

Reporting of two new species of Genus *Ypthima* Hübner (Lepidoptera : Nymphalidae) from Myanmar

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Abstract

Two new species of the genus *Ypthima* Hübner (Lepidoptera: Papilionoidea: Nymphalidae) are described and illustrated from Myanmar. The eleven examples of the new species belong to *Philomela*-group of the genus *Ypthima*.

Keywords: Genitalia, Myanmar, Nymphalidae, *Philomela*, *Ypthima*

Introduction

Ypthima Hübner species are commonly known as “The Rings”. These insects are active in the morning and evening time or on cloudy days. They fly close to the ground and rests on the blades of the grasses. The genus *Ypthima* Hübner is represented by 40 species from India and 100 species from the world (Palaeotropical and East Palaeartic regions). The species identification in this genus is quite confusing due to the variations in size and number of ocelli present on both sides of the wings. Consultation of relevant literature (vide Marshall and de Niceville, 1883; Moore, 1890, 1892; Elwes and Edwards, 1893; Evans, 1932; Talbot, 1947; Shirozu and Shima, 1977, 1979) has critically been made. Shirozu and Shima (1979) studied 73 species from Australia, Asia and South Pacific Islands. The male genitalia of 53 species have been studied by them. The eleven examples of the presently examined material belongs to *Philomela*-group of the genus *Ypthima* Hübner (Shirozu and Shima, 1979). Evans (*loc. cit.*) divided Indian species of this genus into four groups on the basis of wing markings of the underside hindwing. In grouping of the Indian species of the genus *Ypthima* Hübner Talbot (*loc. cit.*) followed mainly Evans. Rose and Sharma (1999) studied the variations in wing maculation of sixteen species of the genus *Ypthima* Hübner on the basis of genitalic structures from Northwestern India. In the present communication, two species of the genus *Ypthima* Hübner have been described as new to science from Myanmar.

The study has been made from the old de Niceville National Zoological Collections present at Zoological Survey of India, Kolkata. 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. Schmett.*, **1** ; 17. Type-species by designation by the commission under its Plenary Powers under Article 70(a): *Ypthima hübnerei* Kirby, 1871, *Syn. Cat. Diurn. Lep.*: 95.

Type-species *Ypthima hübnerei* Kirby.

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

1. 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..... 2
- 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,

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- stumpy, blunt at distal end, vinculum more or less incurved; female genitalia with ductus bursae smaller 6
2. Male brand more prominent. Valva in male genitalia with notch at distal end..... 3
 - Male brand less prominent. Valva in male genitalia with distal end without notch or slightly concave 5
 3. Ocelli on the underside hindwings are either large or small; male genitalia with uncus curved ventrally, valva has simple costal process 4
 - Ocelli on the underside hindwings are represented by minute black dots; male genitalia with uncus weakly curved ventrally, valva has bifurcated costal process *tripuraensis* Sharma
 4. Comparatively darker in colour on the upperside and underside of the wings. Distal end of valva in male genitalia having serrations on harpe and ampulla more or less finger like..... *shimai* sp. n.
 - Comparatively lighter in colour on the upperside and underside of the wings. Distal end of valva in male genitalia without serrations on harpe and ampulla more or less thumb like *baldus* Fabricius
 5. 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
 6. 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 7
 7. Forewing upperside with subapical ocellus wanting or obscurely marked in male; male genitalia with uncus smaller; female genitalia with ductus bursae strongly sclerotized..... 8
 - Forewing upperside with subapical ocellus prominent in both sexes; male genitalia with uncus longer; female genitalia with ductus bursae comparatively less sclerotized 9
 8. Hindwing underside with marginal & discal fascia prominent. In male genitalia, tegumen without a small finger-like outgrowth at anterior margin, distal end of valva with dorsal blunt process and without ventral finger-like process..... *singala* Felder
 - Hindwing underside with marginal & discal fascia ill-defined. In male genitalia, tegumen with a small finger-like outgrowth present at anterior margin, distal end of valve with dorsal conical process and ventral finger-like process..... *shirozui* sp. n.
 9. 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; female genitalia with lamella antevaginalis nearly rectangular process, slightly concave posteriorly..... *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; female genitalia with lamella antevaginalis crescent-shaped, deeply notched posteriorly *coorgensis* Sharma

1. *Ypthima shimai* sp. nov.

Adult (Male): Frontoclypeal area of head studded with white and brown hair and scales; eyes, medium-sized, reddish brown, glabrous; labial palpi obliquely directed upwardly, three segmented, middle and basal segment closely appressed with brown and white hair and scales, middle segment longest, distal segment acuminate and sparsely covered with white and black scales and hairs; antenna 7.0 mm, club slender, black, nudum present between base of the flagellum and base of the club, the flagellum black with white spots at the base of each segment; foreleg reduced strongly, femur longer than tibia, densely covered with brown and white scales and hair, meso and meta legs well developed, femur longer than tibia, tarsus five segmented and clawed; ground colour of upperside drak brown;

forewing upperside with black, bipupilled, yellow-ringed, more or less rounded, subapical ocellus, inner and outer discal fasciae obscure, submarginal fascia dark and distinct, brand long, broad and prominent, underside ochreous white, striated with brown, ocellus as above but yellow ring more prominent and broader, inner discal fascia ill-defined, outer discal fascia and submarginal fascia distinct; hindwing upperside with inner and outer discal fascia ill-defined, submarginal fascia distinct and dark, ocellar area between outer discal fascia and submarginal fascia slightly paler, two unipupilled, almost equal sized, medium-sized ocelli present in spaces in $Cu1a$ and M_3 , two minute ocelli may present in $1b$, underside pale ochreous white with less brown striations, inner discal fascia obscure, outer discal fascia and submarginal fascia less prominent, six black, yellow-ringed, unipupilled ocelli arranged in echelon, two in R_s and M_1 , two in M_3 and $Cu1a$ and two in $Cu1b$, ocelli in $Cu1b$ smallest.

Venation (Figures 1-2): Forewing cell less than half the length of wing, vein R_1 arising beyond the upper angle of the cell, vein M_2 equidistant between veins M_1 & M_2 , udc oblique and minute, mdc slightly incurved, ldc longer and almost straight than others; cell hindwing more than half the length of wing, vein $Cu1a$ before the lower angle of the cell, h vein (humeral vein) more or less T-shaped.

Upperside abdomen dark brown, covered with fuscous scales and below light brown scales present.

Wing Expanse: Half: Male: 18.00 mm.

Adult (Female): Not studied.

Male genitalia (Figures 3-8): Tegumen dorsally broad at base, gradually narrowed posteriorly with slightly bulged distal portion, in lateral view, vinculum longer than tegumen in height, with broad membranous incision on its anteroventral margin; uncus dorsally gradually tapering towards apex, shorter than tegumen, in lateral view weakly curved ventrally with narrow membranous slit at its base; fenestrula represented by small, membranous, oval spot; appendix angularis rather broad, strongly curved inward, gradually tapering towards apex; vinculum weakly inwardly curved; saccus less than $1/3$ x as long as ring, tubular, narrow at apex; valva broader at middle and gradually tapers towards both the ends, costa long with small flap-like costal process and continues to ampulla and harpe, sacculus long and narrow, forked in dorsal view distally, sparsely setosed;

aedeagus dorsally almost straight, strongly curved dorsally in lateral view, subzone smaller, ductus entering dorsad; juxta V-shaped, moderately sclerotized.

	<i>Y. shimai</i> sp. nov.	<i>Ypthima baldus</i> (Fabricius)
1	<i>Ypthima shimai</i> is comparatively darker in colour on the upperside and underside of the wings.	<i>Ypthima baldus</i> is comparatively lighter in colour on the upperside and underside of the wings.
2	In male genitalia, distal end of valva having serrations on harpe and ampulla more or less finger like.	In male genitalia, distal end of valva without serrations on harpe and ampulla more or less thumb like.
3	In male genitalia, costa with small flap-like costal process.	In male genitalia, costa with small rectangular costal process.
4	Aedeagus narrower at the anterior end.	Aedeagus broader at the anterior end.
5	Saccus narrow at apex.	Saccus rounded at apex.

Material examined: Holotype: ♂, Myanmar, Shin Loushai, 28.ii.1880 (Regd no. 7213/H90, de Niceville collections).

Paratype: Myanmar, Shin, Loushai, 1♂, 28.ii.1880 (Regd. no. 7212/H9), de Niceville collections.

Etymology: The species is named in honour of Dr. Hiroshi Shima, Biological Laboratory, college of General Education, Kyushu Univeristy, Ropponmatsu, Fukuoka 810, Japan for his contributions in the taxonomy of the subfamily Satyrinae (Lepidoptera).

Remarks: This species is studied from the old de Niceville collections housed at Zoological Survey of India, Kolkata. *Ypthima baldus* is closely related to the new species however it differs from the new species as given below:

2. *Ypthima shirozui* sp. nov.

Adult (Male): Frontoclypeal area of head clothed with brown hair & scales; dark brown eyes, glabrous, medium sized; labial palpi directed upwardly, three segmented, middle segment long, distal segment narrowing towards apex, basal and middle segment densely covered with brown and black scales & hair; antenna 8.0 mm, slender and brown club,

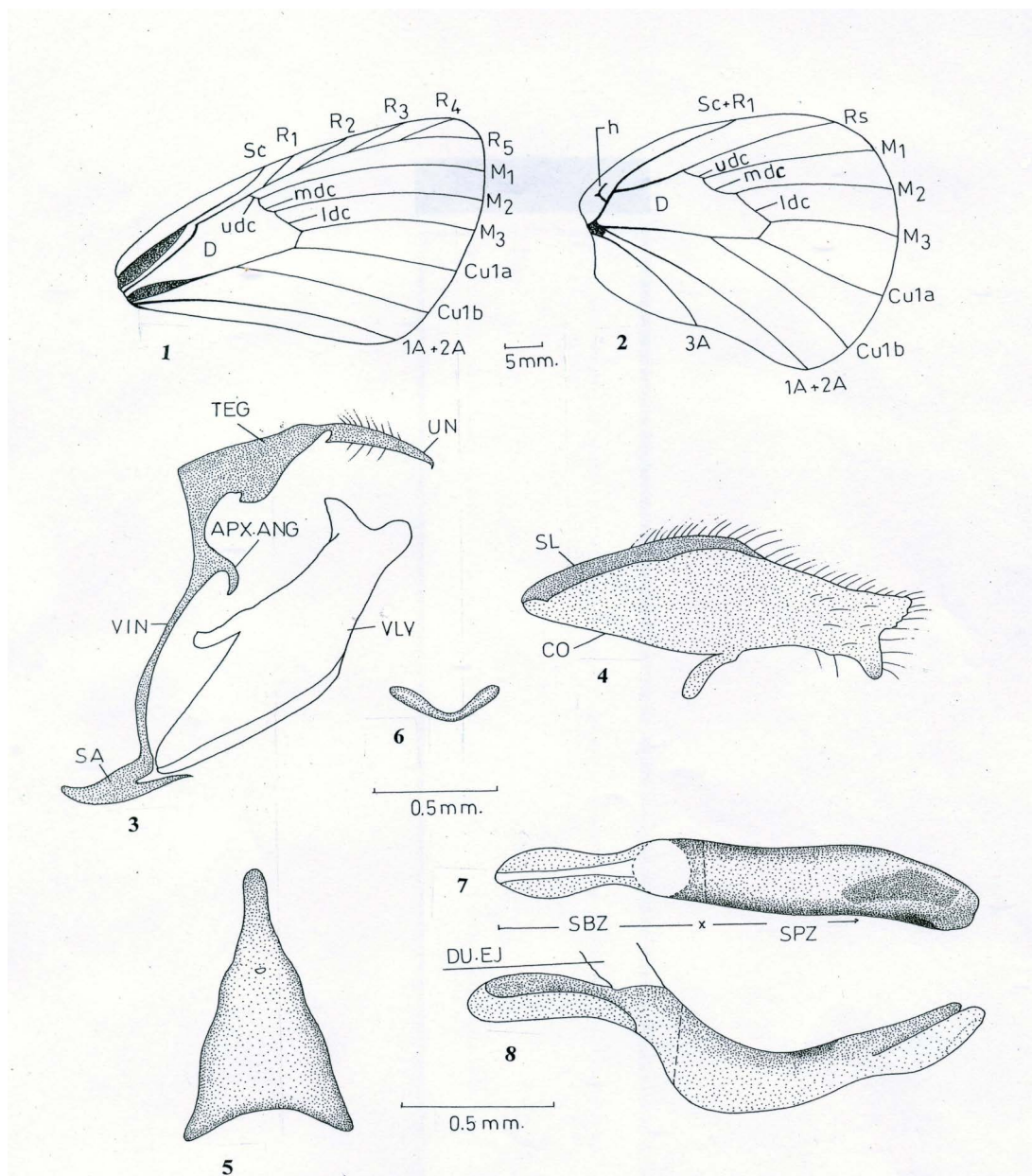


Figure 1. *Ypthima shimai* sp.n. : 1. Venation of forewing 2. Venation of hindwing 3. Male genitalia (lateral view) 4. Valva (Inner view) 5. Dorsum (dorsal view) 6. Juxta (Dorsal view) 7. Aedeagus (dorsal view) 8. Aedeagus (lateral view).

nudum lies between the base of the flagellum and the base of the club, the flagellum brown; thorax clothed with sparse brown hair dorsally and ventrally; foreleg not developed, meso and meta legs white scaled, tibia shorter than femur, tarsus with five segments and clawed; ground colour of upperside pale brown; forewing upperside with inner discal fascia absent, outer discal fascia obscure, submarginal fascia dark and prominent, subapical black, bipupilled, slightly oblique, narrowly ringed with diffuse yellow, yellow ring

may absent, band prominent, underside grayish white, inner discal fascia, outer discal fascia and submarginal fascia well developed, subapical ocellus as on upperside but yellow ring prominent and broader than upperside; upperside of hindwing pale brown inner discal fascia absent, outer discal fascia obscure, submarginal fascia prominent, two unipupilled, black, narrowly ringed with diffuse yellow ocelli present in M_3 and Cula, ocelli may without yellow ring, single or double minute ocellus in Culb may present, underside

Plate



Ypthima shimai sp.n. : 1. Holotype male (Dorsal side).



Ypthima shirozui sp.n. : 3. Holotype male (Dorsal side).



Ypthima shimai sp.n. : 2. Holotype male (Ventral side).



Ypthima shirozui sp.n. : 4. Holotype male (Ventral side).

ground colour as on the forewing underside, inner discal fascia ill defined, outer discal fascia angled outwards in space M_2 , submarginal fascia distinct, six unipupilled, small, black, very narrowly ringed with yellow, ocelli present, two in R_s and M_1 , two in M_3 and Cula, two in Culb. In dry season form, these ocelli are in the form of black dots.

Venation: Cell forewing less than half the length of wing, vein R_1 arising beyond the upper angle of the cell, udc oblique and minute, mdc incurved, ldc almost straight; Cell hindwing more than half the length of wing, Cula before the lower angle of the cell, humeral vein (h) T-shaped.

Abdomen covered with brown scales dorsally & ventrally with white scales.

Length of the forewing: Half : Male : 18.00 - 22.00 mm.

Adult (Female): Not studied.

Male genitalia (Figures 11-16): Tegumen base broad dorsally, gradually tapers posteriorly, shorter than vinculum in height in lateral view, a small finger-like outgrowth present at anterior margin; in dorsal view, uncus gradually narrowing towards apex, shorter than tegumen, in lateral view, slightly curved ventrally with narrow membranous incision at base, sparsely setosed with minute scales; fenestrula represented by a small, membranous, rounded spot, appendix angularis small with blunt distal end; vinculum broader ventrally, slightly inwardly curved; saccus moderately long, narrow at

apex, tubular equal to 1/3 x as long as ring; valva broad, costa with flap-like costal process, distal end with dorsal conical process and ventral finger-like process which has few serration on inner margin, setae present on ventral margin; aedeagus in dorsal view nearly straight, broader at both the ends, in lateral view curved dorsally, subzone and suprazone subequal, ductus entering dorsad; juxta broad and V-shaped.

Material examined: Holotype: ♂, Myanmar, South Shan States, 11.iii.1890 (Regd no. 7069/H9), de Niceville collection.

Paratypes: Myanmar, South Shan States, 2 ♂, dsf., 11.iii.1890 (Regd no.7067/H9, 7068/H9), de Niceville collections; Upper Myanmar, Jilin Yaw, 1 ♂, dsf., 11.iii.1890 (Regd no.

7066/H9), de Niceville collection; Myanmar, Katha Road, 1 ♂, 1.iii.1890 (Regd no. 7071/H90, de Niceville collection; Upper Myanmar, Chindwin, Kalwa, 3 ♂, iii.1890 (Regd no. 7072/H9, 7073/H9, 7074/H9), de Niceville collection; Lower Burma, Thauungyon, 1 ♂, 1.iii.1890, (Regd no. 7076/H9) de Niceville collection.

Etymology: The species is named in honour of Dr. Takashi Shirozu, Biological Laboratory, college of General Education, Kyushu Univeristy, Ropponmatsu, Fukuoka 810, Japan for his contributions in the taxonomy of the subfamily Satyrinae (Lepidoptera).

Remarks: This species is studied from the old de Niceville collections housed at Zoological Survey of India, Kolkata.

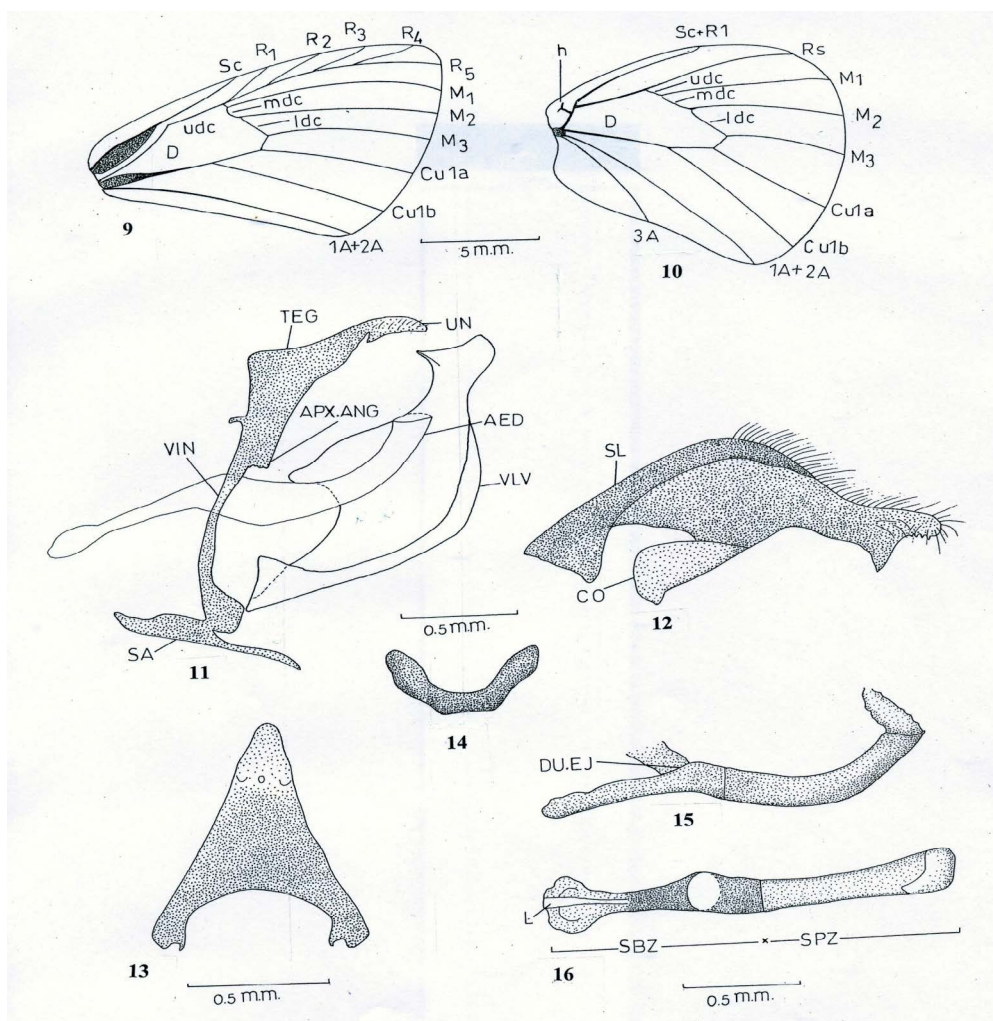


Figure 3. *Ypthima shirozui* sp.n. : 9. Venation of forewing 10. Venation of hindwing 11. Male genitalia (lateral view) 12. Valva (Inner view) 13. Dorsum (dorsal view) 14. Juxta (Dorsal view) 15. Aedeagus (Lateral view) 16. Aedeagus (dorsal view).

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

	<i>Y. shirozui</i> sp. nov.	<i>Ypthima singala</i> (Fabricius)
1	<i>Y. shirozui</i> is paler in ground colour	<i>Ypthima singala</i> is darker in ground colour
2	In male genitalia, tegumen with a small finger-like outgrowth present at anterior margin.	In male genitalia, tegumen without a small finger-like outgrowth at anterior margin.
3	In male genitalia, distal end of valva with dorsal conical process and ventral finger-like process which has few serrations on inner margin,	In male genitalia, distal end of valva with dorsal blunt process and without ventral finger-like process.
4	In male genitalia, costa with flap-like costal process.	In male genitalia, costa without costal process.
5	Aedeagus with anterior end broader, more or less rounded.	Aedeagus with anterior end comparatively narrower.
6	Saccus narrow at apex.	Saccus rounded at apex.

Discussion

The species of the genus *Ypthima* Hübner were not easy to identify/separate due to lot of variations in size and number of ocelli on both side of the wings and the genus, as such, having been remained for many years a stumbling block to the Lepidopterists (Elwes and Edwards, 1893). Eliot (1992) has also recommended that the males admit of ready identification from the characteristic forms of their genitalia. Rose and Sharma (1999) studied the variations in wing maculation of sixteen species of the genus *Ypthima* Hübner from Northwestern India and conspecificity of different individuals has been established on the basis of genitalic structures. During the course of present studies, eleven examples sorted out from the old de Niceville collections belong to *Philomela* group (Shirozu ad Shima, 1979). The variations in the wing maculation of the species were confirmed on the basis of their male genitalia. In respect of characters such as, the uncus, tegumen, aedeagus and the valva in the male genitalia, the presently studied two new species differ not only from each other but also from other species of the group (Shirozu and Shima, 1977, 1979).

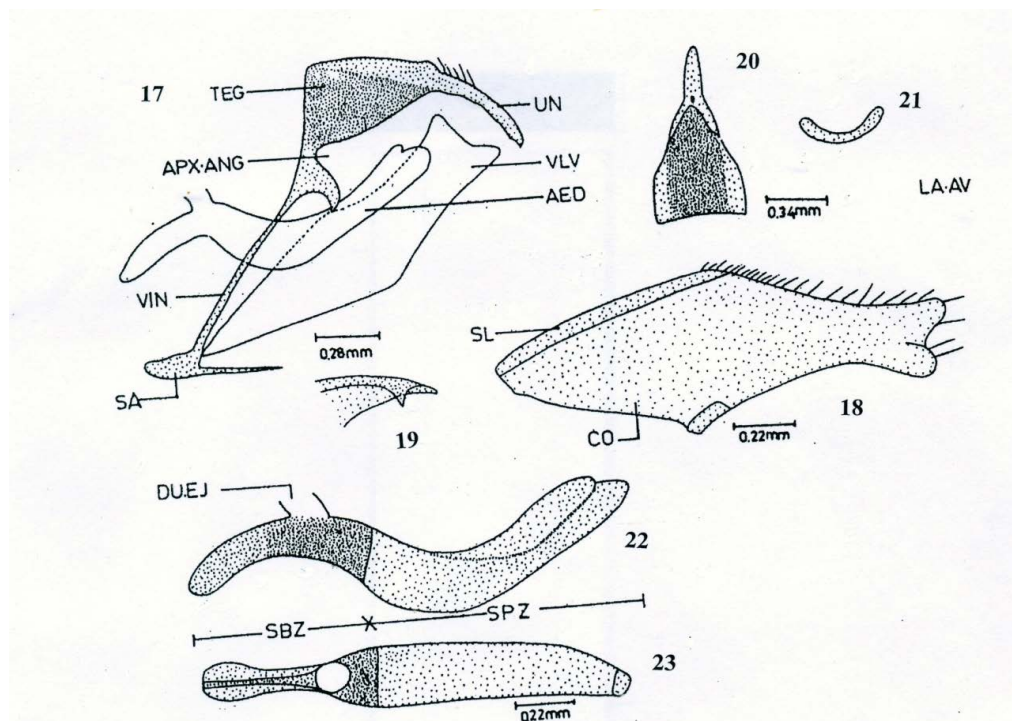


Figure 3. *Ypthima baldus* (Fabricius): 17. Male genitalia (lateral view) 18. Valva (Inner view) 19. Apex of valva (dorsal view) 20. Dorsum (dorsal view) 21. Juxta (Dorsal view) 22. Aedeagus (lateral view) 23. Aedeagus (dorsal view).

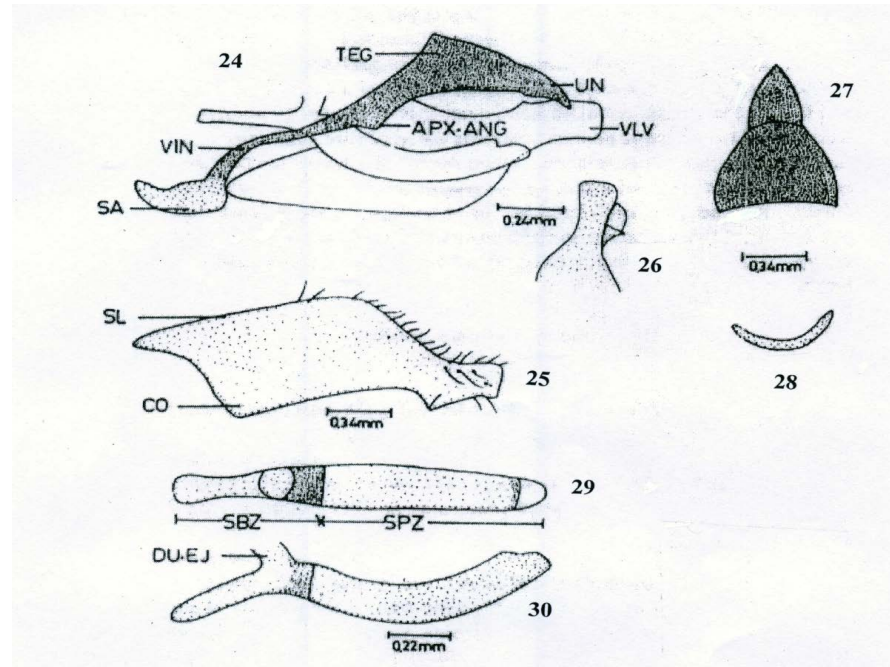


Figure 4. *Ypthima singala* (Fabricius): 24. Male genitalia (lateral view) 25. Valva (Inner view) 26. Outside of valva (lateral view) 27. Dorsum (dorsal view) 28. Juxta (Dorsal view) 29. Aedeagus (dorsal view) 30. Aedeagus (lateral view).

Abbreviations Used

1A+2A: Fused first and second anal veins, 3A: Third anal vein, AED : Aedeagus, APX.ANG.: Appendix angularis, CO: Costa, Cu1a: Upper branch of first cubital, Cu 1b: Lower branch of first cubital, D: Discal cell, DU.EJ.: Ductus Ejaculatorius, h: Humeral vein, ldc: Lower discocellular, M_1 : First medial vein, M_2 : Second medial vein, M_3 : Third medial vein, mdc: Middle discocellular, R_1 : First radial vein, R_2 : Second radial vein, R_3 : Third radial vein, R_4 : Fourth radial vein, R_5 : Fifth radial vein, Rs: Radial sector, SA: Saccus, SBZ: Subzonal portion of

aedeagus, Sc: Subcosta, Sc+ R_1 : Stalk of veins Sc and R_1 , SL: Sacculus, SPZ : Suprazonal portion of aedeagus, TEG : Tegumen, udc: Upper discocellular, UN: Uncus, VIN : Vinculum, VLV: valva.

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