### Revisional notes on the Aemona amathusia (HEWITSON, 1868) complex of taxa

(Lepidoptera, Amathusiidae) by Alexey L. Devyatkin & Alexander L. Monastyrskii received 1.VIII.2008

Summary: New taxonomic data on certain taxa of the genus *Aemona* are presented from a detailed examination of their genitalia. The species status of *A. amathusia* (HEWITSON, 1868) is confirmed; *A. amathusia tonkinensis* ROTHSCHILD, 1916 is raised to species level, and a new subspecies, *A. tonkinensis infuscata* subspec. nov., is described from Central Vietnam; another separate species from Assam is believed to represent *A. pealii* HEWITSON, 1880. The taxon *A. herdyevi* DEVYATKIN, 2007 is confirmed not to be a subspecies of *A. oberthueri* STICHEL, 1906 but is a distinct species. A synopsis of taxa of the *A. amathusia*-group of species is also given.

The last review of the genus *Aemona* was that by NISHIMURA (1999), where he recognized only two species composing the genus, viz. *A. amathusia* (HEWITSON, 1868) and *A. lena* ATKINSON, 1871. However, although the author studied a considerable amount of material, including the types held in the Natural History Museum (London), he did not pay attention to rather small but constant differences in the genitalia of different taxa within *A. amathusia* (HEW.) from different localities.

After the description of five new species and raising *A. a. oberthueri* STICHEL, 1906 to species rank (MONASTYRSKII & DEVYATKIN, 2003; DEVYATKIN & MONASTYRSKII, 2004; DEVYATKIN, 2007) it has become clear that in the case of *A. amathusia* (Hew.) we are dealing with a complex of species related to each other to different degrees.

We strongly suspect that such a case may also be with *A. lena* ATKINSON,, which displays a number of externally different subspecies and forms. A revision of this complex of taxa will be forthcoming. Some revisional and new taxonomic data on the *A. amathusia*-complex are presented below.

*A. amathusia* (HEWITSON, 1868) and *A. tonkinensis* ROTHSCHILD, 1916 stat. nov. (col. pl. 18: 1-4) *A. amathusia* (HEW.) was described and has been known for a long time from a single 9 from Sikkim (Darjeeling). While describing three new species from Vietnam (MONASTYRSKII & DEVYATKIN, 2003), we had to accept the point of view of NISHIMURA (1999) on the conspecificity of *A. amathusia* (HEW.) and *A. tonkinensis* ROTHS., comparing the new taxa with the latter. Now we found them in the collections of the Natural History Museum (London) and had the opportunity to examine two dot specimens, one from Darjeeling (topotype) and the other from Bhutan, the closest and most similar locality to Sikkim. The genitalia of both specimens proved to be virtually identical and sharply different from *A. tonkinensis* ROTHS. Thus we can firmly raise *A. amathusia* (HEW.) to specific rank and establish *A. tonkinensis* ROTHSCHILD stat. nov. The differences distinguishing both species are as follows:

A. amathusia (HEW.) (fig. 1): Uncus rather short, most extended in the proximal part, its tip tapered but not acute in the dorsal view; distal part of the clasp rounded, its tip with rather

compactly arranged numerous spines, not covering the whole area of the tip; aedeagus without a defined sclerotized rib, with a very small number of spines. In general, the genital structures of *A amathusia* (HEW.) are more similar to those of *A*. *simulatrix* MONASTYRSKII & DEVYATKIN, 2003 and *A*. *kontumei* MONASTYRSKII & DEVYATKIN, 2003, from which it sharply differs externally.

*A. tonkinensis* ROTHS. (genitalia figured in MONASTYRSKII & DEVYATKIN, 2003): Uncus much longer, most extended in the median part, tapered and acutely pointed at the tip, in the dorsal view; distal part of the clasp more triangular, its tip with very numerous spines, densely packed in regular rows and forming a sharply outlined field over the whole area of the tip; aedeagus with numerous spines on a conspicuous long sclerotized rib. Examination of the types of *A. a. cochinensis* BROOKS, 1949 confirmed its synonymy with *A. tonkinensis* ROTHS. previously supposed by NISHIMURA (1999).

Since the diagnostic characters of the examined genitalia of *A. tonkinensis* ROTHS. remain remarkably constant within its extended distribution in North and Central Vietnam, and in South-East China, in spite of individual external variability, we finally decided to describe an extremely small and dark form (with typical genitalia) from Thua Thien Hue Province as a new subspecies.



Fig. 1. Aemona amathusia (HEWITSON, 1867) (Bhutan),  $\sigma$  genitalia. Fig. 2. Aemona pealii Wood-MASON, 1880, (Khasia Hills, Assam),  $\sigma$  genitalia.

A, B: Tegumen and uncus, lateral, dorsal; C: Aedeagus, lateral; D: left clasp, dorsal view; E: end of clasp (enlarged), ventral view.

#### 1. Aemona tonkinensis i n f u s c a t a subspec. nov. (colour plate 18: 5-6)

Holotye  $\sigma$ : Central Vietnam, Thua Thien Hue Province, A Luoi district, A Roang commune, 100-600m, 04.VI.2005, DO ANH TUAN leg.

Paratypes: 19, the same data as the holotype; 1 °, 1 9, the same locality, 600-700m, 3.VI. 2005, PHAM MINH HUNG leg.; 1 °, Thua Thien Hue Province, Nam Dong district, Huong Son commune, evergreen forest, 200-400 m, 26.V. 2005, PHAM MINH HUNG leg.; 1 9, the same locality, evergreen forest, 200-500 m, 28.V. 2005, Do ANH TUAN leg.

Two paratypes (& and ?) will be deposited in the Natural History Museum (London), the holotype and other paratypes being kept in coll. Department of Entomology, Moscow State University.

 $\sigma$  (colour plate 18: 5): Upperside. Forewing yellowish ochreous, slightly darker towards the base; termen straight or slightly convex, narrowly brownish; postdiscal line unbroken and almost straight. Hindwing darker than the forewing, brownish ochreous, with rather faint submarginal lunules. Underside fulvous, with contrasting postdiscal and well-defined fine submarginal lines, with wellmarked white-pupilled ocelli in spaces 1b and 2 (the latter much larger) both on the forewing and hindwing, other ocelli being faint and finely brown-ringed. Length of forewing 33 - 34 mm.

Q (colour plate 18: 6): Upperside. Forewing brown, with a slightly darker apex and termen; subcostal and subterminal areas much paler, being yellowish ochreous. Hindwing rather uniform brown, with faint traces of the postdiscal line and submarginal lunules. Length of forewing 38.5 - 39 mm.

In general, the new subspecies differs from *A. tonkinensis tonkinensis* ROTHS. in its smaller size (in the latter the forewing is 40-43 mm in the  $\infty$  and 42-49 mm in the  $\infty$ ) and dark colouration of the hindwing. Although specimens of *A. tonkinensis* ROTHS. from other localities of Central Vietnam are a little smaller than those from the north, they otherwise keep the external characters of the nominotypical subspecies.

#### 2. Aemona pealii WOOD-MASON, 1880 bona spec.? (colour plate 19: 7-8)

This taxon was described as a separate species on the basis of two && from Sibsagar (north-eastern Assam, close to the north of Burma) (WOOD-MASON, 1880). This status was cited for *A. pealii* WOOD-MASON in a number of subsequent works, up to STICHEL (1906). FRUHSTORFER (1910) considered it to be a local (Upper Assam) geographical race of *A. amathusia* (HEW.), which he stated as flying in other parts of Assam (Khasia-, Garo- and Naga Hills). Later, the populations from Assam were treated as the nominate subspecies of *A. amathusia* (HEW.) (D' ABRERA, 1985; NISHIMURA, 1999).

We had an opportunity to examine several specimens from different localities of Assam (Manipur, Khasia Hills, Garo Hills) and northern Burma (Sadon) and found that all of them had almost identical genitalia, different both from *A. amathusia* (Hew.) and *A. tonkinensis* ROTHS., and especially from the first species.

In general, the genitalia of this taxon are similar to those of *A. tonkinensis* ROTHS., but are much smaller (even in butterflies of a larger size); the extended part of the uncus is shorter and much less pointed from the dorsal view; the tip of the clasp has far fewer spines, the latter not being arranged in a clearly outlined field and covering only about a half of the tip area; the tip is blunt or even slightly concave in a lateral view (this being expanded and rounded in *A. tonkinensis* ROTHS.); the spines on the sclerotized rib of the aedeagus are even more robust (fig. 2).

The clasp is also somewhat similar to that of *A. amathusia* (Hew.), including the arrangement of spines on the tip, but the uncus and aedeagus are entirely different.

The  $\Im$  genitalia are also similar to those of *A. tonkinensis* ROTHS., but smaller, and the postvaginal plate is more rounded.

Thus, although all three taxa are externally similar, it is clear that we are dealing with a separate species, presumably *A. pealii* WOOD-MASON, 1880, the more so that WOOD-MASON (1880) himself compared his two type specimens with a single  $\sigma$  (first described by him) of *A. anathusia* (HEWITSON) from another more northern part of Assam (Naga Hills). Another question is if this single  $\sigma$  from Naga Hills really belongs to *A. amathusia* (HEW.) (all the specimens mentioned by WOOD-MASON should be studied, which are likely to have been kept in India and at present may be inaccessible or even lost).

Anyway, on the base of our studies we have come to the firm conclusion that the populations from Sikkim [the type area of *A. amathusia* (Hew.)] and Assam [the type area of *A. pealii* W<sub>OOD</sub>-MASON</sub>] are different at the species level and that *A. pealii* WOOD-MASON most probably deserves full species rank. It also cannot be excluded that both species may fly together in the northernmost parts of Assam.

#### Aemona oberthueri STICHEL, 1906 and A. berdyevi DEVYATKIN, 2007 (col. pl. 19: 9 - 10)

The species rank of *A. oberthueri* STICH. was erected by the authors on the basis of sharp differences from all other *Aemona* species in the  $\sigma$  genitalia (DEVYATKIN & MONASTYRSKII, 2004). *A. berdyevi* DEVYATKIN, 2007, described from North Vietnam (Lao Cai Province), clearly belongs to the same species group, having very similar genitalia. However, while describing this new species, we still had some doubt that this could be a Vietnamese subspecies of the Chinese species *A. oberthueri* STICH., although it differs considerably externally. Having examined a number of specimens of *A. oberthueri* STICH. from different localities of China (Sichuan, Zhejiang, Guangdong, Guanxi), we found that their genitalia were constant and demonstrated certain differences from those of *A. berdyevi* DEVYATKIN. These are as follows: in *A. berdyevi* DEVYATKIN the uncus is relatively longer and is very robust and evenly curved in the lateral view (slender and angled in oberthueri); the tip of the uncus is conspicuously extended from the dorsal view (just blunt or inconspicuously extended in *oberthueri* STICH.); and the distal half of the aedeagus is curved from the dorsal view (almost straight in *oberthueri* STICH.). The clasp is very similar, but also has some minor differences. All these features confirm the species rank of *A. berdyevi* DEVYATKIN, although the two species seem to be closely related.

The present knowledge on *A. amathusia* (Hew.) and its allies allows us to tentatively state the following taxonomic composition of this group:

- 1. A. amathusia (HEWITSON, 1867): Sikkim, Bhutan, N. Assam (?).
- 2. A. pealii WOOD-MASON, 1880: Assam.
- 3. A. tonkinensis tonkinensis ROTHSCHILD, 1916: North and Central Vietnam; South East China (Guangdong).
- 3a. A. tonkinensis infuscata subspec. nov.: Central Vietnam (Thua Thien Hue).
- 4. *A. implicata* MONASTYRSKII & DEVYATKIN, 2003: North and Central Vietnam (Lao Cai, Bac Can, Ha Tinh).
- 5. A. simulatrix MONASTYRSKII & DEVYATKIN, 2003: Central Vietnam (Kon Tum, Gia Lai).
- 6. A. kontumei MONASTYRSKII & DEVYATKIN, 2003 Central Vietnam (Kon Tum, Gia Lai).
- 7. A. falcata MONASTYRSKII & DEVYATKIN, 2004: southern Central Vietnam (Khanh Hoa, Lam Dong).

S. A. berdyevi DEVYATKIN, 2007: North Vietnam (Lao Cai).

9. A. oberthueri STICHEL, 1906: southern China (Sichuan to Fujian and Guanxi).

Taxa with an unclear status (the types should be examined):

- A. amathusia pingpiensis LEE, 1962: South China (Yunnan).
- A. amathusia pacifica MELL, 1942: South-East China (Kuatun, Fukien).
- A. amathusia concolor MELL, 1942: South-East China (Nordfukien).

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# Colour plate 18/ Farbtafel 18



Fig. 1, 2: Aemona amathusia (HEWITSON, [1868]), & (Darjeeling), upperside/ underside. Fig. 3, 4: Aemona tonkinensis tonkinensis Rothschild, &, Central Vietnam, (Quang Binh Province), upperside/ underside.

Fig. 5: *Aemona tonkinensis infuscata* subspec. nov.,  $\sigma$  holotype, upperside. Fig. 6: *Aemona tonkinensis infuscata* subspec. nov.,  $\varphi$  paratype, upperside.

## Colour plate 19/ Farbtafel 19



Fig. 7, 8: *Aemona pealii* Wood-MASON, 1880, & (Manipur), upperside/ underside. Fig. 9. *Aemona oberthueri* STICHEL, 1906, & (Guanxi), upperside. Fig. 10. *Aemona berdyevi* DEVYATKIN, 2007, & holotype, upperside.



Abb. 11: Ochus subvittatus (Moore, 1878) auf einem Grashalm (14.05.08), Umg. Khiriwong.
Abb. 22: Ochus subvittatus (Moore, 1878); Man erkennt, daß die OS der Flügel fast zeichnungslos schwarz-braun ist

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