



Research Paper

ADDITION OF TWO NEW SPECIES OF GENUS *Cladarctia* KODA TO SUBFAMILY ARCTIINAE (ARCTIIDAE: LEPIDOPTERA) FROM NORTH INDIA

Amritpal Singh Kaleka

Department of Zoology & Environmental Sciences,
Punjabi University, Patiala-147002,
Punjab, India.

Abstract

Two new species i.e., *spinulatus* and *trimaculatus* of genus *Cladarctia* Koda have been described from India. Both the species completely conform to the characterization of the type species of this genus- *Cladarctia quadriramosa* (Kollar) and form a natural group. These species can be distinguished from each other on the basis of distinct genitalic structures and other morphological characters.

Key words: Arctiidae, *Cladarctia*, *spinulatus*, *trimaculatus*, new species.

INTRODUCTION

During collection surveys, a complex phenon of fourteen specimens referable to genus *Cladarctia* Koda were collected from Himachal Pradesh and Uttarakhand. All the individuals possessed a similar type of general coloration, maculation and wing pattern and seemed to belong to *Cladarctia quadriramosa* (Kollar). But after critical examination of morphological characters, particularly the genitalic features, it has been concluded that these individuals belong to two distinct species and could not be identified with the help of relevant literature (Hampson [1, 2], Koda [6], Watson et al. [7], Kaleka [3, 4] and comparisons with known species of genus *Cladarctia* Koda, *Estigmene* Hübner and other allied genera. These two species i.e., *spinulatus* and *trimaculatus* are described and illustrated here as new to science.

MATERIAL AND METHODS

The studied material was collected from different localities falling in the States of North-West India. The collected material was treated as per standardized techniques in Lepidopterology. The terminology for naming different parts of genitalia has been followed after Klots [5]. The diagrams were drawn with the help of graph eye-piece fitted in Stereo-zoom binocular.

ABBREVIATIONS

IA: First anal vein; 2A: Second anal vein; AED: Aedeagus; CO: Costa; CRN: Cornuti; CRP: BU: Corpus bursae; CU: Cucullus; Cu₁: First cubital vein; Cu₂: Second cubital vein; DU.EJ: Ductus ejaculatoris; JX: Juxta; M₁: First medial vein; M₂: Second medial vein; M₃: Third medial vein; R₁: First radial vein; R₂: Second radial vein; R₃: Third radial vein; R₄: Fourth radial vein; R₅: Fifth radial vein; RS: Radial sector; SA: Saccus; Sc: Subcosta; Sc+R₁: Subcosta and radial vein; SL: Sacculus; TG: Tegumen; TRA: Transtilla; UN: Uncus; VIN: Vinculum; VLV: Valvula.

RESULTS

Cladarctia spinulatus n. sp.

(Figs. 1- 7)

Head with vertex and frons covered with white scales, frons with basal patch of black scales. Antenna with scape and flagellum studded with white scales, latter with branches & tip black. Eyes golden with polygonal black spots. Labial palpus porrect; clothed with black scales, underside of first and second segments fringed with yellow scales.

Thorax clothed with white scales and a dorsal median black fascia; collar furnished with white scales, edged with yellow, spotted with black, tegula black, edged with white scales. Forewing with ground colour white; costal margin black towards base; broad black fasciae along with subcostal, median and submedian nervures; fascia on median nervure dividing into streaks along veins Cu_2 , Cu_1 , M_3 and M_2 ; black spots on M_1 and Rs ; fringe white; veins R_2-M_1 stalked from upper angle of cell; M_2 and M_3 shortly stalked from lower angle of cell; Cu_2 from two-third of cell. Hindwing with ground colour white; a black discoidal spot; submarginal spots on M_2 , Cu_2 and $2A$; underside with a discoidal spot and submarginal spot on $2A$ prominent; $Sc+R_1$ originating from before middle of cell; Rs and M_1 stalked from upper angle of cell; M_2 form just above lower angle of cell; Cu_1 from before lower angle; Cu_2 from beyond middle of cell. Legs clothed with black scales; fore coxae with black and yellow strips; femora orange above, fore femur black below, however, mid and hind fringed with white on underside; hind tibia and tarsi white; outer tibial spurs more than half length of inner ones.

Abdomen decorated with yellow scales, underside with white scales; short dorsal black bands; lateral and sublateral series of black spots.

Male genitalia: Uncus broad, swollen at base, gradually narrowing towards tip, tip narrow, appears beak-like laterally, setosed with small and fine setae on dorsal and lateral side; acrotergite rounded; tegumen with both of its arms narrow and well sclerotized, longer than vinculum; vinculum rounded, V-shaped; saccus defined. Valva with costa well developed; sacculus ill-defined; apical portion with four finger like projections, three small and one quite long in left valva, in right valva one of three processes located at middle reduced, lower one flap-like; costal margin with a rounded flap-like projection bent inwardly; juxta quadrate, with emarginated apical margin. Aedeagus long and slender, tip rounded, one of its walls produced into a rounded sclerotized projection, bearing a small spine; vesica armed with small denticles.

Wing Expanse (Half) : Male: 21 mm

Material Examined:

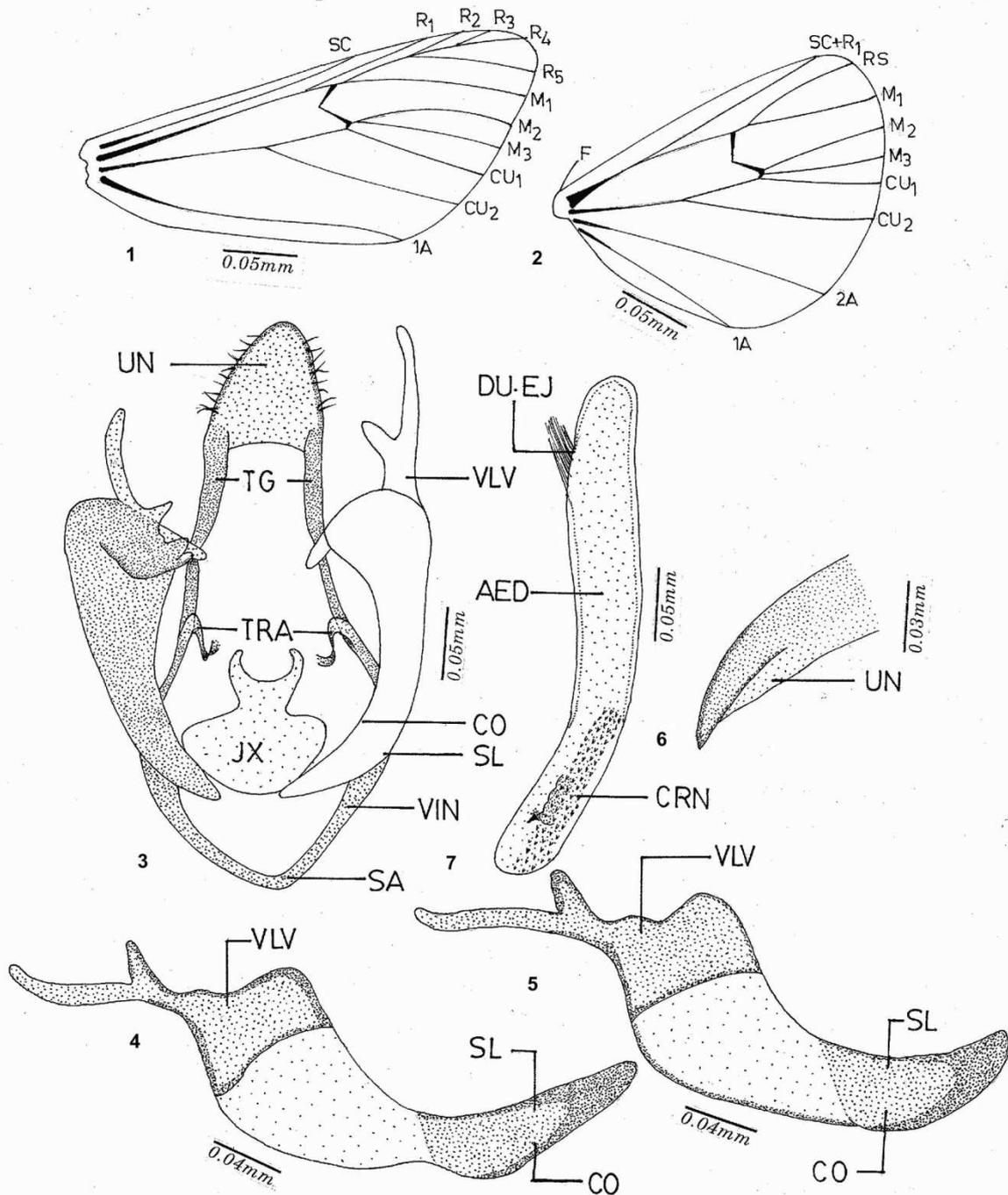
Holotype : Himachal Pradesh: Bharmour, 16.VI.1993, 1 ♂.

Paratype : Himachal Pradesh: Bharmour, 15.VI.1993, 6 ♂♂.

Remarks: The present species is closely allied to *bharmourensis* Kaleka with respect to ornamentation of head, thorax and abdomen; structure of labial palpus and wing venation. However, it differs on the basis of forewing maculation and origin of vein M_2 in Hindwing, shape of vinculum and presence of a single prominent spine at the distal end of aedeagus in male genitalia.

Etymology: The name of the species pertains to the armature of aedeagus in male genitalia.

PLATE 1



Cladarctia spinulatus n.sp.

1. Forewing 2. Hindwing 3. Male genitalia 4. Valva -inner view
5. Valva -ventrolateral view 6. Uncus -lateral view 7. Aedeagus

***Cladarctia trimaculatus* n.sp.**

(Figs. 8-14)

Head with vertex and frons covered with white scales, frons with sides having black patches. Antenna with scape having yellow scales, flagellum with white scales, underside with black scales. Eyes golden with black spots. Labial palpus porrect, reaching lower level of frons; first segment decorated with orange yellow scales, second and third with black scales, underside fringed with yellow scales.

Thorax furnished with white scales and a dorsal median black strip; collar clothed with white scales but spotted with black, tegula black, stripped with white scales. Forewing with ground colour white; costa black towards base; subcostal, median and submedian black fasciae; median fascia sending streaks on veins Cu_1 , Cu_2 , M_3 and M_1 ; black spot on M_2 ; a black oblong spot on R_5 ; fringe white; costal fascia on underside; vein R_1 originating from beyond three-fourths of cell; R_2 - R_5 stalked from upper angle of cell; M_1 from upper angle; M_2 from above lower angle of cell; Cu_2 from beyond two-thirds of cell. Hindwing with ground colour white, with traces of discoidal black spot; submarginal spots on M_2 , Cu_2 and smaller one on 2A, spot on vein M_2 reduced; discoidal spot prominent on underside; $Sc+R_1$ originating from well before middle of cell; R_s and M_1 stalked from upper angle of cell; M_2 from just above lower angle of cell; Cu_1 from before lower angle of cell; Cu_2 from beyond middle of cell. Legs dressed with black scales; fore coxae with yellow scales, sides with black; femora orange above, fore femur black below, mid and hind fringed with white; hind tibia white, tarsi ringed with black; outer tibial spurs more than half length of inner ones.

Abdomen furnished with yellow scales dorsally, underside with white scales; dorsal black bands present; lateral and sublateral black spots conspicuous.

Male genitalia: Uncus triangular, weakly swollen at base, slightly curved at distal end, tip pointed, dorsally setosed; acrotergite large, covering half of uncus; tegumen well sclerotized, almost same size of vinculum; vinculum narrow and U-shaped; saccus short. Valva broad, costa well developed; apical portion with two unequal projections, one small and other large, third one slightly produced; costal margin with a large ventrally folded flap; right valva with slight wavy margin; juxta with broad and rounded basal half, emarginated apical half. Aedeagus long and slender, curved, with its tip rounded, both of its walls well sclerotized anteriorly, however, posteriorly one of its walls bearing small denticles like spines, at distal end a sclerotized patch bearing three distinct spines; vesica decorated with large number of spines and denticles.

Wing Expanse (Half) : Male: 19-21 mm

Material Examined:

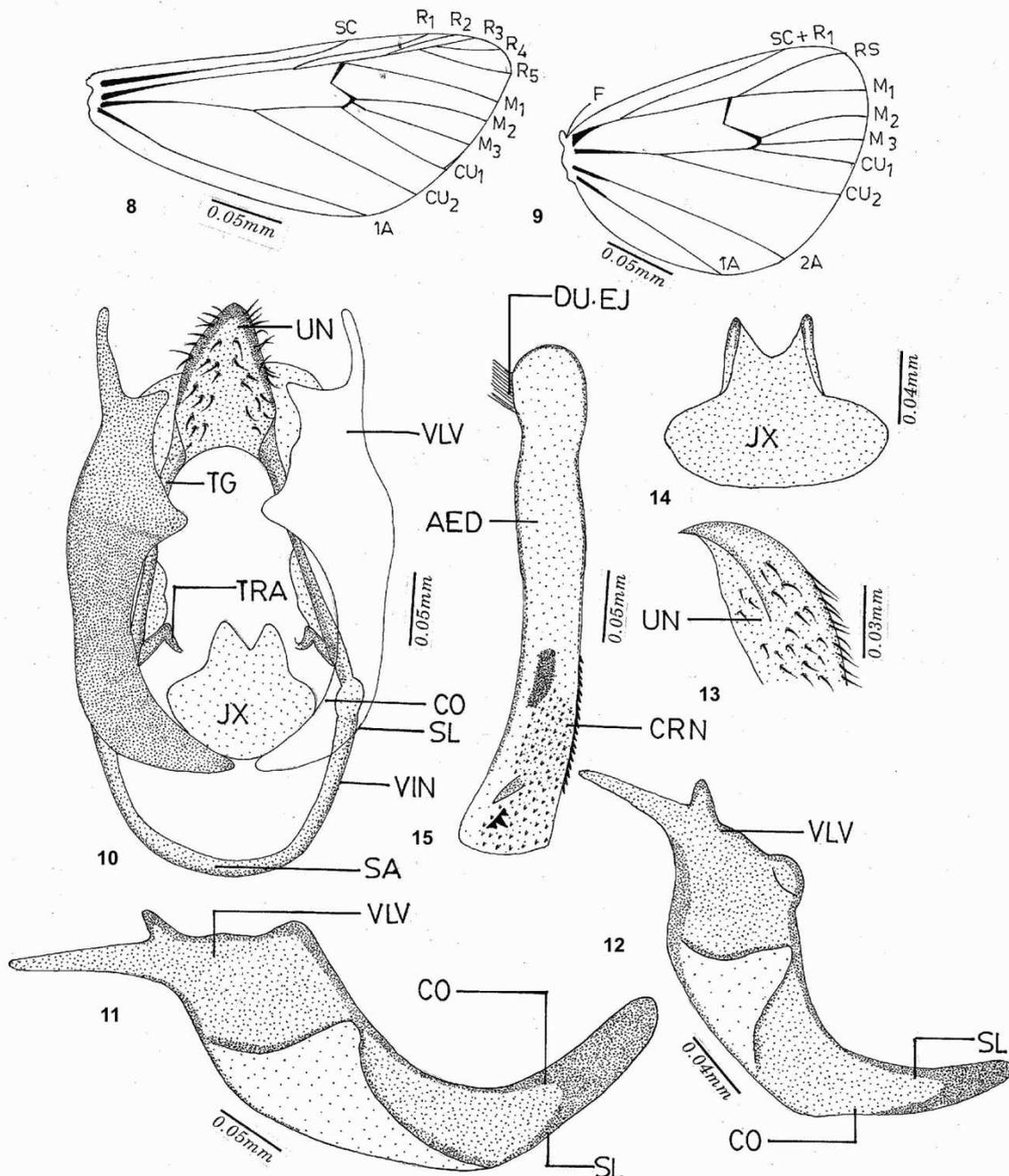
Holotype : Uttarakhand: Berinag, 07.VI.1995, 1 ♂

Paratype : Uttarakhand: Berinag, 15.VI.1995, 1♂, 11.VI.2015, 4♂♂; Choukari, 08.VI.1995 1♂.

Remarks: The present species is closely allied to other species namely *bharmourensis*, *quadriscopulatus*, *spinulatus* and *goodgeri* of this genus as far as general colouration, maculation and pattern is concerned. However, it differs from all these species on the basis of its male genitalic characters for instance valva and armature of vesica in its aedeagus.

Etymology: This species has been named on the basis of three submarginal spots on hind wing.

PLATE 2



Cladartia trimaculatus n.sp.

8. Forewing 9. Hindwing 10. Male genitalia 11. Valva -ventrolateral view
12. Valva -inner view 13. Uncus -lateral view 14. Juxta- enlarged 15. Aedeagus

ACKNOWLEDGEMENT

The author is thankful to Dr. N. Koda for proper guidance and his valuable reprints. The financial assistance rendered by UGC, New Delhi is gratefully acknowledged.

REFERENCES

1. Hampson, G.F., 1894, *Fauna of British India, Moths, Including Ceylon and Burma*, **2**, Taylor and Francis Ltd, London, 1-609.
2. Hampson, G.F., 1901, *Catalogue of the Lepidoptera Phalanae in the British Museum Collections*, **3**: 1-690.
3. Kaleka, A. S., 1999, Two new species of genus *Cladarctia* Koda (Arctiinae: Arctiidae: Lepidoptera) from India. *Zoos' Print Journal*, 14(8): 77-81.
4. Kaleka, A. S., 2005, Three new species of genus *Cladarctia* Koda (Arctiinae: Arctiidae: Lepidoptera) from India. *Journ. Bomb. Nat. Hist. Soc.*, 102(1): 69-74.
5. Klots, A. B., 1970, In: *Lepidoptera in Taxonomist's Glossary of Genitalia in Insects*. Tuxen, S. L. (Ed.) Munksgaard: Copenhagen, 115-130.
6. Koda, N., 1988, A generic classification of the subfamily Arctiinae of Palaearctic and Oriental regions based on the male and female genitalia (Lepidoptera: Arctiidae) Part-II, *Tyo to Ga*, **39(1)**: 45-47.
7. Watson, Allan, Fletcher, D.S. and Nye, I.W.D., 1980, *The generic names of the moths of the World*, Noctuoidea, **2**: 1-228.