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**Original article**


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## Notes on some Oriental species of the genus *Ypthima* Hübner (Lepidoptera: Nymphalidae; Satyrinae)

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### Abstract

The male genitalia of *Y. bolanica* Marshall and *Y. putamdui* South were described and illustrated and systematic positions of both species were noted. *Ypthima hanburyi* Holloway was redescribed in detail based on specimens obtained in Sabah, Malaysia and its systematic position in the genus was discussed. *Ypthima inouei* Shirôzu et Shima was treated as a good species distinct from *Y. watsoni* Elwes et Edwards based on the male genitalic structure.

**Key words:** Butterflies, genus *Ypthima*, male genitalia, wing markings, systematic position.

### Introduction

The butterfly genus *Ypthima* Hübner, 1818 is diverse in southeastern fringe of the Palearctic Region to the Oriental Region and some 100 species have been known from the area. Several attempts have been made to classify the genus into species groups or consider the phylogenetic relationships of the genus. However, it is sometimes difficult to classify the genus into species groups, or even into species, based only on the wing markings because of the lack of distinct characters to discriminate them. The male genitalia have been known to provide important information for the identification of species of this genus (e.g. Elwes & Edward, 1893) and the female genitalia are also useful in the classification, but many species, especially those described by earlier authors, have not been studied in detail.

The main purpose of this paper is to provide basic information on the genital character of four species of this genus, *Y. humburyi* Holloway, *Y. watsoni* (Moore), *Y. bolanica* Marshall and *Y. putamdui* South, for considering systematic

positions of these species in this genus. These species have not been well studied since their original description and problematical in their systematic position remain.

Materials are examined from the collections of the Natural History Museum, London (NHM), Institute for Tropical Biology and Conservation, University of Malaysia Sabah (ITBC), Biosystematics Laboratory, Graduate School of Social and Cultural Studies, Kyushu University, Fukuoka (BLKU) and Museum of Nature and Human Activities, Hyogo.

### Redescription and systematic notes

***Ypthima bolanica* Marshall, 1882** (Figs. 1A-C, E, 2)  
*Ypthima bolanica* Marshall 1882: 759.

*Ypthima bolanica*: Marshall & Nicéville, 1883: 231 - Moore, 1892: 85 - Elwes & Edwards, 1893: 48 - Fruhstorfer, 1911 :121 - Evans, 1932.

This is a distinctive species among members of this genus in having peculiar wing markings: the underside of both wings has distinct marginal

whitish stripes and the hindwing underside has 5 ocelli in cells 6, 5, 4, 2 and 1b. This peculiar ocelli arrangement is never found in this genus and the affinity of this species has been variously considered. This species appears to have been considered close to *Ypthima baldus* (Fabricius, 1775) or its allies (e.g. Fruhstorfer, 1911), but its genitalia have never been studied. The male genitalia of this species, however, show apparent characteristics of a group different from *Y. baldus* and its allies and a probable relationship to *Y. ceylonica* (Hewitson, [1865]) or *Y. arctoa* (Fabricius, 1775) in having very long appendix angularis and sacculus and absence of the fenestrula.

**Male genitalia:** Tegumen in dorsal view gradually narrowed posteriorly, without distinct emargination on posterior margin, slightly shorter than vinculum in lateral view. Fenestrula absent. Uncus long, slightly longer than tegumen in lateral view, narrow and weakly curved ventrally in lateral view. Appendix angularis very narrow long and downcurved, pointed apically. Saccus long, about 1/3 as long as ring height. Valva as long as ring height, broad at base and narrowed beyond basal 3/5, apex finely serrate for a short distance; costa long and narrow, continuous to rod like ampulla+harpe; anellifer broad, occupying basal 3/5 of ventral 2/3 of valva; sacculus almost absent. Aedeagus nearly straight; in dorsal view membranous on apical 1/3 of right side obliquely, without flexed sclerite on its apex.

**Material examined:** Holotype male, Mach, Bolan, Pakistan, Sept. 1879, Swinhoe (NHM).

***Ypthima hanburyi* Holloway, 1984** (Figs. 3-5)

*Ypthima hanburyi* Holloway, 1984: 127

*Ypthima hanburyi*: D 'Abbrera, 1985: 471

**Male & female.** Rather small in size; no seasonal forms recognizable.

**Upperside of forewing:** Brown in ground color, paler longitudinal band distinct between discal and submarginal fasciae; male brand weakly developed on basal area; large yellow-ringed, bipupilled black subapical ocelli well developed, slightly elliptic in male and roundish in female; fringe brown.

**Upperside of hindwing:** Brown in ground color, paler longitudinal band weaker and narrower than on forewing; male brand indistinct; no ocelli on subternal area; fringe brown.

**Underside of forewing:** Yellowish brown in ground color, paler between discal and submarginal fasciae which are well developed from cell 3 to 1b, with fine and close brownish striations; striation coarse on pale area; subapical ocellus as on upperside.

**Underside of hindwing:** Yellowish brown in ground color, slightly paler between submedian- and submarginal- area, with very fine and close brownish striations; discal and submarginal fasciae indistinct; very minute yellow-ringed nonpupilled ocelli present on cells 6 and 2, no subternal ocellus.

**Androconia** small, about 0.13 mm in length, gradually narrowed to apex, apical fringe short and small.

**Forewing vein R1** arising slightly before r-m crossvein.

**Male genitalia:** Tegumen in dorsal view strongly concave on anterior margin, evenly narrowed posteriorly, posterior margin weakly bulged; in lateral view slightly higher than vinculum, posteroventral margin with narrow and rather long incision; appendix angularis broad and weak, curved inward. Fenestrula small. Uncus distinctly shorter than tegumen, gradually narrowed posteriorly, rather narrow and weakly curved ventrally in lateral view, apex weakly pointed. Saccus about 1/4 as long as ring, ventral surface of inner wall with transverse incision. Aedeagus in lateral view distinctly curved dorsally on apical 1/3; perivesical area occupying apical 1/4 of dorsal side obliquely, without apical sclerite inflexed into vesica. Valva nearly as long as ring, broad at base and gradually narrowed to pointed apex; costa broadly and roundly expanded dorsally on basal 2/5; anellifer of ventral 1/2 of basal 1/3 of valva; sacculus short and narrow at base.

**Female genitalia:** Central process of lamella antevaginalis rather narrow and long, gradually widened toward apex and truncated at apical margin; lateral lobe of lamella antevaginalis well developed and free from wall of copulatory cavity, with many minute hairs. Lamella postvaginalis rounded in ventral view, concave centrally and central longitudinal area weakly ridged, anterior margin expanded as an elongate tube. Ductus seminalis attached to ductus bursae near ostium bursae. Ductus bursae rather broad, weakly and narrowly sclerotized near ostium bursae. Corpus bursae rounded, with 2 short and rather weakly sclerotized signa.

Fore wing length: 17-19 mm.

Material examined: 1 male, 1 female, Danum Valley, Sabah, Malaysia, 23.Feb.2005, T. Tachi; 4 males, 2 females, same locality as preceding, 9-17.Sept.2004, A. Nakanishi & T. Tachi (in ITBC and Museum of Nature and Human Activities, Hyogo).

Distribution. Borneo.

Remarks. As Holloway (1984) mentioned in the original description, this species is similar to *Ypthima asterope* in the wing markings, but its genitalia apparently show the characteristics of *Y. pandocus* Moore [1858] and its allies (*pandocus* group of Shirôzu & Shima, 1979).

The *pandocus* group is restricted in its distribution to Sundaland, Philippines and Sulawesi with an exception of a species recently discovered from Vietnam (*Y. daclaca* Uémura et Monastyrskii, 2004). In this group, species occurring in the Philippines and Sulawesi are well characterized by the genitalic structure and species occurring in each area may be recognized as a monophyletic group, respectively. The Philippines species are all characterized by the strongly expanded ventrolateral margin of the tegumen and short uncus of the male genitalia and weakly developed and broadly membranous lateral lobes of lamella antevaginalis of the female genitalia. The Sulawesi species are characterized by the strongly angulated aedeagus and strongly developed central and lateral lobes of the lamella antevaginalis of the female genitalia. On the other hand, species occurring in Sundaland and Vietnam, such as *pandocus*, *nigricans*, *hanburyi* and *daclaca*, have no distinct character to unite them.

*Ypthima hanburyi* is found in the center of the distribution area of this group. This species is very characteristic in its small size and in having strongly reduced ocelli on the hindwing, very short androconia, rather broad male valva and well developed and minutely haired laterall lobe of the lamella postvaginalis. In the genital characters this species resembles *Y. nigricans* Snellen, 1892 known from Java and Bali or species occurring in Sulawesi. Further detailed study on the male and female genitalia is necessary to clarify the phylogenetic position of this species.

***Ypthima putamdui* South, 1913** (Figs. 1C-D, F, 6)

*Ypthima putamdui* South, 1913: 348.

This species has not been treated in any literature after its original description (South, 1913). There are several species similar to this species in the wing markings in southwestern China. The peculiar markings of the wing underside suggests its relationships to *Y. megalomma* Butler, 1874 and its allies and the male genitalia are apparently similar to those of *Y. pseudodromon* Forster, 1948: valva with a strong and marginally serrate process on distal area of costa, a few additional short spines present on basal area of rod-like ampulla+harpe.

Male genitalia: Tegumen in lateral view as high as vinculum, posterior margin only weakly emarginated. Uncus as long as tegumen, weakly curved ventrally in lateral view. Appendix angularis large, triangular. Saccus slightly more than 1/4 of ring. Valva wide at base; costa with dorsal expansion on apical portion, which is irregularly serrate at apex, 2-3 additional small spines present beyond costa on rod-like basal portion of ampulla+harpe; apex of valva finely serrate for a short distance; sacculus narrow on basal 2/5 of ventral portion.

Material examined: Holotype male of *Y. putamdui*, Nya Chuka, 10,000', S. E. Tibet, China, 25.v.1911, F. M. Bailey (NHM).

***Ypthima watsoni* (Moore, [1893])** (Figs.7-8)

*Pandima watsoni* Moore, [1893]:89.

This species is rather difficult to identify and also to place systematically in the complex of *Ypthima* species with 3 ocelli on the hindwing underside. Identifications of this species by earlier authors appear to be doubtful.

Aoki & Uemura (1984) considered *Y. inouei* Shirôzu et Shima as a junior synonym of *Y. watsoni* (Moore, [1893]) and later Uemura (1998) treated it as a subspecies of the latter. We examined syntypes of *Y. watsoni* and found that they are fairly different from each other in the male genitalia: in *watsoni* the the valva with only a few weak teeth on its apex, whereas the valva with finely serrate apical portion for a short distance in *inouei*; the aedeagus without apical sclerite being flexed from ventral portion into the vesica in *watsoni*, but the apical sclerite is well developed in *inouei*. We consider that these differences in the male genitalia of both species are

enough to treat them as distinct species: *Ypthima inouei* Shirôzu et Shima, *stat rev.*

*Ypthima inouei* must be closely related to *Y. sordida* Elwes & Edwards, 1893 or *imitans* Elwes & Edwards, 1893 in the genital characters. The affinity of *Y. watsoni* is not certain, but it is not close to *Y. newara* Moore, 1874 as Shirôzu & Shima (1979) considered. *Ypthima frontierii* Uémura et Monastyrskii, 2000 appears to be very similar to this species in the male genitalia. Uémura & Monastyrskii (2000) considered *Y. frontierii* belonging to the *megalomma* group probably because of its underside wing markings, but *Y. frontierii* is not a member of the group because of the lack of the spine or process on the costa of the male valva. It is possible that such the markings appear independently in some species groups of this genus.

Material examined: Holotype male of *Y. inouei*, Trang Bom, Vietnam, 2.ix.1962, S. Inoue (BLKU); syntype male of *Y. watsoni*, Toungoo, Burma, March 1891, Capt. Watson (NHM); syntype female of *Y. watsoni*, same locality as preceding, 22.i.1891, Capt. Watson (NHM).

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### References

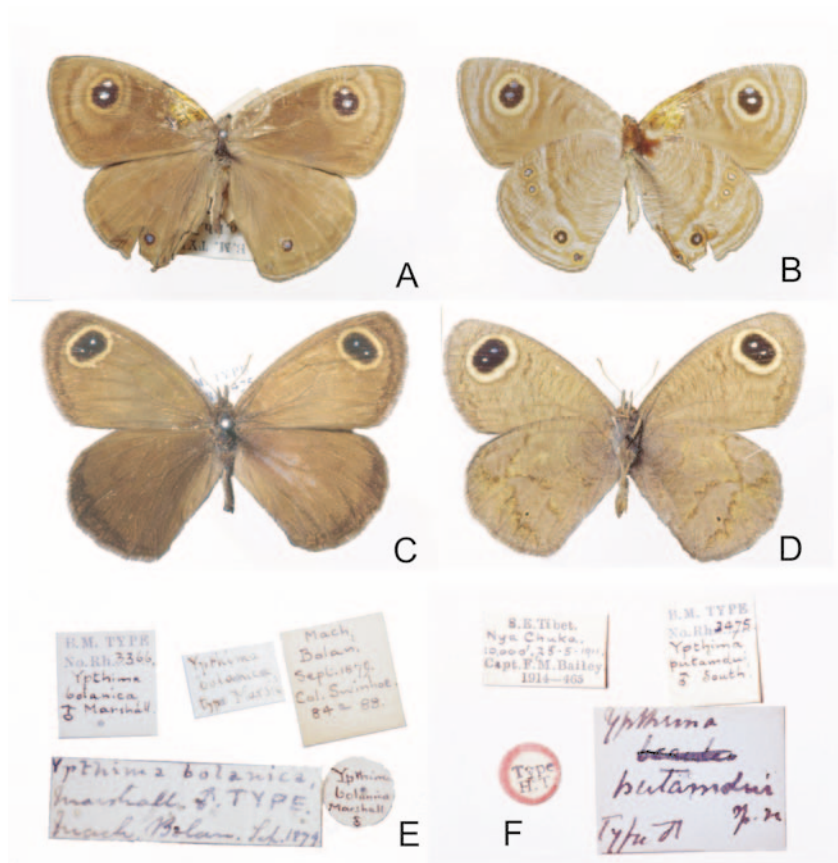
- Aoki, T. & Uémura, Y. 1984. Studies on the genus *Ypthima* (Lepidoptera: Satyridae) in Thailand. *Tokurana*, (6/7): 71-103.
- Butler, A. G. 1874. Description of four new Asiatic butterflies. *Cistula Entomologica*, **1**: 235-236.
- Elwes, H. J. & Edwards, J. 1893. A revision of the genus *Ypthima*, with especial reference to the character afforded by the male genitalia. *Transactions of the Entomological Society of London*, 1893: 1-54.
- Evans, W. H. 1932. The identification of Indian butterflies. Second Edition. 454 pp. The Bombay Natural History Society.
- Fabricius, I. C. 1775. Systema entomologicae, sistens insectorum classes, ordines, genera, species, adiectis synonymis, locis, descriptionibus, observationibus. 832 pp. Flensburg & Leipzig.
- Forster, W. 1948. Beiträge zur Kenntnis der ostasiatischen *Ypthima*-Arten (Lep. Satyrid.). *Mitteilungen der Münchener Entomologischen Gesellschaft*, **34**: 472-492.
- Fruhstorfer, H. 1911. Family Satyridae. In Seitz, A. "The Macrolepidoptera of the world," **9**: 285-401. Stuttgart.
- Hewitson, W. C. A. 1865. A monograph of the genus *Ypthima*; with descriptions of two new genera of diurnal Lepidoptera. *Transactions of the Entomological Society of London*, (3) **2**: 281-293.
- Holloway, J. D. 1984. Notes on the butterflies of the Gunung Mulu National Park. *Sarawak Museum Journal*, **30**: 89-131.
- Hübner, J. 1818. Zuträge zur Sammlung der exotische Schmetterling, 1.
- Marshall, G. F. L. 1882. Notes on Asiatic butterflies, with description of some new species. *Proceedings of the Zoological Society of London*, 1882: 758-761.
- Marshall, G. F. L. & de Nicéville, L. 1883. Butterflies of India, Burma and Ceylon 1. Calcutta Press, Calcutta.
- Moore, F. 1874. Descriptions of new Asiatic Lepidoptera. *Proceedings of the Zoological Society of London*, 1874: 565-579.
- Moore, F. 1892. Lepidoptera Indica, 2: 2-98. Reeve, London.
- Shirôzu, T. & Shima, H. 1979. On the natural groups and their phylogenetic relationships of the genus *Ypthima* Hübner mainly from Asia (Lepidoptera: Satyridae). *Sieboldia*, **4**: 231-295.
- Snellen, P. C. T. 1892. Beschrijving van eenige nieuwe Javaansche dagvlinders. *Tijdschrift voor Entomologie*, **35**: 135.
- South, R. 1913. A list of butterflies collected by Cap. F. M. Bailey in western China, South-Eastern Tibet, and the Mishmi Hills, 1911.

*Journal of Bombay Natural History Society*, **22**: 345-365.

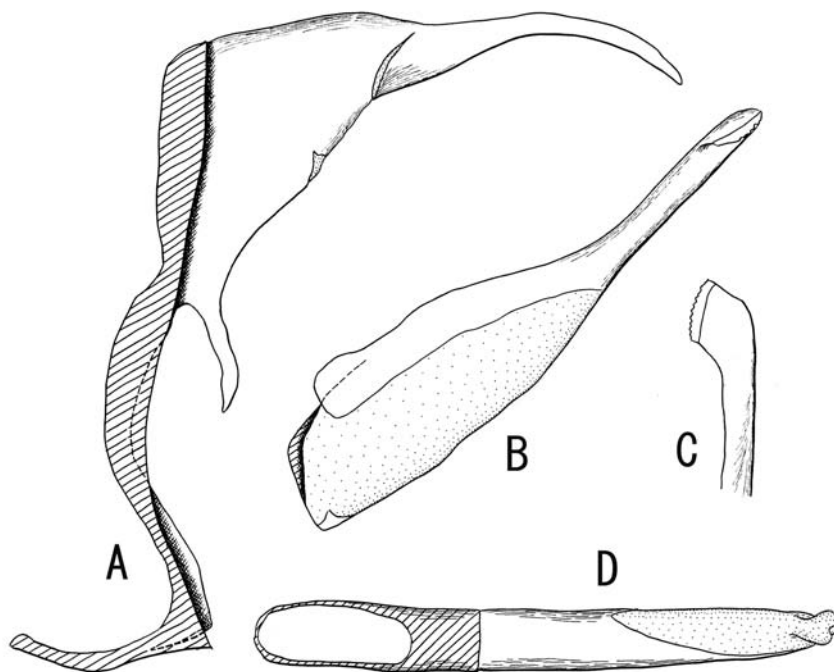
Uémura, Y. 1998. Revisional Notes on Oriental satyrid butterflies (Lepidoptera: Satyridae). Part I. *Ypthima fusca* & *Ypthima watosoni*. *Bulletin of the Toyosato Museum of Entomology*, (7): 1-6.

Uémura, Y. & Monastyrskiy, A. L. 2000. Descriptions of two new species of the genus *Ypthima* Hübner (Lepidoptera: Satyridae) from north and central Vietnam. *Transactions of the Lepidopterological Society of Japan*, **51**: 150-156.

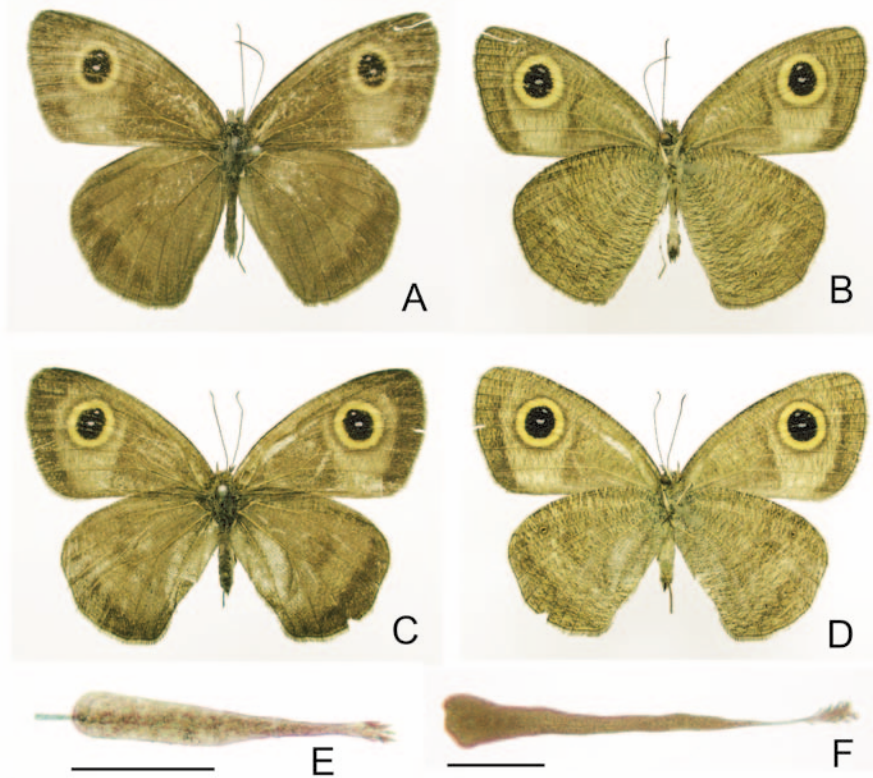
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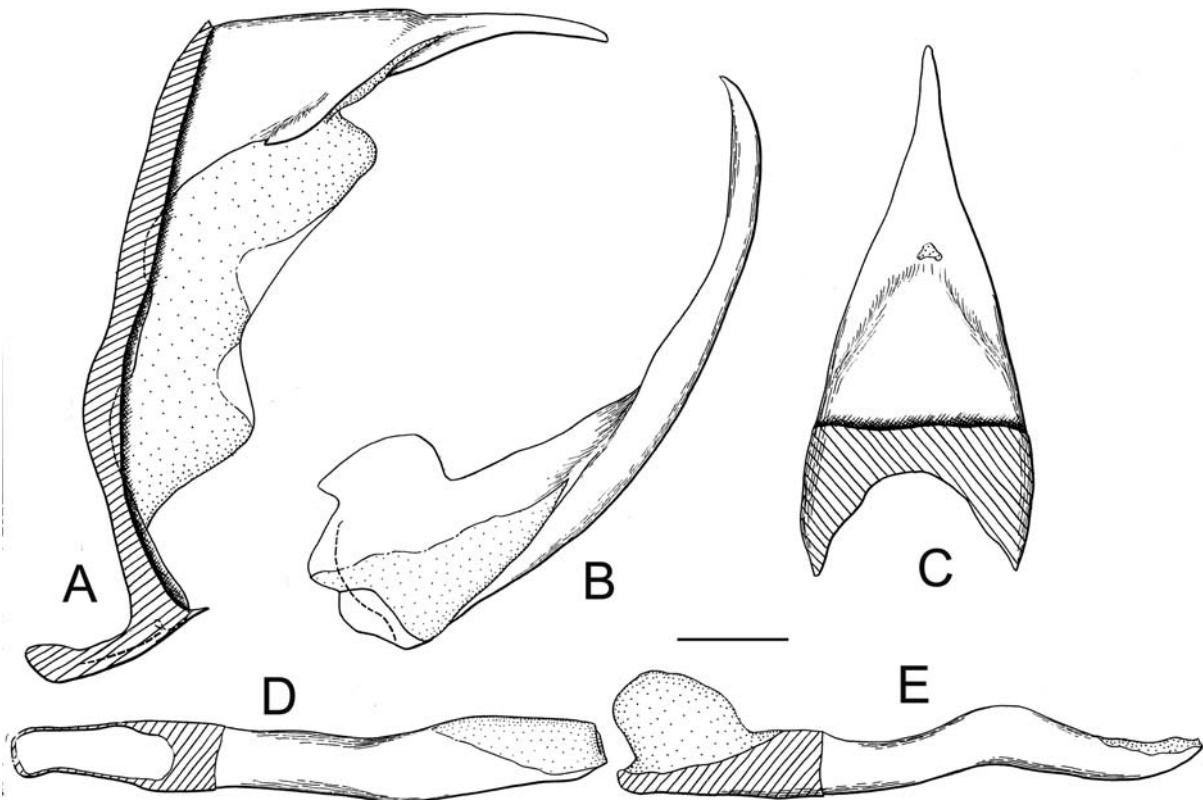
**Figure 1.** Holotypes and labels of *Ypthima bolanica* Marshall (A, B, E) and *Y. putamdui* South (C, D, F). A, C, upperside; B, D, underside.



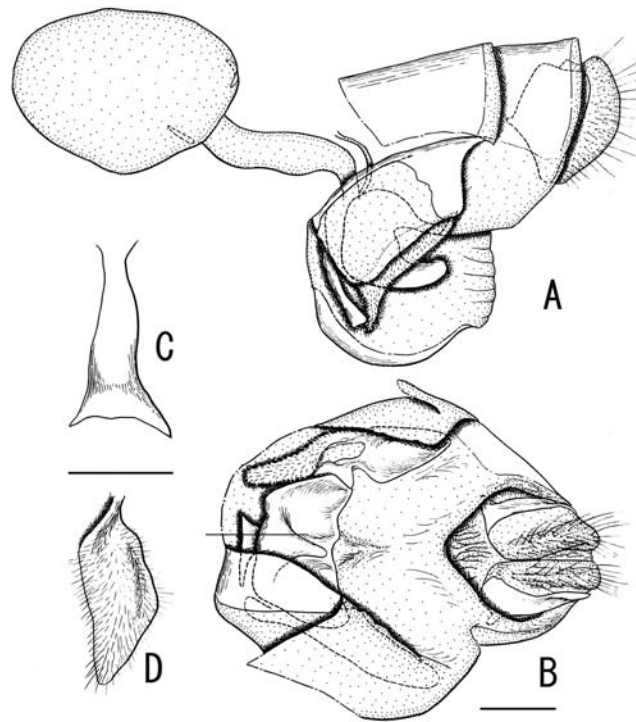
**Figure 2.** Male genitalia of *Y. bolanica*. A, ring in lateral view; B, inside of right valva; C, apex of valva; D, aedeagus in lateral view.



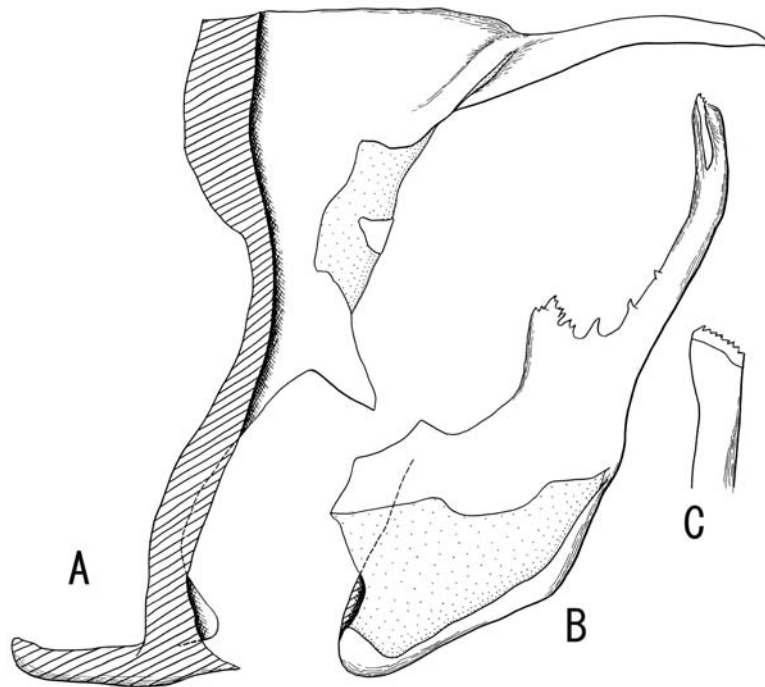
**Figure 3.** A-D, *Y. hanburyi* Holloway; A, B, male; C, D, female. E, F, androconia ; E, *Y. hanburyi*; F, *Y. pandocus* Moore. Scale: 0.05 mm.



**Figure 4.** Male genitalia of *Y. hanburyi*. A, ring in lateral view; B, inside of right valva; C, dorsum in dorsal view; D, aedeagus in dorsal view; E, same in lateral view. Scale: 0.3 mm.



**Figure 5.** Female genitalia of *Y. hanburyi*. A, lateral view; B, ventral view (corpus bursae not drawn); C, central lobe of lamella antevaginalis in ventral view; D, right lateral lobe of lamella antevaginalis. Scale for female genitalia 0.3 mm, for central and lateral lobes of lamella antevaginalis 0.28 mm.



**Figure 6.** Male genitalia of *Y. putamdui* South. A, ring in lateral view; B, inside of right valva, C, aedeagus in lateral view.



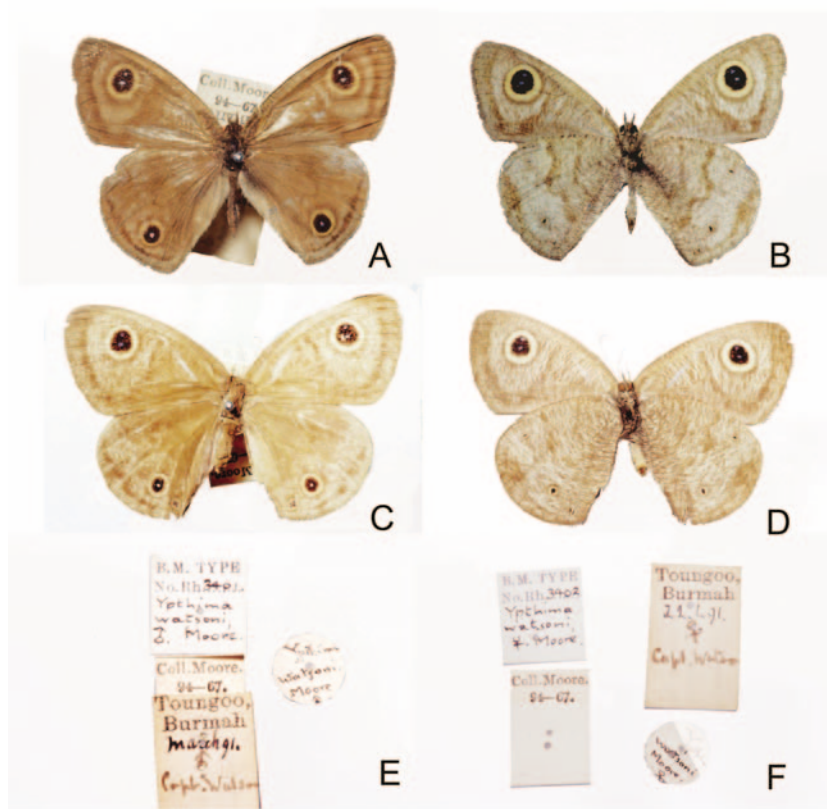


Figure 7. Syntype male (A, B) and female (C, D) of *Y. watsoni* Moore and labels. A & C, upperside; B & D, underside.

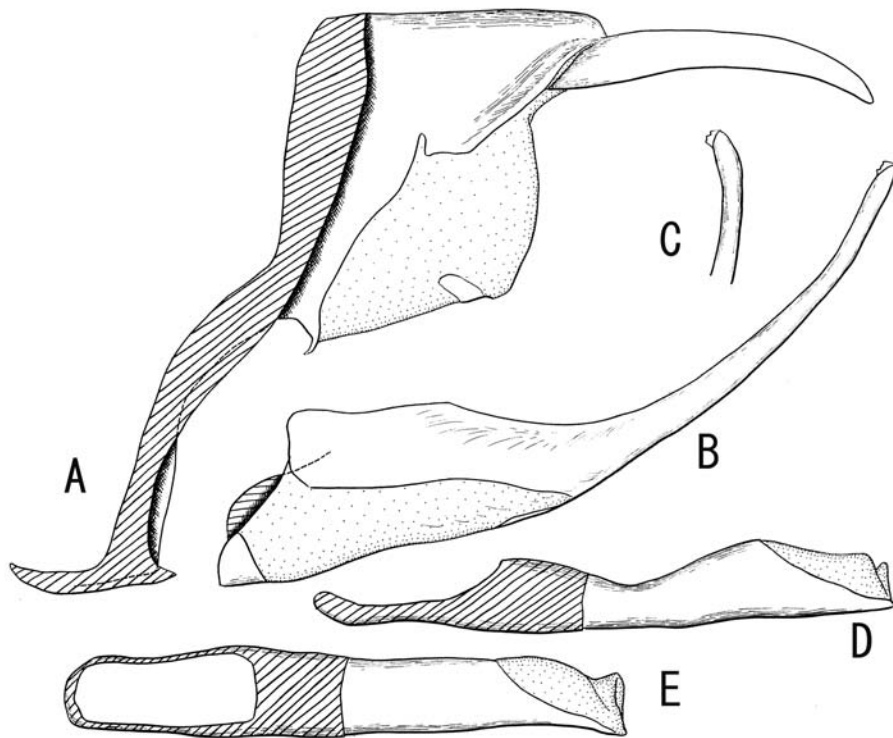


Figure 8. Male genitalia of *Y. watsoni*. A, ring in lateral view; B, inside of right valva; C, apex of valva; D, aedeagus in lateral view; E, same in dorsal view.