

TAXONOMIC REVISION OF CRATOPUS SCHOENHERR (CURCULIONIDAE: ENTIMINAE) FROM INDIA

G. MAHENDIRAN* AND V. V. RAMAMURTHY

National Pusa Collection, Division of Entomology,
Indian Agricultural Research Institute, New Delhi – 110 012, INDIA
e-mail: mahi.iari@gmail.com

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***Corresponding
author**

ABSTRACT

Two species of the genus *Cratopus* (Curculionidae: Entiminae) known from India are revised. The generic and species descriptions are updated through addition of measurements and description of elytral vestiture characters. A modified key to the species of *Cratopus* is provided.

INTRODUCTION

The broad nosed weevils of the subfamily, Entiminae with more than 12000 species described, are the largest group of weevils and they are distributed worldwide. Except for some larger genera like *Myloccerus*, *Tanymecus*, *Dereodus*, *Lepropus*, *Episomus* and *Indomias*, the entimines are poorly studied. The genus *Cratopus* comes under the Entiminae, which is taxonomically important and poorly studied in India. The only substantial contribution on this genus had come from Marshall (1916). The available information is limited and is lacking in essential diagnostics especially genitalia and elytral vestiture. Keeping this in view, the present study was proposed to address the gaps in existing knowledge through improving the descriptions by studying the taxonomic characters in a comprehensive manner and by including genitalia and elytral vestiture. All taxonomic characters required attention had to be illustrated and keys improved with the objective of quick and authentic identification of species. This genus first described by Schoenherr (1826) under broad group Gonatoceri was placed under the group Cyphides by Lacordaire (1863). But, Marshall (1916) included it under Naupactides, based on the character of the tibial apex being not enclosed, under Brachyderinae. Later, *Cratopus* was categorized under Cratopini by Emden (1944) and Gandhi and Pajni (1984). However, Thompson (1992) revised this under Entiminae. Lyal and Alonso-Zarazaga (2006) according to Art 29.31 of the code changed it to Cratopodini. Thus it falls under Cratopodini of Entiminae. Schoenherr (1826) designated *Cratopus triangularis* as a type species. But, Alonso

-Zarazaga and Lyal (1999) after required scrutiny of literature and specimens brought *Lixus melanocephalus* Fabricius as a type species. *Antistius* Fairmaire, *Nadhernus* Reitter and *Pamphaea* Pascoe were synonymized with *Cratopus* by Hustache (1919) and Richard (1983), respectively. All these changes modified the concept of the genus and its distribution from closely related genera. It will be worthwhile to note that this genus is well distributed in the East coast of Africa and the islands of the Indian Ocean as far East as the Andamans and Nicobars. As on date, 81 species are known, of which two species had been reported from India.

The present study confirms the details provided by Marshall (1916) and augments the same with measurements and elytral vestiture. This also reveals that comparison of breadth of elytra with prothorax is useful in separating the species like *adspersus* and *nicobarensis*.

MATERIALS AND METHODS

Voucher material including types are deposited with National Pusa Collection (NPC) of the Division of Entomology, Indian Agricultural Research Institute, New Delhi. All the taxonomic characters, except ultra structure of elytral vestiture were studied using intact specimens. WILD M8 stereozoom microscope, Leica MZ 16A stereozoom microscope, LEITZ ORTHOLUX II interference, phase contrast, compound microscope and Leica DFC-290 camera attached with Leica application suit ver. 2.8.2 were used in the taxonomic studies. Illustrations were made using a drawing tube fitted with a camera lucida.

RESULTS AND DISCUSSION

Taxonomic studies

Genus *Cratopus* Schoenherr, 1826: 120 [Type: *Lixus melanocephalus* Fabricius, 1798]; Gender: Masculine
Cratopomorphus Deyrolle, 1863: 13
Pamphaea Pascoe, 1886: 322; Richard, 1983: 5
Nadhernus Reitter, 1899: 285; Hustache, 1919: 497
Antistius Fairmaire, 1902: 358; Hustache, 1919: 476

Genus description

Head: exerted, eyes sublateral and 1.20–1.23x as long as broad, frons with a central fovea.

Rostrum: continuous with but 1.37x shorter than head, about (1.03 - 1.04x) as long as broad, almost parallel sided, anterior margin shallowly sinuate, scrobes broad and deep, strongly curved downwards or passing obliquely below eyes, lateral, but lower edge often visible from above (Figs. 1-4), mandibles with a distinct scar, mentum usually supported on a very short peduncle and concealing maxilla, but occasionally peduncle longer and maxilla more or less fully exposed.

Antennae: testaceous to brown, scape gradually clavate, reaching or exceeding posterior margin of eye, first funicle segment 1.10x longer than second, third to seventh subequal, segments of club distinct.

Prothorax: 1.26–1.35x broader than long, posterior margin 1.24–1.45x broader than anterior, both margins truncate, anterior margin slightly oblique at sides, without lobes or vibrissae, upper surface evenly covered with shallow coarse punctations or small granulations (Figs. 7, 8).

Scutellum: distinct, 1.2x longer than broad.

Elytra: broadly ovate, shoulders rounded or sloping, basal margin truncate or very faintly sinuate, with ten or twelve striae, hind wings present (Figs. 10, 11, 19-22). Elytral vestiture of only one type, elongate, apex sharply or bluntly pointed and grey with pink tinges or light yellow (Figs. 16–18).

Sternum: with fore coxae nearer anterior margin of prosternum, mesosternum with epimeron only slightly smaller than episternum and separating it from elytron at base; metasternum 1.97x longer than middle coxae, episternum narrow, hind coxae not touching elytra.

Venter: with intercoxal process ogival, second ventrite 1.18 – 1.46x longer than third and fourth together and separated from first by a very strongly curved stria (Fig. 12).

Legs: light brown to dark brown or black, with fore femora armed with a single tooth below; all tibiae usually denticulate internally, tibial apex of hind pair open (Fig. 14), tarsal claws connate at base (Fig. 15).

Key to species (modified after Marshall, 1916)

Elytra with twelve striae; metasternum between coxae much longer (1.97x) than middle coxae.....2
 Elytra with ten striae; metasternum only slightly longer than middle coxae.....*sinhalensis*
 Vestiture beneath the eye evidently broader than those on frons (Fig. 3); elytra 5.08x as long as rostrum, 2.87x as long as that of prothorax, its breadth at the middle 1.1x as long as that of prothorax and 1.22x as that of its breadth at

base.....*adspersus*

Vestiture beneath the eye just as narrow as those on frons (Fig. 4); elytra 6.3x as long as rostrum, 3.44x as long as that of prothorax, its breadth behind the middle 1.85x as long as that of prothorax and 1.53x as that of its breadth at base.....*nicobarensis*

Species description *Cratopus adspersus* Waterhouse

(Figs. 1, 3, 5, 7, 10, 16, 19, 20).

Cratopus adspersus Waterhouse, 1884: 576.

General colour: black or piceous, sparsely and evenly clothed with recumbent hair like vestiture, greyish with a slight green, blue or coppery reflexion, and scattered elytra with small groups of few broader scales; scutellum densely clothed with white scales (Figs. 19-20).

Head: with rather coarse shallow punctations, intervals forming a transverse wrinkles, 1.39x as long and 1.38x as broad as rostrum, 0.79 x as long and 0.6x as broad as prothorax, frons with a central fovea, its breadth 1.2x broader than length of eyes, which are only moderately convex; vestiture just beneath eyes distinctly broader than those on frons.

Rostrum: 0.98x as long as the breadth at base of rostrum and 0.71x as long as the breadth at base of head, parallel, almost flat above, with confluent punctations throughout and with a low smooth costa on each side running obliquely from above antennae towards eyes, scrobe strongly curved (Figs. 1, 3).

Antennae: testaceous to brown, scape not exceeding posterior margin of eye; first funicle segment longest, 1.1x, 1.64x, 2.2x and 1.58x as long as second, third, fourth and sixth, fifth and seventh, respectively; in terms of breadth, seventh segment broadest of all, dilated anteriorly, 1.2x as broad as first to sixth. Club 2.64 xs as long as first and 4.15x as long and 1.5 xs as broad as seventh segment of funicle (Fig. 5).

Prothorax: 1.77x as long as and 2.33x as broad as rostrum, 1.35x broader than long at behind middle; breadth behind the middle 1.55x as at apex, 1.07x as broad as at base, base 1.45x as broad as apex, sides strongly rounded, base truncate and 1.45x longer than apex, upper surface evenly covered throughout with shallow granulations which are more or less confluent (Fig. 7).

Legs: light to dark brown, rugosely sculptured, with pale hair like vestiture and a denser ring beyond the middle on hind femora.

Elytra: 5.08x as long as rostrum, 2.87x as long as that of prothorax; its breadth at middle 1.1x as that of prothorax and 1.22x as that of its breadth at base, broadly ovate, sides very slightly rounded, base truncate or very faintly sinuate, apices separately pointed; twelve striae, very shallow, but distinctly punctate, intervals flat, finely and transversely rugose, tenth more convex and slightly costate before the middle in the ♀ only, lateral intervals with obliquely raised seate, especially in basal half (Figs. 10, 19, 20). Only one type of elytral vestiture, elongate, slightly curved, broader near base then gradually narrowed towards apex and base, apex bluntly pointed, with a subrectangular pedicel, granulated and grey with pink tinges (Fig. 16).

Venter: with first ventrite longest, 1.55x, 3.45x, 3.88x and 1.55x as long as second, third, fourth and fifth, respectively; in



Figure 1-22: *Cratopus*. Head, dorsal view: 1. *adpersus*, 2. *nicobarensis*; Head, lateral view: 3. *adpersus*, 4. *nicobarensis*; Antenna: 5. *adpersus*, 6. *nicobarensis*; Prothorax, dorsal view: 7. *adpersus*, 8. *nicobarensis*; 9. *Cratopus* Femora; Elytron, dorsal view: 10. *adpersus*, 11. *nicobarensis*; 12. Venter, 13. Mentum, 14. Hind tibial apex, 15. Claw; Elytral vestiture: 16. *adpersus*, 17, 18. *nicobarensis*; Dorsal and lateral view: 19, 20. *adpersus*, 21, 22. *nicobarensis*

term of breadth, first the broadest, 1.08x, 1.22x, 1.34x and 1.55x as broad as second, third, fourth and fifth, respectively.

Length: 9.00mm; **breadth:** 2.55 mm.

Specimens examined: Maldives Islands: Addu, 23.vi.1934, Coll. E.A. Glennie.

Distribution: INDIA: Minicoy. MALDIVES ISLANDS, SEYCHELLES, EAGLE ISLANDS (B.I.O.T).

***Cratopus nicobarensis* Marshall**

(Figs. 2, 4, 6, 8, 11, 17, 18, 21, 22).

Cratopus nicobarensis Marshall, 1916:46.

General colour: black or piceous, sparsely and evenly clothed with recumbent hairlike vestiture; vestiture greyish with a slight green, blue or coppery reflexion, and scattered over elytra are small groups of few broader scales; scutellum densely clothed with white scales (Figs. 21, 22).

Head: with rather coarse, shallow punctations, intervals forming transverse wrinkles, 1.37 x as long and 1.63x as broad as rostrum, 0.75x as long and 0.75x as broad as prothorax, frons with a central fovea, its breadth equal to length of eyes, which 1.23x longer than broad; vestiture just beneath eyes as narrow as those on frons, which are slightly narrower than in *C. adspersus*.

Rostrum: shorter (0.94x) in proportion to eyes, 0.96x as long as the breadth at base of rostrum and 0.59x as long as the breadth at base of head, almost flat above, with confluent punctations throughout and with a low smooth costa on each side running obliquely from above antennae towards eyes, scrobes strongly curved (Figs. 2, 4).

Antennae: testaceous to brown, scape not exceeding posterior margin of eye; first segment of funicle longest, 1.28x, 2x and 2.34x as long as second, third and fourth, fifth, sixth and seventh, respectively; in terms of breadth, seventh segment broadest of all, 1.4x, 1.75x and 1.17x as broad as first, second to fifth and sixth, respectively. Club 2.22x as long as first, and 5.17x as long and 1.58 x as broad as seventh segment of funicle (Fig. 6).

Prothorax: 1.83x as long as and 2.2x as broad as rostrum, 1.26x broader than long at little behind middle; breadth at little behind middle 1.37x as broad as at apex, 1.11x as broad as at base, base 1.24x as broad as apex, sides strongly rounded, base truncate, upper surface evenly covered throughout with shallow granulations which are more or less confluent (Fig. 8).

Legs: light to dark brown, rugosely sculptured, with pale hair like vestiture and a denser ring beyond the middle on the hind femora.

Elytra: 6.3x as long as rostrum, 3.44x as long as that of prothorax; its breadth behind middle 1.85x as that of prothorax and 1.53x as that of its breadth at base, broadly ovate, sides very slightly rounded, base truncate or very faintly sinuate, apical area a little more produced; striae more distinctly punctate, especially those on inflexed margin, which are well defined right up to base, intervals flat, finely and transversely rugose, tenth more sharply costate in ♀ (Figs. 11, 21, 22). Only one type of elytral vestiture, elongate, broader near base, then gradually narrowing towards apex and base, apex sharply pointed, granulated and grey with pink tinge or light yellow

(Fig. 17, 18).

Venter: with first ventrite longest, 1.25x, 3.34x, 4x and 2x as long as second, third, fourth and fifth, respectively; in term of breadth, first the broadest, 1.08x, 1.34x, 1.66x and 2.03x as broad as second, third, fourth and fifth, respectively.

Length: 10.75 mm; **breadth:** 4.35 mm.

Specimen examined: Andaman and Nicobar: Car Nicobar, 22-26.iii.1925, P.V. Isaac Coll.

Distribution: INDIA: Andaman and Nicobar: Car Nicobar

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