, face and gena entirely sculptured except for a large smooth and glabrous speculum(Fig 4) , on antennal scrobe, extending upto three fourth eye level on frons medially; cheeks with fine radiating striae, lacking granulations in between striae, and gradually merging with granulations near lower margin of eyes, pilosity scanty; IOS : HW to HH =22 : 35 : 14 (in front view); eyes densely pubescent; mandibles with three pointed and equal teeth; central keel distinct, complete and expending till anterior ocelli; lateral ocelli contiguous with orbital margin; hyper-occipital carina complete; occipital carina distinct, striate-scrobiculate; temples coarsely granulate, without any striae; antennae with 7 segments, 4 funicular segments; clava large (Figs. 3, 6), segmentation indistinct; length and width of F1 a little less than that of pedicel, F1 longest, > 2x length of F2; F3 and F4 much transverse; clava large, 4 segmented, segmentation indistinct. L: W ratio of antennal segments being 17: 3; 7: 2; 1: 2; 1:2; 1:2; 1:2; 1:1; 14:8.

Mesosoma : (L : W = 31 : 33); narrower than head dorsally (Fig. 1); surface with granulations as on vertex; mesoscutum with dense pubescence; notauli distinct as a short strip, but visible only till 0.2 of mesoscutum, trans scutellar sulcus not crenulated; mesoscutellum moderately convex (Fig. 1), surface with granulations as on mesoscutum, pilosity scattered; posterior margin of mesoscutellum feebly excavate, a row stiff setae present on posterior border; metascutellum with an arched row of horizontal foveolae; propodeum feebly hairy, drawn into pointed spines at lower corners; propodeal lamellae and flanges on either sides of metasomal horn developed into spines laterally; pronotum laterally striate longitudinally and with rough rugosity, mesopleural carina distinct (Figs. 5), bordered, though not continuous, with longitudinal striae; acetabular carina, flanked by irregular punctate and irregular longitudinal elements; lower, stem of forewing emarginated inwards, fitting to curvature of metasomal horn when at rest; L : W =61 : 17; pmv longer than stgv; (mv : stgv : pmv = 2: 7 :8), pmv with 5-6 large setae; marginal fringe short; hindwing wider than usual, width of hindwing: forewing = 14 : 23; basal vein absent (Fig. 2).

Metasoma : (L : W = 58 : 34); T3 is widest among all the tergites ; all tergites transverse, T2 onwards with fine pubescence laterally; metasomal horn in dorsal view extending backwards, upto anterior half of T2, horn dorsally with closely placed concentric striae; median suture between T1 and T2 distended downwards; T1 longest among tergites; proportions of width to length of T1 to T7 medially being 23: 14; 31: 8; 34: 11; 27: 6; 22: 2; 14: 1; 8: 8 T1 and T2 with similar sculpture, weak and wavy longitudinal striae, T3 onwards with dense and fine irregular reticulate sculpture; anterior margin of T3 with a narrow smooth band; posterior margins of T3-T6 with a narrow smooth band; T7 entirely sculptured, with sparse long hairs (Fig. 1); ovipositor extended.

Male: Unknown.

Etymology: The species is named '**dwitiyus**', this being the second species under the genus ('Dwitiya' in Sanskrit = second)

Material examined: Holotype. Female (20678/ H3). India: West Bengal: Sagar Island, Phulbari (N21° 51' 43.94", E088° 07' 46.32"); Coll: Sunita; 21.iii.2018; yellow pan trap.

Fig. 1

Fig. 2

Fig. 3

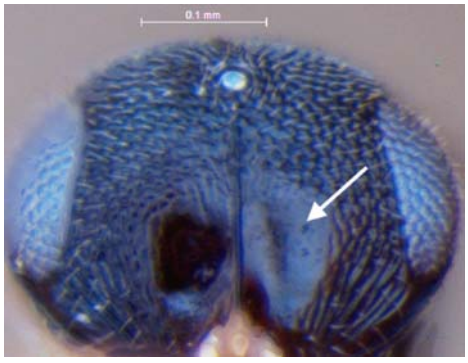

Fig. 4

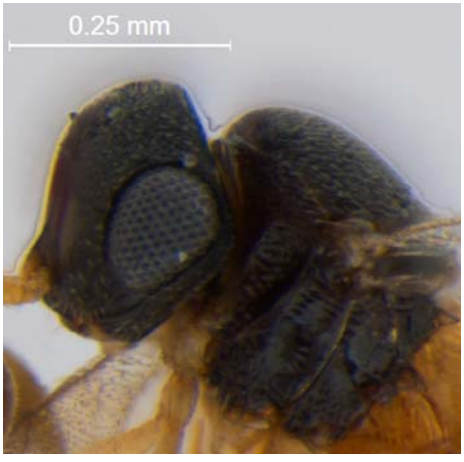

Fig. 5

Fig. 6

Figs. 1-6. *Neoceratobaeus dwitiyus* sp. nov. Holotype, female
1) Dorsal view; 2) Lateral view; 3) Wings; 4) Head front view (Speculum indicated); 5) Head with Mesopleuron; 6) Head with antenna

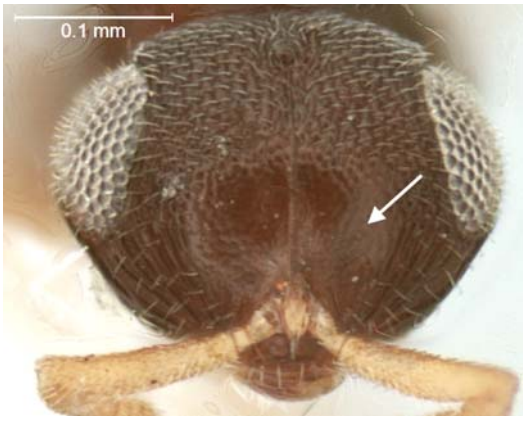

Fig. 7

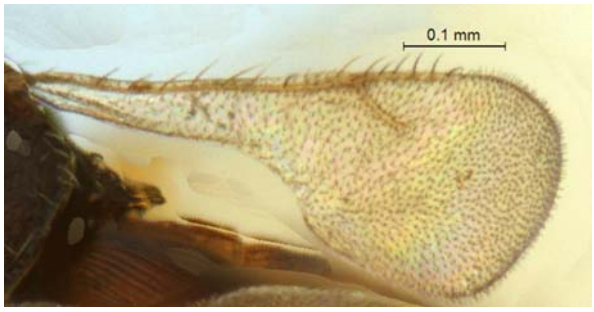

Fig. 8

Figs. 7-8. Female *Neoceratobaeus gibbus* Rajmohana
7) Head frontal view (Speculum indicated); 8) Forewing

Paratype: 1 female (20679/H3). India: West Bengal: Sagar Island: Gangasagar Island, Bharat Seva Ashram Campus (N21° 38' 22.05", E088° 04' 48.32"); Coll: Sunita; 23.iii.2018; yellow pan trap.

Diagnosis:

Neoceratobaeus dwitiyus sp. nov. is very similar to *N. gibbus*, but the former can be identified by the smooth, shiny and glabrous speculum on antennal scrobe, which is very conspicuous. *In N. gibbus*, speculum is not smooth (Fig. 7), instead with impressions or traces of coriaceous sculpture. In *N. dwitiyus*, forewing is comparatively longer, 3.5X as long as wide, with distal margin slantingly convex. In *N. gibbus*, forewing is wider, only 2.5X as long as wide, with a more rounded distal margin (Fig. 8). Both the species differ largely in the shape and size of the forewing (Figs. 3, 8).

Comments:

Genus *Neoceratobaeus* has been known by females only. The metasomal horn on T1, serve as a recess for the internally retracted ovipositor and the horn length is correlated to ovipositor length (Austin *et al,* 2004). The prominent metasomal horn of *N. dwitiyus* gives a clue of the length of the ovipositor and also that the eggs of the host spider would have a thick sac. Since only one specimen each was trapped, in both the collecting events, this indicates the rarity of the species.

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