

Taxonomic studies on Oriental Hesperiidæ, 3*. - A key to the continental species of *Parnara* MOORE, 1881, based on the ♀ genitalia

(Lepidoptera, Hesperiidæ)

by

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Summary: A genitalia-based key to the ♀♀ of 5 continental Oriental species of the genus *Parnara* MOORE, 1881 is presented. The main diagnostic characters are the relative length and structure of the ductus bursae and the shape of the postvaginal plate.

The identification of certain species in the genus *Parnara* MOORE, 1881 has always posed some problem for those dealing with the taxonomy and faunistics of the Asiatic Hesperiidæ. The first up-to-date key to all Oriental taxa known at that time was that of EVANS (1949) but it was based only on the ♂♂ and predominantly on the external features, especially as far as the taxa treated under *P. guttata* (BREMER & GREY, 1853) were concerned. In a very brief revision of the genus, CHIBA & ELIOT (1991), giving a key to the species and also dealing only with the external features and ♂ genitalia, raised the rank of *P. guttata apostata* (SNELLEN, 1886) to species and described a new species *P. kawazoei* CHIBA & ELIOT, 1991, but reduced the status of *P. guttatus batta* EVANS, 1949 to a junior synonym of the nominate subspecies. The last taxon, however, was later raised to species by FUKIOKA & al. (1997) on the base of its sympatry with *P. guttata* (BREMER & GREY) in China and then found to be the most distinct from other sympatric species in view of the ♂ genitalia (DEVYATKIN & MONASTYRSKII, 2002).

Such a taxonomic instability in the genus *Parnara* is associated as with a great similarity of the external features [only the typical specimens of *P. guttata* (BREMER & GREY) are quite separable, by their large size and two cell spots], as with a similarity of the ♂ genitalia in different species. The ♀ genitalia have not been studied at all.

The size and spotting pattern are highly variable in the *Parnara* ♀♀, this making some of the species almost indistinguishable by the external features. The latter may be helpful in most cases for separating *P. guttata* (BREMER & GREY) (see above); however, the ♀♀ of this species sometimes lack the cell spots which normally distinguish them from other species, and small ♀ specimens may not be easily identified.

After examination of numerous specimens, mostly from different localities of Vietnam, I found that the ♀ genitalia, although variable, bear rather constant diagnostic characters, the most important being the structure and proportions of the sclerotized ductus bursae and the distal shape of the postvaginal plate (fig. 1), which in most cases make identification of doubtful specimens possible, irrespective of their external condition. Other parts of the genitalia (papillae anales, antevaginal plate etc.) are rather similar in all *Parnara* species studied.

* (2) see Atalanta 35 (1/2): 67-71.

Therefore, in this paper I am deliberately leaving aside the external features, giving only the genitalia characters.

The most complicated case is the identification of the ♀ of *P. batta* EVANS, 1949.

First of all, it is necessary to define some important external characters of this species, based on the ♂♂ and obviously underestimated by the previous researchers. The 3 small subapical forewing spots in *P. batta* EVANS are arranged in a straight line and directed at right angles to costa; in case a specimen has only 2 spots (3 of the 6 Vietnamese specimens), this direction is conserved. This character is sometimes found in other continental species of the genus, but usually one of the spots is more or less shifted out of the straight line (this being almost a rule in case of 3 spots). Secondly, the underside is clearly yellowish, and the hindwing spots, arranged almost in a straight line, are narrowly shaded with dark colour [similarly to some specimens of *P. guttata* (BREMER & GREY)].

According to the above definitions, a single ♀ from Central Vietnam (Lam Dong Province, Bi Doup - Nui Ba Nature Reserve) fitting the characters of the ♂♂ and having the genitalia most different from other species was taken as a true ♀ of *P. batta* EVANS and used in the key. The only ♀ specimen examined from Evans' series of *P. batta* EVANS (Fukien, S.E. China) in the Natural History Museum, London (BMNH), proved to belong to *P. ganga* EVANS (never recorded from this area before); the ♀ listed as *P. batta* EVANS from North Vietnam earlier (DEVYATKIN & MONASTYRSKII, 2002) was found to represent *P. bada* EVANS. These misidentifications point to the necessity of gaining more material on *P. batta* EVANS and defining the characters of the ♀ more precisely.

Only the continental, mostly widely distributed, species are included into the key, since the status of the island forms requires a special study which may reveal new taxa, as it was the case with *P. kawazoei* CHIBA & ELIOT, 1991, from Sulawesi and the Philippines.

Abbreviations: DB - ductus bursae; PPL - postvaginal plate.

Key to the species

- 1 (4) DB relatively long, more than 2 times (usually 2.5-3 times) longer than wide; its distal part with a few distinct diagonal wrinkles.
- 2 (3) DB usually slightly extended in the distal part, its lateral sides gently concave; proximal end almost straight. Distal side of PPL shallowly but not widely excavate (fig. 2, A)
*P. apostata* (SNELLEN, 1886)
- 3 (2) DB slightly and evenly tapered to the distal end or almost parallel-sided; its lateral sides straight; proximal end somewhat produced in the middle. Distal side of PPL shallowly and widely excavate or concave (fig. 2, B)*P. ganga* EVANS, 1937
- 4 (1) DB relatively short, not more (usually less) than 2 times longer than wide; its distal part with longitudinal or diagonal wrinkles.
- 5 (6) DB about 2 times longer than wide, with diagonal wrinkles in the distal part; its lateral sides parallel. Distal side of PPL widely concave (fig. 2, C) *P. guttata* (BREMER & GREY, 1853)
- 6 (5) DB about 1.5 times longer than wide, with some longitudinal wrinkles in the distal part.
- 7 (8) DB small, parallel-sided; its proximal end slightly convex. PPL rounded, its distal side with a small excavation (fig. 2, D)*P. bada bada* (MOORE, 1878)
- 8 (7) DB robust, conspicuously tapered distally; its proximal end uneven. Distal side of PPL widely and shallowly excavate (fig. 2, E) *P. batta* EVANS, 1949

Apart from the shape and proportions, quite distinctive is the absolute size of the ductus bursae (although there is, of course, some variation): thus, the rather small *P. apostata* (SNELLEN) possesses the longest ductus, while the ductus of the equally sized *P. bada* (MOORE) is almost two times shorter, and its length is intermediate in the largest species, *P. guttata* (BREMER & GREY). Although useful, quantitative data are not included into the key, since in practice there is not always a possibility to make measurements while identifying the material.

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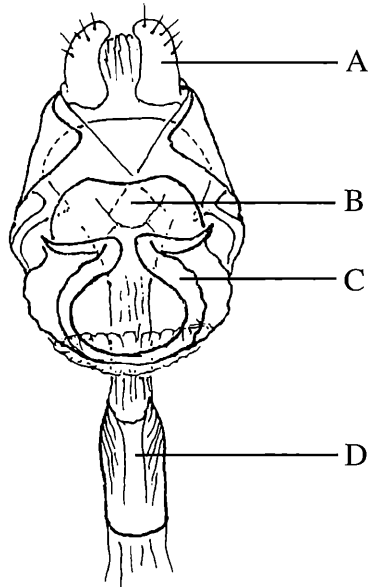


Fig. 1. ♀ genitalia of *Parnara* MOORE (without bursa copulatrix). A: papillae anales; B: postvaginal plate; C: antevaginal plate; D: ductus bursae.

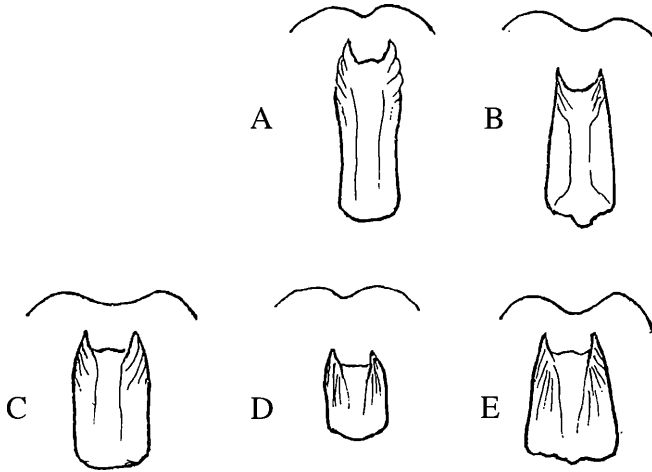


Fig. 2. Postvaginal plate (distal part) and ductus bursae of *Parnara* MOORE. A: *P. apostata* (SNELLEN, 1886); B: *P. ganga* EVANS, 1937; C: *P. guttata* (BREMER & GREY, 1853); D: *P. bada bada* (MOORE, 1878); E: *P. batta* EVANS, 1949