THE SAWFLY GENUS *CROESUS* LEACH (HYMENOPTERA: ALLANTINAE) IN INDIA

V. Vasu

Department of Zoology, Punjabi University, Patiala, Punjab 147002, India.

Abstract

Two species of the genus *Croesus* Leach viz. *C. orientalis* (Rohwer) and *C. mriduae* sp. nov. are dealt herein. Taxonomic validity of both the species and their affinities have been supported by taxonomic description, illustrations, detailed discussion and review.

Keywords

Croesus, *Hymenoptera*, mriduae, *Nematinae*, orientalis *Rohwer*

Abbreviations

AMF - anterior part of median fovea
AWMT - apical width of metatibia
COF - circumocellar furrow
EL - eye length
FR - frontal ridge
IATS - Inner apical tibial spur
ICD - inter cenchri distance
IDMO - interoocular distance at level of median ocellus
IOF - interocellar furrow
ITD - inter tegular distance
LID - lower interocular distance
MB - metabasitarus
MWMB - maximum width of metabasitarsus
OATS - Outer apical tibial spur
OCL - oculooccipital line
OOL - oculoocellar line
PMF - posterior part of median fovea
POF - postcellar furrow
POL - postocellar line
UCL - oculooccipital line
UOL - oculoocellar line

Introduction

Taxonomic studies on the Sawfly genus *Croesus* erected by Leach (1817) taking *Tenthredo septentrionalis* Linnaeus as its type species are carried out from India. This small genus is now represented by only ten species and is restricted to the northern hemisphere. In India two species are on record, one of which is new to science and is described here, and the other one, *C. orientalis* Rohwer, from northeastern India is redescribed following a standard pattern. Illustrations pertaining to genitalia and other morphological characters of taxonomic importance are provided.

Konow (1905) catalogued six species under this genus. Following this work Benson (1958) dealt with the genus, but only the British fauna that is represented by four species was keyed out and illustrated. Benson (1963) again dealt with this genus and presented a key for separating three species -- *varus* Villaret, *orientalis* Rohwer and *septentrionalis* Linnaeus from each other and also from the other known species that are placed under two species-complexes, namely, *latipes* complex (i.e., *latipes* Villaret, *nigrodorsatus* Malaise, and *latitarsus* Norton) and *japonicus* complex (i.e., *japonica* Takeuchi, *nigromaculatus* Malaise, and *castaneae* Rohwer). In the present text the new species has been thoroughly compared with all of the known species treated to date under this genus.

The type material of new species is housed at Division of Entomology, Pusa National Collections, Indian Agricultural Research Institute, New Delhi, India.

Received 26 November 2002 *Finally accepted 25 November 2003*

Genus *Croesus* Leach

Croesus Leach, 1817: 129; Konow, 1905: 61; Benson, 1958: 148, 209; Benson, 1963: 25; Abe & Smith, 1991: 23, 106.

Type species

Croesus septentrionalis (Linnaeus)

Distribution

Northern Hemisphere (Holarctic and Oriental regions).

Diagnosis

Adult: Wings normal; forewings extending beyong apex of abdomen, hyaline and often with infuscate band below stigma; forewing cell 2R1 without crossvein, vein Sc before point of origin of vein M from R, and cell without close middle loop; cell c almost half as wide as medial width of apical part of vein C at point of origin of vein Rs+M from R. Frontal crest angularly produced between antennae in lateral view, inner orbits between eyes and antennae often convex is dorsal aspect; clypeus deeply incised. Tarsal claw with subapical tooth of varied length, basal lobe absent, metatibial apex and metabasitarsus greatly expanded like leaves, width of basitarsus greater than half length of rest of tarsal segments collectively. Cerci extending well beyond posterior apex of ovipositor sheath.

***Croesus orientalis* Rohwer**
(Figs. 1-6)

Croesus orientalis Rohwer, 1921: 109; Benson, 1963: 25

Material depository

Holotype borrowed from USNM, Washington, D.C. appended with labels as: *Croesus orientalis* Rohwer, Type, No.22892, female, 17.ix., Shillong, 5000ft, Fletcher collection, Lon No. 123.

Material examined

One female, 2.ix.1994, Shillong, Meghalaya, 1500m, coll. V. Vasu.

Individual variation

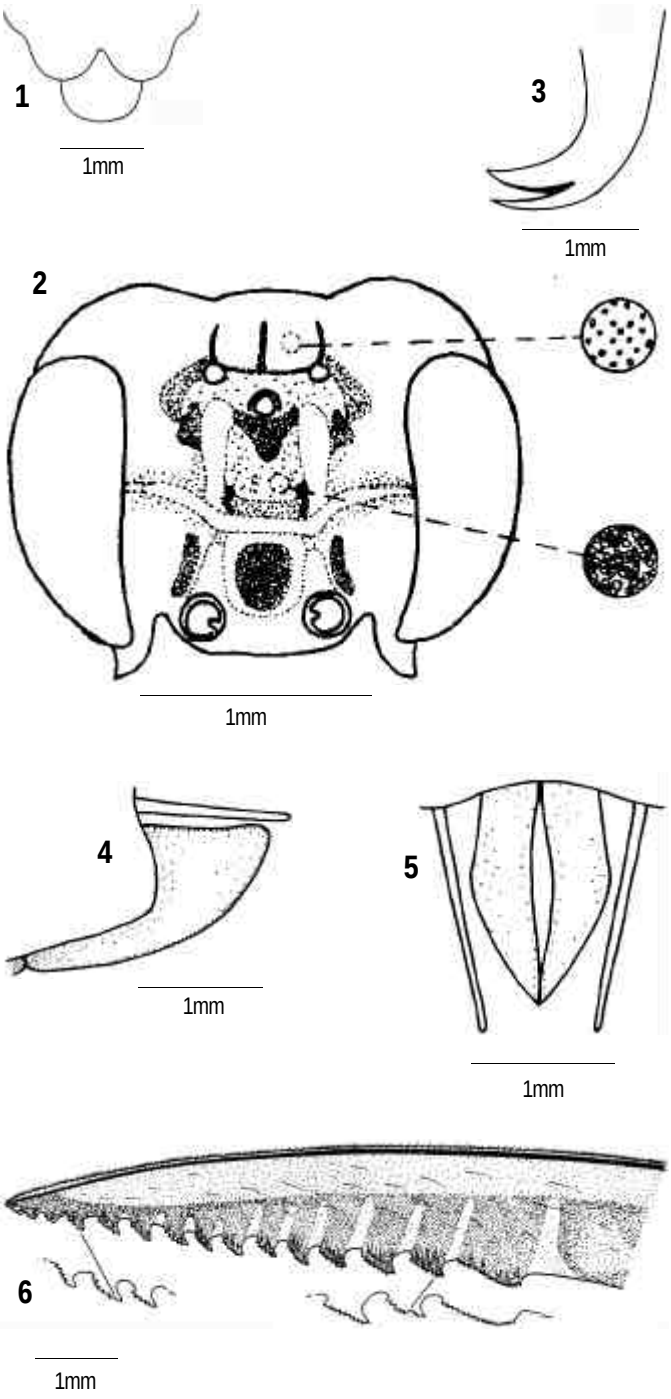
Both are alike.

Distribution

Myanmar; India: Meghalaya.

Diagnostic features

Based upon the general colour pattern and reflection of the body, general pattern of distribution of punctures on various parts of body, absence of interocellar furrow, size of malar space almost of diameter of median ocellus, extension or cerci well beyond posterior margin of ovipositor sheath, flat top of mesoscutellum, and antennal segment three shorter than four. The two species dealt herein viz. *C. orientalis* Rohwer and *C. mriduae* sp. nov. come close to each other, but the former can



Figures 1-6.* Croesus orientalis *(Rohwer)
1 - Clypeus and labrum; 2 - Head (front view); 3 - Tarsal claw; 4 - Ovipositor sheath (lateral view); 5 - Ovipositor sheath (dorsal view); 6 - lancet

be set distinctly aside from the latter on the basis of following significant characters such as: temple, mesonotum, and mesopleura almost impunctuate (Densely punctate in latter); scape 0.8x its apical width (1.5x in latter); scape and pedicel almost equal (2:1 in latter); segments three and four as 4:5 (5:6) in latter; clypeus triangularly incised (semicircularly incised in latter); supraantennal pit shallowly canaliculated (deep, crescent shaped in latter); median fovea pit-like (ditch-like in latter); circumocellar furrow distinct (shallow in latter); lateral furrows ending half way to hypothetical hind margin of head (as in latter); postocellar area wider than long as 3:2 (2:1 in latter); head widened behind eyes (parallel in later); mesoscutellar appendage ecarinate (carinate in latter); tarsal claw with subapical tooth longer than apical one (shorter in latter); and pubescence silvery, 0.8x scape length (mixed brownish and silvery, 0.3x in latter).

Female: Colour: Body black except pale yellow metatrochanter and adjoining parts of coxa and femur, and brownish labrum. Wing hyaline with infuscated band below stigma on forewing; venation including costa, subcosta and stigma fuscous to black.

Structure: Length 9.0mm. Antenna 4x head width, scape and pedicel almost equal and each 0.8x its apical width, segments three and four as 4:5; clypeus (Fig. 1) triangularly emarginated up to ½ of its length, labrum (Fig. 1) broader than long as 3:2 with almost truncate anterior margin, malar space 1.1x diameter of median ocellus and 0.8x international line; LID:IDMO:EL = 1.0:1.0:0.7; POL:OCL:UOL:UCL = 1.0:1.2:1.2:0.8; supraclypeal area tectiformly elevated, supraantennal pits shallowly canaliculated; frontal area at level of eyes, supraantennal tubercles and frontal ridges low lying; median fovea in form of deep oval pit just above supraclypeal area and posteriorly separated from broad uneven part by means of transverse ridge touching inner eye margin (Fig. 2); postcellar furrow shallow, interocellar furrow absent; circumocellar furrows distinct; lateral furrows sunken, bulging medially and ending abruptly half way to hypothetical hind margin of head; postocellar area subconvex, wider than long as 3:2 with median longitudinal carina in its anterior 2/3; head dilated eyes; mesoscutellum almost flat, appendage ecarinate; ICD:ITD = 1.0:3.5; tarsal claw (Fig. 3) with subapical tooth stronger and longer than apical one and distance between two tips shorter than length of subapical one, basal lobe absent; metabasitarsus longer than following three joints combined as 2:1, AWMT:MWMB:MB:IATS:OATS: = 1.0:1.0:3.2:1.5:0.9. Cerci extending well beyond posterior apex of ovipositor sheath (Fig. 4, lateral view; Fig. 5, dorsal view); lancet (Fig. 6) having 15 serrulae.

Sculpture: Head with densa, minute, almost confluenting punctures on frontal area, rest with fine, scattered punctures; mesonotum with dense, minute, distinct punctures; mesoscutellum punctate like mesonotum on its posterior half, appendage impunctate; mesepisternum shining with dense, fine punctures; mesosternum with large, scattered punctures; abdomen densely microstriated and with dense, large, distinct punctures on posterior ½ of each tergite 4-8.

Pubescence: Silvery, 0.8x scape length.

Male: Yet to be discovered.

***Croesus mriduae* sp. nov.**
(Figs. 7-14)

Material examined
Holotype: One female, 26.v.1986, Manali, Himachal Pradesh, 2200m, coll. M.S. Saini.

Paratype: Three males, 27.vii.1982, Kalatop, Himachal Pradesh, 2400m, coll. M.S. Saini.

Individual variation
All specimen alike except forewing of female has three cubital cells, the second one is the largest.

Distribution
India: Himachal Pradesh.

Etymology
Species is named after Mridu, the only daughter of the author.

Diagnostic features
The following discussion is made to set the two species, viz. *C. orientalis* Rohwer and *C. mriduae* sp. nov. distinctly far apart from rest of the known species of the genus *Croesus* Leach. The characters bringing them close are discussed under the former. The two species can be separated from *C. brischkei* Zaddach, *C. japonica* Takeuchi, *C. latipes* Villaret and *C. varsus* Villaret as: abdomen entirely black (red girdled in latter four species); black part with metallic reflection (without metallic reflection in *brischkei* Zaddach and *varus* Villaret); temple, mesonotum and mesopleura almost impunctate in *orientalis* Rohwer (distinctly punctate in *brischkei* Zaddach and *varus* Villaret); mesopleura above smooth and almost impunctate (Smooth with distinct punctures in *brischkei* Zaddach and *varus* Villaret whereas rough without punctures in *japonica* Takeuchi and *latipes* Villaret); and POL:OCL = 1.0:1.2 in *orientalis* Rohwer (1.0:0.9-1.0 in *latipes* Villaret). The entirely black coloured abdomen brings the two species in question quite close to *C. nigrodorsatus* (Malaise); *C. latitarsus* Norton and *C. castaneae* (Rohwer), however the two can be separated from the latter three species as: mesopleura above smooth with few punctures or almost impunctuate (rough without punctures in latter three); POL:OCL = 1.0:1.2 in *orientalis* Rohwer (1.0:0.9-1.0 in

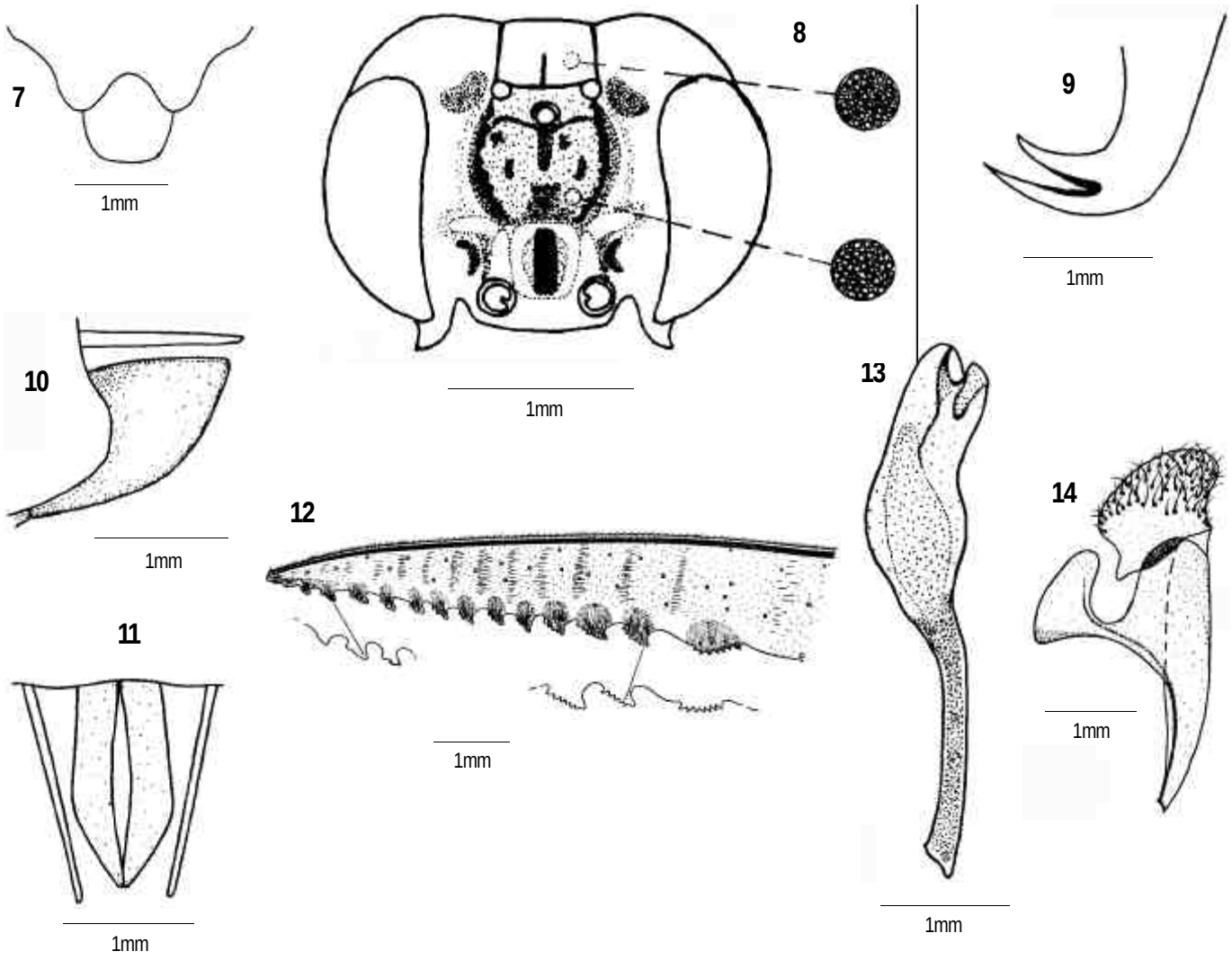


Fig 7-14. **Croesus mriduae** ***sp. nov.***
7 - Clypeus and labrum; 8 - head (front view); 9 - tarsal claw; 10 - ovipositor sheath (lateral view); 11 - ovipositor sheath (dorsal view); 12 - lancet; 13 - penis valve; 14 - gonoforceps.

nigrodorsatus (Malaise) and *latitarsus* Norton); sternopleural line glaberate (punctate in *nigrodorsatus* (Malaise) and *latitarsus* Norton). However the characters pertaining to clypeal incision and sculpture on head bring the two species in question very close to *C. septentrionalis* (Linnaeus), the characters distinguishing the two from the latter one are as follows: mesopleura above smooth with distinct punctures or almost impunctate (rough without punctures in latter); POL:OCL = 1.0:0.8 in *mriduae* sp. nov. (1.0:1.2:1.3 in latter); malar space of diameter of median ocellus (distinctly longer than diameter of median ocellus in latter); clypeus incised ½ of its medial length (distinctly more than half of its medial length in latter).

Female: Colour: Body black, ferruginous are: femora, tibiae and tarsi of front four legs, rest of parts of legs fuscous to black except pale yellow metatrochanter and adjoining parts of coxae. Wings hyaline, venation including costa, subcosta and stigma ferruginous.

Structure: Length 9.0mm. Antenna 3.3x head width, scape 1.5x its apical width, pedicel 0.8x its apical width, scape and pedicel as 2:1, segments 3 and 4 as 5:6; clypeus (Fig. 7) semicircularly incised up to ½ of its length, labrum (Fig. 7) broader than long as 3:2 with almost truncate anferior margin; malar space 1.0x diameter of median ocellus and 0.8x interantennal line;

LID:IDMO:EL = 1.0:1.0:0.7, POL:OCL:UOL:UCL = 1.0:0.8:0.7:0.7; supraclypeal area tectiformly elevated, supraantennal pits crescent-shaped; frontal area almost at level of eyes, supraantennal tubercles and frontal ridges low lying; median fovea in form of deep oval ditch and separated from low lying uneven posterior part (Fig. 8); postocellar furrow distinct, interocellar furrow absent, circumocellar furrows shallow; lateral furrows distinct, converging posteriorly and ending abruptly at hypothetical hind margin of head; postocellar area convex, wider than long as 2:1, with distinct median longitudinal furrow in its anterior ½; head parallel behind eyes; mesoscutellum flat, appendage carinate; ICD:ITD = 1.0:4.5; tarsal claw (Fig. 9) with subapical tooth stronger but shorter than apical one, and distance between two tips shorter than length of subapical one, basal lobe absent; metabasitarsus longer than following 3 joints combined as 8:5, AWMT:MWMB:MB:IATS:OATS: = 1.0:1.0:3.0:1.1:0.8. Cerci extending well beyond posterior apex of ovipositor sheath (Fig. 10, lateral view; Fig. 11, dorsal view); lancet (Fig. 12) having 15 serrulae.

Sculpture: Head with dense, minute, confluenting punctures; mesonotum with dense, minute, distinct punctures; mesoscutellum punctate like mesonotum on its posterior half and lateral aspects, appendage subrugose; mesepisternum shining with dense, confluenting punctures; mesosternum with dense, minute, confluenting punctures; mesosterna with dense, minute, distinct puntures; abdomen densely cross-striated and with dense, minute, distinct punctures.

Pubescence: Mixed brownish and silvery, 0.3x scape length.

Male: Average length 6.5mm. Similar to female.

Gentialia: Penis valve (Fig. 13), gonoforceps (Fig 14)

Acknowledgements

The author is highly thankful to Prof. M.S. Saini, Department of Zoology, Punjabi University, Patiala, India for allowing the study and physical verification of the material of the species in question and also for his valuable suggestions. The author is highly thankful to Dr. D.R. Smith, USNM, Washington, D.C. USA for lending the type material, his valuable suggestions and for providing the concerned literature.

References

Abe, M. and D.R. Smith (1991). The Genus-group Names of Symphyta (Hymenoptera) and their type species. *Esakia*, 31: 1-115.

Benson, R.B. (1958). Hymenoptera 2. Symphyta Section (c). Nematinae (Tenthredinidae). *Handbooks for the Identification of British Insects* 6(2c): 139-152.

Benson, R.B. (1963). The Nematinae (Hymenoptera, Tenthredinidae) of South-east Asia. *Entomologisk Tidskrift* 84(1-2): 18-27

Konow, F.W. (1905). Hymenoptera, Fam. Tenthredinidae. In: Wytsman, P. (editor). *Genera Insectorum*. Fasc. Brxelles, 29: 176pp.

Leach, W.F. (1817). *The Zoological Miscellany III; Being Descriptions of New or Interesting Animals*. E. Nodder and Son, London, 3: 151pp.

Rohwer, S.A.(1921). Notes on sawflies, with descriptions of new genera and species. Proceedings of the United States National Museum, 59 (2361): 83-109.