

TWO NEW SPECIES OF GENUS *CLADARCTIA* KODA (ARCTIIDAE: ARCTIINAE: LEPIDOPTERA) FROM INDIA

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Abstract

Two new species of the genus *Cladarctia* Koda: *C. quadrispiculatus* and *C. goodgeri* are described in detail and illustrated from India.

Key words

Cladarctia, genitalia, new species, Lepidoptera, Arctiidae, india

Abbreviations

IA - First anal vein
AED - Aedeagus
CRN - Cornuti
Cu₂ - Second Cubital Vein
JX - Juxta
M₂ - Second median vein
R₁ - First radial vein
R₃ - Third radial vein
R₅ - Fifth radial vein
SA - Saccus
Sc+R₁ - Stalk of Sc+R₁
TG - Tegumen
UN - Uncus
VIN - Vinculum

2A - Second anal vein
Co - Costa
Cu₁ - First Cubital Vein
F - Frenulum
M₁ - First median vein
M₃ - Third median vein
R₂ - Second radial vein
R₄ - Fourth radial vein
Rs - Radial sector
Sc - Subcosta
SL - Sacculus
TRA - Transtilla
VES - Vesica
VLV - Valva

Introduction

During recent faunistic explorations conducted for the collection of tiger moths from northwestern India, as many as seven representatives referable to two distinct species were collected from different localities of Himachal Pradesh and Uttar Pradesh. Both these species conform to the characterization of the monotypic genus *Cladarctia* Koda. These species are closely allied to the type species *quadrimosa* Kollar of this genus on the basis of ground colour and general maculation, but clearly distinct with respect to different genitalic structures and other morphological features. The type species *quadrimosa* Kollar is originally described from India. Both these species are also different from the known species of an allied genus *Estigmene* Hübner. These species could not be identified from relevant literature (Hampson, 1894, 1901; Koda 1987) and as well as from

national/ international museums. Therefore, both these species are being described here for the first time. The terminology for genitalia has been followed after Klots (1970). The type material will be deposited in the museum of Zoological Survey of India, Calcutta in due course of time.

Cladarctia quadrispiculatus sp. nov.

(Figs. 1 - 9)

Material Examined

Holotype: 1 male, Himachal Pradesh, Kalpa, 3000 m, 24.06.1993, Coll. A.P. Singh

Paratypes: 1 male, with same data as holotype; 1 male Himachal Pradesh, Nauni, 900 M, 02.08.1994, Coll. A.P. Singh; 1 male, Uttar Pradesh, Ranikhet, 2000 m, 02.07.1994, Coll. A.P. Singh.

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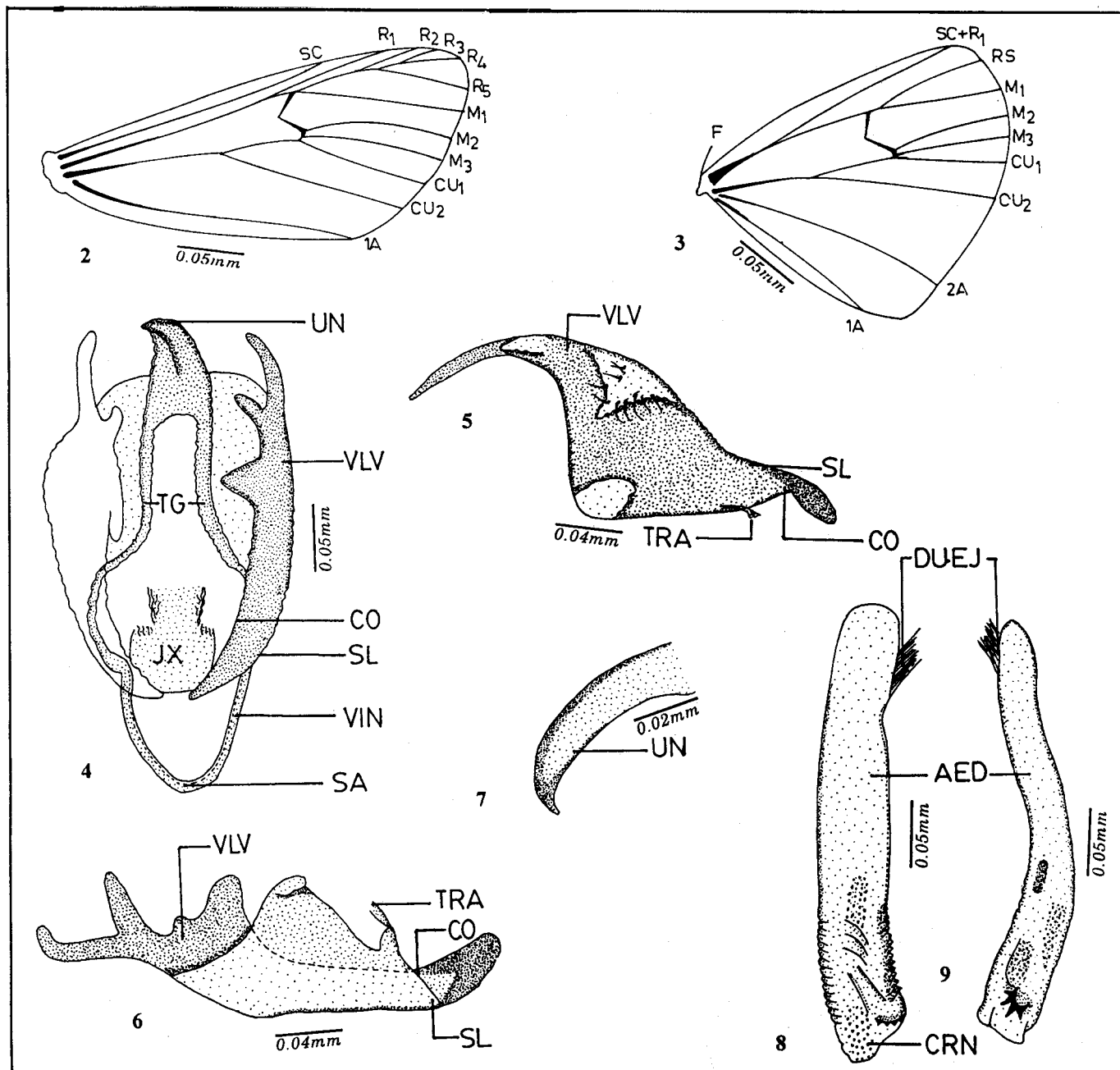
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Figure 1. *Cladarctia quadrispiculatus* sp. nov. - Male

Figures 2 - 9. *Cladarctia quadrispiculatus* sp. nov.

2. Forewing;
3. Hindwing;
4. Male genitalia;
5. Valva (Right) - inner view;
6. Valva (Right) - ventrolateral view;
7. Uncus - lateral view;
8. Aedeagus - dorsal view;
9. Aedeagus - ventral view



Distribution: Himachal Pradesh and Uttar Pradesh, India.

Etymology: The name of the species has been based on its four distinct spines present on a sclerotized patch in the vesica of aedeagus.

Diagnostic features: Head with vertex and frons furnished with white scales, frons with black patches on sides. Antenna with scape having yellow scales; flagellum clothed with brown scales. Eyes black. Labial palpus porrect, just reaching lower level of frons; first segment decorated with yellow scales, second and third segments black, underside fringed with white.

Thorax covered with white scales, but bearing a dorsal median black fascia; collar dressed with white scales, edged with yellow and spotted with black; tegula black, edged with white. Forewing with ground colour white, costal margin black near base; broad fasciae along with median, submedian nervures; subcostal fascia from end of cell to costa, median nervure sending short streaks along with Cu_2 ; black spots on veins R_3 , M_1 , M_3 , Cu_1 and Cu_2 ; spots on Cu_2 and M_1 are longer; fringe white; veins R_2 - R_3 stalked from upper angle of cell; M_2 arising from above and Cu_2 from before lower angle of cell; Cu_2 from beyond two-thirds of cell. Hindwing with ground colour white; submarginal spots on veins M_2 , Cu_2 and a point above 2A; underside with discoidal spot on upper angle; vein $Sc+R_1$ before middle of cell; R_s and M_1 stalked from upper angle of cell. Legs dressed with black scales; fore coxae decorated with yellow and fuscous scales; femora orange above, fore femur with black scales on under side; mid and hind femora fringed with white; hind tibia and tarsi white; outer tibial spurs more than half length of inner ones.

Abdomen covered with yellow scales; underside furnished with white scales; dorsal, lateral and sublateral series of black spots conspicuous. Male genitalia with uncus of moderate size, triangular, tip blunt, dorsally setsoed; acrotergite well developed, rounded; tegumen well sclerotized, longer than vinculum; vinculum U-shaped; saccus defined. Valva narrow at base, broad and rounded in middle; costa well differentiated, apical portion with four projections, third one reduced; a ventrally folded large flap conspicuous; juxta saucer-shaped, apical portion with corrugated margin. Aedeagus long, slender and curved but with a rounded tip; one of its walls bearing small spines; distal end with sclerotized patch bearing four distinct spines; vesica armed with small denticles. Female genitalia not examined.

Wing Expanse (Half): Male: 21 mm

Remarks: The present species is closely allied to another new species *goodgeri* being described here in the present study with respect to general maculation and wing patterns. The new species *quadriscopulatus* is distinct from *goodgeri*, wing pat-

terns, with respect to vein Cu_1 arising from before angle of the cell and median fascia sending streak only on Cu_2 in its forewing (In *goodgeri*, median fascia sending streaks on veins Cu_2 and M_2). The tegumen is longer than vinculum and valva bear four apical projections in male genitalia of the new species (In *goodgeri*, tegumen is almost of same size of vinculum and valva with two apical projections).

Cladarctia goodgeri sp. nov.

(Figs. 10 - 19)

Material Examined:

Holotype: 1 male, Himachal Pradesh, Narkanda, 2700 m, 27.06.95, Coll. A.P. Singh.

Paratypes: 1 male, Himachal Pradesh, Kalpa, 3000 m, 01.07.1995, Coll. A.P. Singh; 1 male, Uttar Pradesh, Kasauni, 2000 m, 12.06.1995, Coll. A.P. Singh.

Distribution: Himachal Pradesh and Uttar Pradesh, India.

Etymology: The name of the species pertains to an eminent Arctiid specialist Dr. David T. Goodger of the Natural History Museum, London who has helped the author by sending reprints and transparencies of types for quick and easy comparison.

Diagnostic features: Head with vertex and frons covered with white scales; frons with black patches on sides. Antenna with scape and flagellum studded with white; branches and tip black. Eyes golden brown bearing black spots. Labial palpus porrect, just reaching lower level of frons; first segment decorated with yellow scales, second and third segments clothed with black scales.

Thorax covered with white scales; a black dorsal median fascia conspicuous; collar furnished with white scales, edged with yellow, spotted with black; tegula black, edged with white. Forewing with ground colour white, costal edge black upto middle; subcostal, median and submedian black fasciae; median fascia sending streaks towards veins M_2 and Cu_2 ; spots on R_s , M_1 , M_3 and Cu_1 ; underside with costal fascia; R_2 , R_3 stalked just before upper angle of cell. Hindwing with ground colour white; a faint impression of discoidal spot; submarginal spots on veins M_2 , Cu_2 and 2A; underside with a prominent discoidal black spot, a submarginal point on M_2 and a spot on Cu_2 ; fringe white; $Sc+R_1$ arising from before middle of cell; R_s and M_1 stalked from upper angle of cell; Cu_1 arising from before lower angle of cell. Legs dressed with black scales; fore-coxa yellow sides black; femora orange above, fore femur black below; mid and hind femora fringed with white scales on underside; hind tibia and tarsi white, tarsi banded with black; outer tibial spurs more than half length of inner ones.

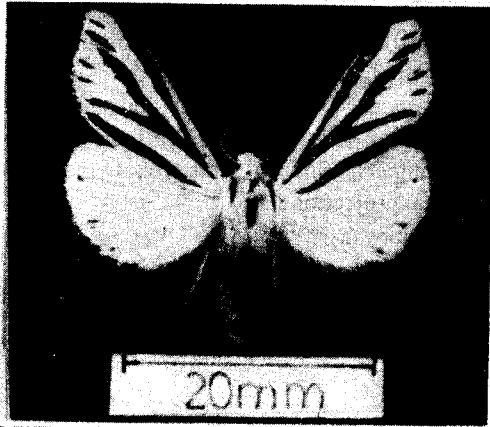
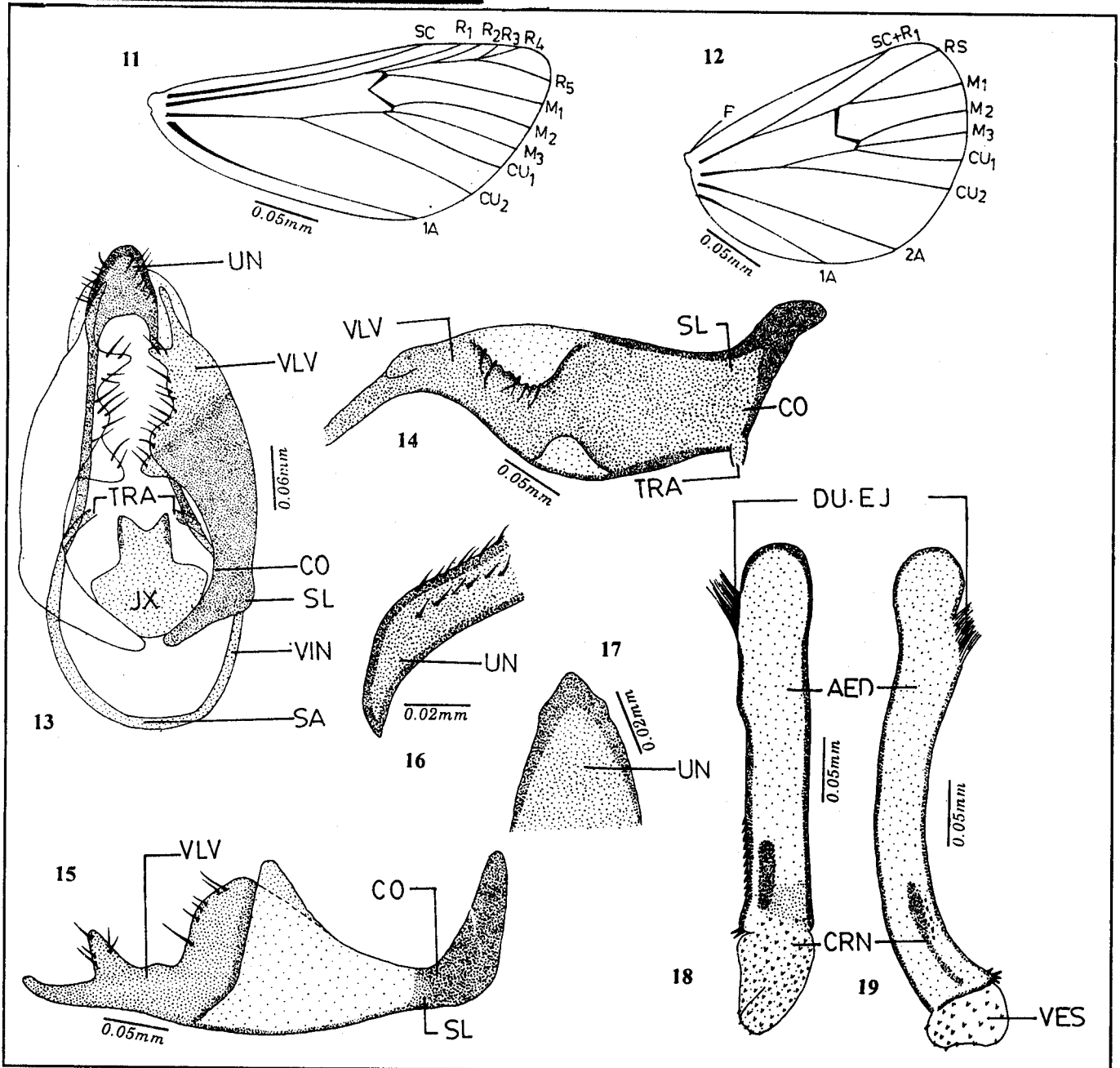


Figure 10. *Cladarctia goodgeri* sp. nov. - Male

Figures 11 - 19. *Cladarctia goodgeri* sp. nov.

- 11. Forewing;
- 12. Hindwing;
- 13. Male genitalia;
- 14. Valva (Right) - inner view;
- 15. Valva (Right) - ventrolateral view;
- 16. Uncus - lateral view;
- 17. Uncus - dorsal view;
- 18. Aedeagus - dorsal view;
- 19. Aedeagus - ventral view;



Abdomen covered with yellow scales, underside decorated with white scales and dorsal black bands except first and last segment, on which black spots present; lateral and sublateral series of black spots. Male genitalia with uncus short, broad, swollen at base, narrowing and slightly curved towards distal end, lateral margins slightly produced; acrotergite large, well developed; tegumen well sclerotized, almost of same size of vinculum; vinculum rounded, U-shaped; saccus reduced. Valva long and narrow, with costa highly developed; apical portion with two finger-like projections, a flap-like ventrally curved projection; juxta broad, basal half narrow and apical portion emarginate. Aedeagus long, narrow, tip rounded, slightly curved towards distal end; both of its walls well sclerotized, one of its walls bearing small denticle-like spines; four prominent spines at distal end; vesica armed with small spines and denticles. Female genitalia not examined.

Wing Expanse (Half): Male: 20 mm

Remarks: As described in the remarks of *quadrispiculatus* sp. nov. the species under reference i.e. *goodgeri* sp. nov. is allied to it. The present species is also related to *quadriramosa*

(Kollar) (the type species of genus *Cladarctia* Koda) with respect to pattern of forewing but distinct from it with regard to submarginal spots on hindwing and armature of aedeagus.

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References

- Hampson, G.F. (1894).** Fauna of British India including Ceylon and Burma. Moths -Vol. II. Taylor and Francis Ltd., London, 609 pp.
- Hampson, G.F. (1901).** Catalogue of the Lepidoptera Phalaenae in the British Museum 3: 1-690.
- Klots, A.B. (1970).** Lepidoptera. In: *Taxonomist's Glossary of Genitalia in Insects* (Ed. S.L. Tuxen), pp.115-130. Munksgaard, Copenhagen.
- Koda, Nobutoyo (1987).** A generic classification of the subfamily Arctiinae of Palaearctic and Oriental regions based on male and female genitalia (Lepidoptera: Arctiidae) Part-I, *Tyo to ga* 39: 153-237.

Key to the three species of genus *Cladarctia* Koda

1. Forewing with vein M_2 arising from lower angle of cell; hindwing with prominent discoidal spot on upper side; aedeagus without sclerotized patch *quadriramosa* (Kollar)
- 1A. Forewing with vein M_2 arising from above lower angle of cell; hindwing with prominent discoidal spot on underside; aedeagus with a sclerotized patch having three or four distinct spines at distal end.....2
2. Forewing with veins R_2 - R_5 stalked from upper angle of cell; hindwing with vein Cu_1 from lower angle of cell; male genitalia with uncus having blunt tip; valva with four apical projections; juxta with apical portion having crispate walls; acrotergite large *quadrispiculatus* sp. nov.
- 2A. Forewing with veins R_2 - R_5 stalked from before upper angle of cell; hindwing with vein Cu_1 from before lower angle of cell; male genitalia with uncus having pointed tip; valva with two apical projections; juxta with apical portion having smooth walls; acrotergite of moderate size *goodgeri* sp. nov.