



TWO NEW SPECIES OF THE GENUS *YPETHIMA* HÜBNER (LEPIDOPTERA : PAPILIONOIDEA : SATYRIDAE) FROM INDIA AND MYANMAR

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INTRODUCTION

The genus *Ypthima* Hübner is represented by about 100 species distributed in the Palaetropical and East Palaearctic regions. Identification of certain species and population complexes is, in fact, an intricate problem. Consultation of relevant literature (vide Marshall & de Niveville, 1883; Moore, 1890, 1892; Elwes & Edwards, 1893; Evans, 1932; Talbot, 1947; Shirozu & Shima, 1977, 1979) has critically been made. Shirozu & Shima (1979) dealt with seventy three described species from Asia, South Pacific Islands and Australia. They have studied the male genitalia of as many as fifty-three species. In view of the presently examined material represented by seven examples belongs to *Philomela*-group of the genus *Ypthima* Hübner (Shirozu & Shima, 1979). Evans (*loc.cit.*) distinguished four groups among the Indian species of this genus. His grouping was mainly based on the wing markings of the hindwing underside. In his book of the Indian butterflies Talbot (*loc.cit.*) followed mainly Evans in the grouping of the Indian *Ypthima* Hübner. This article deals with the description of two new species of the genus *Ypthima* Hübner from India and Myanmar. The material has been studied from the National Zoological Collections, collected by different workers. Type specimens are deposited in the National Zoological Collections, Zoological Survey of India.

SYSTEMATIC ACCOUNT

Genus *Ypthima* Hübner
Common name : The Rings

Ypthima Hübner, 1818, *Zutr.z. samml.exot. Schm.*, 1:17.

Type-species : *Ypthima hübnerei* Kirby.

Key to Indian species of *Philomela*-group of the genus *Ypthima* Hübner

1. Hindwing underside with double ocellus (WSF) or black dots (DSF) in space Culb in line with ocelli or black dots in spaces M_3 and Cula; male genitalia with appendices angulares, small, stumpy, blunt at distal end, vinculum more or less incurved; female genitalia with ductus bursae smaller.....2
- Hindwing underside with double ocellus (WSF) or black dots (DSF) in space Culb out of line with ocelli or black dots in spaces M_3 and Cula; male genitalia with appendices angulares more or less curved, pointed distally, vinculum nearly straight; female genitalia with ductus bursae comparatively longer.....5
2. Hindwing underside with greyish -brown striations, white pupil and ocelli comparatively larger; male genitalia with anterior one-third of aedeagus nearly straight.....*lisandra* Cramer
- Hindwing underside with greyish -white striations, white pupil and ocelli comparatively smaller; male genitalia with anterior one-third of aedeagus curved ventrally.....3
3. Forewing upperside with subapical ocellus wanting or obscurely marked in male; male genitalia with uncus smaller; female genitalia with ductus bursae strongly sclerotized...*singala* Felder

- Forewing upperside with subapical ocellus prominent in both sexes; male genitalia with uncus longer; female genitalia with ductus bursae comparatively less sclerotized4
- 4. Larger in size; marginal and discal fasciae distinct on the hindwing underside; male genitalia with uncus strongly curved ventrally, aedeagus 2/3 curved posteriorly in lateral view (figs.19, 24); female genitalia with lamella antevaginalis nearly rectangular process, slightly concave posteriorly (fig. 25)..... *marshalli* Butler
- Smaller in size; marginal and discal fasciae ill-defined on the hindwing underside; male genitalia with uncus weakly curved ventrally, aedeagus 2/3 more or less straight posteriorly in lateral view (figs. 3, 9); female genitalia with lamella antevaginalis crescent-shaped, deeply notched posteriorly (fig. 10).....*coorgensis* sp. n.
- 5. Forewing upperside with proximal half dark brown and distal half paler, brand prominent.....6
- Forewing upperside either dark brown or paler, brand moderately developed7
- 6. Ocelli on the underside hindwings are either large or small; male genitalia with uncus curved ventrally, valva has simple costal process (figs. 26, 27).....*baldus* (Fabricius)
- Ocelli on the underside hindwings are represented by minute black dots; male genitalia with uncus weakly curved ventrally, valva has bifurcated costal process (figs. 13-14).....*tripuraensis* sp. n.
- 7. Upperside dark-brown, submarginal and discal fascia less prominent; male genitalia with uncus less curved ventrally; female genitalia with ductus bursae sharply curved and broader*indecora* Moore
- Upperside paler, submarginal and discal fascia prominent; male genitalia with uncus strongly curved ventrally; female genitalia with ductus bursae nearly straight and narrower*sarkaghatensis* Rose & Sharma

1. *Ypthima coorgensis* sp.n.

Adult (Male): Head with frontoclypeal area clothed with brown and white scales and hair, eyes dark brown, medium sized, glabrous; labial palpi obliquely upturned, basal segment smallest, distal segment acuminate, middle segment long, closely appressed with white and black scales and hair; antenna 6.0 mm, club slender, black, nudum

extends from the base of the club to the base of the flagellum, the latter dark brown; thorax dressed with brown hair and scales dorsally, white and brown scales and hair ventrally; foreleg strongly reduced, meso and meta legs white scaled, femur longer than tibia, tarsus five segmented and clawed; upperside ground colour brown; forewing upperside with subapical, bipupilled, ringed with diffuse yellow or bright yellow, more or less rounded ocellus, marginal and discal fascia not prominent, brand obscure, underside striated with greyish-white, subapical ocellus as on upperside but the ring more prominent and broader, marginal and discal fasciae ill defined; hindwing upperside with two black, single pupilled, small, rounded, yellow ringed ocelli in M_3 & Cula, fasciae obscure, underside striations as on forewing underside, submarginal fascia distinct, discal faciae obscure, five black, single pupilled, yellow-ringed ocelli present in R_s , M_1 , M_3 , Cula and Culb, ocelli in M_3 & Cula may contiguous or spaced, ocellus in Culb bipupilled.

Venation (Figs.1-2): Forewing cell less than half the length of wing, R_1 arising beyond the upper angle of the cell, mdc and ldc slightly incurved; hindwing cell more than half the length of the wing, Cula before the lower angle of the cell, humeral vein (h) (precostal vein) more or less T-shaped.

Abdomen dorsally brown & ventrally clad with white scales.

Adult (Female): Foreleg well developed, otherwise as in male.

Length of the forewing: Male: 13.0-14.0 mm.

Female: 14.0 mm.

Male genitalia (Figs. 3-9): Tegumen in dorsal view broad at base, gradually narrowed posteriorly, in lateral view subequal to vinculum in height, with membranous incision antero-ventrally; uncus shorter than tegumen, gradually narrowed posteriorly to a pointed tip, in lateral view weakly curved ventrally, narrow membranous slit at the base; fenestrula of a small membranous spot; appendix angularis short, narrower and blunt at apex; vinculum weakly

curved inwardly; saccus less than $\frac{1}{2}$ x as long as ring, tubular; valva broad at middle than both the ends, costa long with narrow, small costal process and continues to ampulla + harpe, sacculus narrow and long, distal end deeply notched in dorsal view, sparsely setosed; aedeagus in dorsal view more or less straight, broader posteriorly, gradually narrowed towards anterior end; in lateral view, curved dorsally, suprazone longer than subzone, ductus entering dorsad; juxta more or less U-shaped.

Female genitalia (Fig.10): Anterior portion of copulatory cavity narrower anteriorly, broader posteriorly; lamella antevaginalis crescent-shaped, covered with minute setulae, lateral lobes of lamellae antevaginalis are semicircular plates covered with broad, small setulae; apophysis anterioris wanting, apophysis posterioris small membranous; papilla analis elongated; ductus seminalis originate from ductus bursae near corpus bursae; ductus bursae moderately long, sclerotized, broad posteriorly, narrow anteriorly; corpus bursae subglobular.

Material Examined

Holotype: , MYANMAR, Hanzada, 01.ii.1893 (Regd. no. 6868/H9), De Niceville collection. Paratypes: INDIA: Karnataka, Western Ghat, Coorg, 1 , 06.iii.1889 (Regd. no. 6652/H9), De Niceville collection. MYANMAR: Hanzada, 1 , 01.ii.1893 (Regd. no. 6869/H9) De Niceville collection.

Etymology : The species is named after the name of the locality in India (Western Ghats) from where one male individual has been collected.

Remarks : This species has been described from the very old specimens lying in the National Zoological Collections. The male specimen from Coorg (India) have ocelli in M_3 & Cula prominent. However, when the male genitalia of this specimen was dissected for close examination, it was found conspecific with male genitalia of the specimen from Hanzada (Myanmar).

The species is closely related to *Ypthima marshalli* Butler, however it differs from the latter species as given below:

2. *Ypthima tripuraensis* sp. n.

Adult (Male): Head with frontoclypeal area studded with black and white scales and hair; eyes light brown, medium sized, glabrous; labial palpi forwardly and upwardly directed, three segmented, middle segment long, distal segment tapering towards apex, densely fringed with black and white scales and hair; antenna 7.0 mm, club slender, light brown, nudum extends from the base of the club to the base of the flagellum, the latter dark brown; foreleg strongly reduced, femur longer than tibia, densely fringed with white & brown scales & hair, meso and meta legs white scaled, tibia shorter than femur, tarsus five segmented and clawed; forewing upperside with black, bipupilled, yellow iris, subapical ocellus, proximal half dark brown with long & broad, distinct band, outer distal half paler,

	<i>Ypthima marshalli</i> Butler	<i>Y. coorgensis</i> sp. n.
1.	Larger in size (length of forewing = 17.0 mm)	Comparatively smaller in size (length of forewing = 13.0 - 14.0 mm).
2.	Marginal and discal fasciae distinct with more white striations in between the fasciae on the underside of the hindwings.	Marginal and discal fasciae ill-defined with less white striations in between the fasciae on the underside of the hindwings.
3.	Male genitalia with uncus strongly curved ventrally, apex of the valva forked in dorsal view.	Male genitalia with uncus weakly curved ventrally, apex of the valva deeply notched in dorsal view.
4.	Suprazonal portion of aedeagus narrower in dorsal view.	Suprazonal portion of aedeagus broader in dorsal view.
5.	In female genitalia, lamella antevaginalis is more or less rectangular plate.	In female genitalia, lamella antevaginalis is crescent-shaped.

	<i>Ypthima baldus</i> (Fabricius)	<i>Y. tripuraensis</i> sp. n.
1.	Hindwing underside has well developed ocelli.	Ocelli are represented by only black dots on the hindwing underside.
2.	Uncus in male genitalia curved ventrally.	Uncus in male genitalia weakly curved ventrally.
3.	In male genitalia, valva has simple costal process.	In male genitalia, valva has bifurcated costal process.
4.	Subzone portion of aedeagus in dorsal view is comparatively less broader	Subzone portion of aedeagus in dorsal view is comparatively broader

submarginal fascia prominent, underside grey with more white striations in distal half, ocellus as above but yellow ring broader, submarginal and discal fascia prominent and form loop around the ocellus; hindwing upperside with discal and marginal fasciae prominent, proximal half dark brown & distal half paler, two black, single pupilled, nearly equal in size, yellow ringed ocelli in Cula and M₃, additional minute ocelli may present in Culb and M₁, one in each, underside with proximal half brown & distal half light brown, five black dots present in Rs, M₁, M₃, Cula & Culb, black dots may prominent or obscure.

Venation (Figs. 11-12): Cell of forewing less than half the length of wing, vein R₁ arising beyond the upper angle of the cell, vein M₂ equidistant between veins M₁ and M₂, udc minute, mdc incurved, ldc longer than others; hindwing cell more than half the length of wing, vein Cula before lower angle of the cell, humeral vein (h) (precostal vein) more or less T-shaped.

Abdomen dark brown dorsally, furnished with fuscous scales, below clad with dirty white scales.

Length of forewing: Male: 18.0-20.0mm.

Adult (Female): Not studied.

Male genitalia (Figs. 13-18): Tegumen in dorsal view broad at base, gradually narrowed posteriorly, in lateral view shorter than vinculum in height with small, membranous incision on its antero-ventral margin; uncus in dorsal view gradually tapering towards pointed apex, subequal in length to tegumen, in lateral view, weakly curved ventrally, with narrow membranous slit on its base; fenestrula of a small,

membranous, rounded spot; appendix angularis short and narrow, weakly curved inwardly; vinculum inwardly curved; saccus short, tubular and stumpy; valva broad at middle than both the ends, costa with bifurcated costal process and continues to ampulla + harpe, distal end forked in dorsal view; aedeagus almost straight in dorsal view, curved anteriorly in lateral view, ductus entering dorsad; juxta more or less V-shaped.

Material examined

Holotype: , INDIA, West Tripura, Kalabagan, 20.ii.1991, G.K. Srivastav.

Paratypes: INDIA : West Tripura, Kalabagan, 2 , 20.ii.1991, G.K. Srivastav; North Tripura, Jadurambari Beat, 1 , 1.iii.1991, G.K. Srivastav.

Etymology : The species is named after the name of the state from where four male individuals have been collected.

Remarks : One male specimen from Kalabagan (West Tripura) have additional minute ocelli in Culb and M₁, one in each, on the upperside of the hindwing, whereas, one male specimen from Jadurambari Beat (North Tripura) have additional minute ocellus in Culb on the upperside hindwing. When the male genitalia of these variable individuals was dissected for close examination of their constituent parts like uncus, tegumen, vinculum, saccus, valva and aedeagus, it was found conspecific.

The species is closely related to *Ypthima baldus* (Fabricius), however it differs from the latter species as given below:

Discussion : Elwes & Edwards (1893) pointed out that owing to a lot of variations, different

species of the genus *Ypthima* Hübner were difficult to identify/separate and the genus, as such, having been remained for many years a stumbling block to the Lepidopterists. Eliot (1992) has also recommended that the males admit of ready identification from the characteristic forms of their genitalia. During the course of present studies, seven examples have been identified to belong to *Philomela* group (Shirozu & Shima, 1979). In respect of characters such as, the uncus, tegumen, aedeagus and the valva in the male genitalia and the corpus bursae, ductus bursae and genital plate in the female genitalia, the presently studied two new species differ not only from each other but also from other species of the group (Shirozu & Shima, 1977, 1979).

SUMMARY

Two new species of genus *Ypthima* Hübner (Lepidoptera : Papilionoidea : Satyridae) are described from India and Myanmar and illustrated in this paper.

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Explanation to the Figures

Ypthima coorgensis sp.n. : 1. Venation of forewing 2. Venation of hindwing 3. Male genitalia (lateral view) 4. Valva (Inner view) 5. apex of valva 6. Dorsum (dorsal view) 7. Juxta (Dorsal view) 8. Aedeagus (dorsal view) 9. Aedeagus (lateral view) 10. Female genitalia (ventral view).

Ypthima tripuraensis sp.n. : 11. Venation of forewing 12. Venation of hindwing 13. Male genitalia (lateral view) 14. Valva (Inner view) 15. Juxta (Dorsal view) 16. Dorsum (dorsal view) 17.

Aedeagus (Lateral view) 18. Aedeagus (dorsal view).

Ypthima marshalli Butler : 19. Male genitalia (lateral view) 20. Valva (Inner view) 21. Dorsum (dorsal view) 22. Juxta (Dorsal view) 23. Aedeagus (dorsal view) 24. Aedeagus (lateral view) 25. Female genitalia (ventral view).

Ypthima baldus (Fabricius) 26. Male genitalia (lateral view) 27. Valva (Inner view) 28. Apex of valva (dorsal view) 29. Dorsum (dorsal view) 30. Juxta (Dorsal view) 31. Aedeagus (lateral view) 32. Aedeagus (dorsal view).

Explanation to the Photographs

Ypthima coorgensis sp.n. : 1. Holotype male (Dorsal side) 2. Holotype male (Ventral side) 3. Paratype female (Dorsal side)

Ypthima tripuraensis sp.n. : 4. Holotype male (Dorsal side) 5. Holotype male (Ventral side)

Abbreviations used

1A+2A : Fused first and second anal veins, 3A : Third anal vein, AED : Aedeagus, APX.ANG. : Appendix angularis, CO : Costa, CRP.BU. : Corpus bursae, Cu1a : Upper branch of first cubital, Cu 1b : Lower branch of first cubital, D : Discal cell, DSF : Dry-season form, DU.BU. : Ductus bursae, DU.EJ. : Ductus Ejaculatorius, DU.SEM. : Ductus seminalis, h : Humeral vein, LA.AV. : Lamella antevaginalis, ldc : Lower discocellular, M₁ : First medial vein, M₂ : Second medial vein, M₃ : Third medial vein, mdc : Middle discocellular, P.A. : Papilla analis, PO.APO : Apophysis posterioris, 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, SBZ : Subzonal portion of aedeagus, Sc : Subcosta, Sc+ R₁ : Stalk of veins Sc and R₁, SL : Sacculus, SPZ : Suprazonal portion of aedeagus, TEG : Tegumen, udc : Upper discocellular, UN : Uncus, VIN : Vinculum, VLV : valva, WSF : Wet-season form.

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PLATE - 1

Ypthima coorgensis sp.n.



1. Holotype male (Dorsal side)



2. Holotype male (Ventral side)



3. Paratype female (Dorsal side)



4. Holotype male (Dorsal side)



5. Holotype male (Ventral side)





