Two new dark colored species of the genus *Barsine* Walker, 1854 from China and Indochina (Lepidoptera, Erebidae, Arctiinae, Lithosiini)

ANTON V. VOLYNKIN1,2,4 and KAREL ČERNÝ3

1 Altai State University, South Siberian Botanical Garden, Lenina str. 61, RF-656049, Barnaul, Russia. E-mails: barsine@yahoo.com; volynkin_a@mail.ru

2 Tomsk State University, Institute of Biology, Ecology, Soil Science, Agriculture and Forestry, Lenina Avenue, 36, RF-634050, Tomsk, Russia

3 Tiergartenstrasse 27, A-6020 Innsbruck, Austria. E-mail: natura.cerny@aon.at

4 Corresponding author

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Abstract
In the present paper, two new species, *Barsine persephone* Volynkin & Černý, sp. nov. (N Thailand and N Vietnam), and *Barsine asotoida* Volynkin & Černý, sp. nov. (SW China and N Myanmar) are described. A new combination is established: *Barsine specialis* (Fang, 1991), comb. nov. Both new species belong to the *Barsine prominens* (Moore, 1878) species-group, and, as well as *B. specialis* have unusual for the genus dark brown forewing coloration. Adult, male and female genitalia are illustrated.

Key words: *Barsine*, Lithosiini, Asia, new species, new combination.

Introduction

*Barsine* Walker, 1854 is one of the most species-rich genera in the subtribe Nudariina (family Erebidae, subfamily Arctiinae, tribe Lithosiini) widely distributed in Oriental and Palaearctic Regions. The *B. prominens* species-group was recently established by Volynkin & Černý (2016) and includes medium-sized species with ground color of forewings from creamy white or pale yellow to bright yellow or orange, thin, dark pattern elements, and pale hindwings which sometimes have a pattern presented as a discal spot and one-two diffuse transverse lines. Only one described species, *B. specialis* known from SW China (Yunnan), has dark brown pattern filling most of the forewing surface and dark brown hindwings. During the examination of extensive Lithosiini materials deposited in the Museum Witt (Munich) and Natural History Museum (London) we found two more, yet undescribed species from Asia with similar dark forewing coloration. Both species are closest relatives of *B. specialis*, and described below.
Material and Methods

Abbreviations used: AFM = private collection of Alessandro Floriani (Milan, Italy); ASV = private collection of Aidas Saldaitis (Vilnius, Lithuania); NHMUK (formerly BMNH) = Natural History Museum (London, UK); MWM/ZSM = Museum Witt Munich / The Bavarian State Collection of Zoology (Museum Witt München / Zoologische Staatsammlung München, Munich, Germany).

The genitalia were dissected and mounted in Euparal on glass slides. Photos of imago were taken using a Nikon D3100/AF-S camera equipped with Nikkor, 18–55 mm lens. Genitalia images were taken by the same camera attached to a microscope with an LM-scope adapter.

Descriptions of the new species

**Barsine persephone** Volynkin & Černý, sp. nov. (Figs 1–3, 9, 10, 14)

**Type material.** **Holotype** (Figs 1, 9): male, Thailand, Changwat Chiang Mai, Mt. Doi Phahompok, 16 km NW of Fang, 2000 m, 27.III.1998, leg. Tibor Csővári & Pál Stéger, slide MWM 31379 Volynkin (Coll. MWM/ZSM).


**Diagnosis.** Forewing pattern of *B. persephone* (Figs 1–3) is more similar to that of *B. specialis* (Figs 7, 8), but can be easily distinguished by the shorter posterior brown subbasal dash, the much broader distal brown area connected with the discal spot in the cell and with the medial brown subbasal dash, presence of two creamy spots in the distal brown area opposite the cell corners, and creamy white terminal area, whereas in *B. specialis* the posterior brown subbasal dash is long, the discal spot is separated in the medial creamy white area, the distal brown area is narrower, connected with the posterior brown subbasal dash, light spots in the distal brown area are absent, and the terminal area is brown; hindwing of *B. persephone* differs clearly from that of *B. specialis* by the creamy white ground color and the pattern consisting of a brown wavy medial transverse line and an intense brown suffusion on veins in the marginal area, whereas in *B. specialis* hindwing is monotonous dark brown. The male genitalia of *B. persephone* (Figs 9, 10) differ from those of both *B. specialis* (Fig. 13) and *B. asotoida* (Figs 11, 12) by the broader and apically tapered medial costal process, the much longer and curved distal costal process, the almost straight distal sacculus process, and the subbasal diverticula covered with numerous spinules (whereas in *B. specialis* and *B. asotoida* subbasal diverticula are granulated). The female genitalia of the new species (Fig. 14) differ from those of *B. asotoida* (Fig. 15) by the significantly longer antrum; from *B. specialis* (Fig. 16) differs by the significantly longer and weaker sclerotized antrum, and the smaller appendix bursae.

**Description. Adult** (Figs 1–3). Forewing length 13–14 mm in males (14 mm in HT) and 13–15 mm in females. Male antennae ciliate, female antennae filiform. Head yellow; thorax yellow, with two black dots on patagia, and four black dots dorsally; abdomen yellow. Forewing base bright yellow, with three black dots; forewing ground color creamy white, pattern dark brown, consists of three broad subbasal longitudinal dashes of different length, discal spot, and very broad distant dark area connecting medially with discal spot and medial longitudinal subbasal dash; terminal area thin, creamy white; cilia dark brown. Hindwing creamy white, pattern diffuse, dark brown, consists of wavy medial transverse line, and broad dark suffusion on veins in terminal area often merging into diffuse broad terminal line; cilia creamy whitish with slight brown
Figures 1–8. Barsine spp.: adults. 1, B. persephone, holotype male, N Thailand, Chiang Mai prov. (MWM/ZSM); 2, B. persephone, paratype male, N Vietnam, Fan-si-pan Mts. (MWM/ZSM); 3, B. persephone, paratype female, N Vietnam, Fan-si-pan Mts. (MWM/ZSM); 4, B. asotoida, holotype male, SW China, Yunnan prov. (MWM/ZSM); 5, B. asotoida, paratype male, N Myanmar, Kachin State (©NMHUK); 6, B. asotoida, paratype female, SW China, Yunnan prov. (MWM/ZSM); 7, B. specialis, male, China, Yunnan (MWM/ZSM); 8, B. specialis, female, China, Yunnan (MWM/ZSM).
suffusion. **Male genitalia** (Figs 9, 10). Uncus long, narrow, laterally flattened, mediadly curved, apically pointed; tuba analis medium-broad, scaphium very thin and weakly sclerotized; subscaphium presented as setose field; tegumen medium short and broad; manica with two sclerotized bands; juxta broad, shield-like; vinculum large, U-like. Valve narrow, distally broadened; costa moderately sclerotized, with large, narrowly trigonal medial process tapered apically, and long, narrow, claw-like curved, thin distal process directed dorsally; medial membranous lobe of valve short and broad; sacculus narrow, setose; distal saccular process short, narrow, apically pointed, directed distally. Aedeagus long, narrow, straight; vesica broad, more or less globular, with two large dorsal subbasal diverticula covered with numerous short but robust spines, one broad ventral subbasal granulated diverticulum, and broad, sack-like medial diverticulum covered with very short, but robust trigonal cornuti of different size. **Female genitalia** (Fig. 14). Ovipositor narrow, conical; papillae anales large, elongated, apically rounded; apophyses anteriores and posteriores moderately long, thin, equal in length. Ostium bursae broad; antrum long, broadly funnel-shaped, moderately sclerotized; ductus bursae short, narrow, membranous; corpus bursae large, sack-like, its posterior section sclerotized posteriorly at connection with ductus bursae and densely covered with spinules at connection with appendix bursae; medial section of corpus bursae densely covered with numerous short and thin spinules, anterior section membranous, with round, weakly dentate signum; appendix bursae originates latero-posteriorly, long, C-like curved, densely covered with numerous short and thin spinules.

**Distribution.** North Thailand (Chiang Mai province) and North Vietnam (Fan-si-pan Mts.).

**Etymology.** In Greek mythology, Persephone is a goddess, Hades’ wife and the queen of the underworld. The species’ name refers to its dark forewing coloration.

**Barsine asotoida** Volynkin & Černý, sp. nov. (Figs 4–6, 11, 12, 15)

**Type material.** **Holotype** (Figs 4, 11): male, SW China, Yunnan, Yunfe Shan [Yunfeng Mts.], W Gudong, Techong env., 25°22.623´N, 98°24.351´E, 2400 m, 1–2.VI.2013, leg. Petr Viktora, slide MWM 31422 Volynkin (Coll. MWM/ZSM).

26 paratypes: **CHINA**: 10 males, 3 females, same data as in the holotype, slide MWM 31423 Volynkin (f) (Coll. MWM/ZSM); 1 male, 1 female, NW Yunnan, Nu Jiang valley, road Lushui/Gulang, H-2000 m., N 25°58.15”, E 98°47.40”, 19.V.2018., Butvila & Saldaitis leg. (Colls AFM & ASV); **MYANMAR**: 2 males, NE Burma, Kambaiti, 7000 ft., 13.V.1934, R. Malaise [leg.], slide NHMUK010313540 Volynkin (Coll. NHMUK); 3 males, same locality and collector, but 14.V.1934 (Coll. NHMUK); 2 females, same locality and collector, but 15.V.1934, slide NHMUK010313541 Volynkin (Coll. NHMUK); 1 males, 3 females, same locality and collector, but 17.V.1934 (Coll. NHMUK).

**Diagnosis.** Externally, *B. asotoida* (Figs 4–6) is similar to *B. persephone* (Figs 1–3) by its light hindwings coloration, but differs by presence of medial transverse line of forewing consisting of three large brown spots, the much narrower distal brown area presented as a postmedial line, presence of a broad creamy white subterminal area with broad but weak greyish longitudinal suffusion on veins, presence of a diffuse subbasal transverse line on hindwing, the medial transverse line of hindwing situated more distally, and absence of dark suffusion on veins in the subterminal area of hindwing. The male genitalia of *B. asotoida* (Figs 11, 12) are surprisingly much more similar to those of *B. specialis* (Fig. 13) than *B. persephone* (Figs 9, 10), but differ by the longer medial costal process, the weaker distal saccular process directed dorsally, and the larger subbasal diverticula, whereas in *B. specialis* the medial costal process is significantly shorter, the distal saccular process is robust, and only its tip is slightly curved dorsally, and the subbasal diverticula of vesica are significantly smaller. The female genitalia of *B. asotoida* (Fig. 15) differ from those of *B. specialis* (Fig. 16) by the much narrower and shorter antrum, and narrower and slightly shorter appendix bursae.

**Description.** Adult (Figs 4–6). Forewing length 13–14 mm in males (13 mm in HT) and 14–15.5 mm in females. Male antennae ciliate, female antennae filiform. Head yellow; thorax yellow, with two black dots on patagia, and four black dots dorsally; abdomen yellow. Forewing base bright yellow, with three black dots;
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Figures 12–13. Barsine spp.: male genitalia. 12, B. asotoida, paratype, N Myanmar, Kachin State, slide NHMUK010313540 Volynkin (©NMHUK); 13, B. specialis, China, NE Yunnan, slide MWM 31378 Volynkin.

B. asotoida, PT
NE Myanmar, Kambaiti Pass, slide NHMUK010313540

B. specialis
China, NE Yunnan, Wumeng Shan Mts., slide MWM 31378 Volynkin

forewing ground color creamy white, pattern dark brown, consists of antemedial line interrupted into three long transverse dashes, medial line interrupted into three large spots, broad and wavy postmedial line sometimes presented as a broad shadow, and diffuse discal spot connected with postmedial line; subterminal area with slight, diffuse, grayish longitudinal suffusion on veins; terminal area creamy whitish; cilia pale grayish. Hindwing creamy white, with grayish diffuse subbasal transverse line often presented as slight suffusion, and diffuse, grayish, wavy medial transverse line; cilia white. Male genitalia (Figs 11, 12). Uncus long, narrow, laterally flattened, medially curved, apically pointed; tuba analis medium-broad, scaphium very thin and weakly sclerotized; subscaphium presented as setose field; tegumen medium short and broad; manica with two sclerotized bands; juxta broad, shield-like; vinculum large, U-like. Valve narrow, distally broadened; costa moderately sclerotized, with medium-long, narrowly trigonal medial process pointed apically, and short, thin, apically pointed distal process directed dorsally; medial membranous lobe of valve short and broad; sacculus narrow, setose; distal saccular process short, trigonal, apically pointed, directed dorsally. Aedeagus long, narrow, straight; vesica broad, more or less globular, with two large, granulated dorsal subbasal diverticula, one broad ventral subbasal granulated diverticulum, and broad, sack-like medial
diverticulum having long and broad cluster of very short, but robust trigonal cornuti of different size. **Female genitalia** (Fig. 15). Ovipositor narrow, conical; papillae anales large, elongated, apically rounded; apophyses anteriores and posteriores moderately long, thin, equal in length. Ostium bursae broad; antrum medium-long, broadly caliciform, with heavily sclerotized margins; ductus bursae short, narrow, membranous; corpus bursae large, sack-like, its posterior section sclerotized posteriorly at connection with ductus bursae and densely covered with spinules at connection with appendix bursae; medial section of corpus bursae densely covered with numerous short and thin spinules, anterior section membranous, with round, weakly dentate signum; appendix bursae originates latero-posteriorly, long, C-like curved, densely covered with numerous short and thin spinules.


**Distribution.** China (western Yunnan province) and northern Myanmar (Kachin State).

**Etymology.** The specific epithet refers to its external resemblance to the species of the genus *Asota* Leach, *Asota tortuosa* (Moore) (Erebidae, Aganainae).

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References


