

Bembecia hissorensis, a new species of Clearwing moths from Tajikistan, Central Asia (Lepidoptera: Sesiidae)

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Abstract. A new species of *Bembecia* HÜBNER, [1819] is described from Tajikistan. *Bembecia hissorensis* sp. nov. was collected in grassland and open juniper forest in the Hissor Mountains west and north of Dushanbe. The adult male and its genitalia are illustrated and compared with the closely related *Bembecia tshatkalensis* ŠPATENKA & KALLIES, 2006.

Zusammenfassung. Eine neue Art der Gattung *Bembecia* HÜBNER, [1819] wird aus Tadschikistan beschrieben. *Bembecia hissorensis* sp. nov. wurde im Grasland und lichten Wacholderwäldern des Hissor-Gebirges westlich und nördlich Dushanbe gefunden. Das adulte Männchen und seine Genitalien werden abgebildet und mit der nahe verwandten *Bembecia tshatkalensis* ŠPATENKA & KALLIES, 2006 verglichen.

Key words. Lepidoptera, Sesiidae, *Bembecia*, new species, taxonomy, Central Asia, Tajikistan, Palaearctic Region, Hissor mountains.

Introduction

The knowledge of the Clearwing moth has recently increased due to the use of synthetic pheromones. As a result, the Western Palaearctic fauna is well explored and important monographs of this Lepidoptera family were written over the last 20 years (e. g. FREINA 1997; ŠPATENKA et al. 1999). Knowledge on the Clearwing moth fauna of Central Asia, however, is rather incomplete. As a result of numerous expeditions to this region, several new species were discovered and could be described within the last decades (ŠPATENKA 1987, ŠPATENKA 1997, GORBUNOV 2001, ŠPATENKA & KALLIES 2006, BARTSCH & ŠPATENKA 2010, ŠPATENKA & BARTSCH 2010, STALLING et al. 2010). During two journeys to Tajikistan in 2007 and 2010, a series of males was collected, representing a further unknown species of *Bembecia* HÜBNER, [1819], which is described below.

Materials and Methods

All specimens were attracted to synthetic pheromone baits (original *apiformis*-pheromone from the Plant Research International, Wageningen, The Netherlands which contains (Z,Z)-3,13-octadecadien-1-ol (PÜHRINGER & RYRHOLM 2000). The baits were deployed at differ-

ent times of the day over different time periods. All specimens were attracted before noon. The attracted individuals were caught either using hand nets or traps (Variotrap).

Abbreviations. SMNS – State Museum of Natural History, Stuttgart; CAL – collection of ARTHUR LINGENHÖLE, Biberach; CDB – collection of DANIEL BARTSCH, Stuttgart; CFA – collection of FLORIAN ALTERMATT, Pfäffikon ZH; CTG – collection of THEO GARREVOET, Antwerpen; CTS – collection of THOMAS STALLING, Inzlingen.

Bembecia hissorensis sp. nov.

Holotype. ♂, „Tadschikistan, Hissargebirge 1800 m 10 km N/W Hissor, N 38° 37'42", E 68°25'33", 13.VII.2010, leg. A. LINGENHÖLE“, CAL (SMNS).

Paratypes. 6♂, TJ, Uzun, NW Dushanbe, 1800 m, 3.VII.2007, N 38°37'56,0", E 68°25'09,6", 7:00–11:30 h, pheromone, leg. TH. STALLING & F. ALTERMATT (CTS); 3♂, TJ, Uzun, NW Dushanbe, 1800 m, 3.VII.2007, N 38°37'56,0", E 68°25'09,6", 7:00–11:30 h, pheromone, leg. T. STALLING & F. ALTERMATT (CFA); 6♂, TJ, Hissar mountains, 10 km N/W Hissor, 2040 m, 10.VII.2010, N 38°38'23", E 68°25'18", leg. A. LINGENHÖLE (CAL); 119♂, TJ, Hissar mountains, 10 km

N/W Hissor, 1800 m, 13.VII.2010, N 38°37'42", E 68°25'33", leg. A. LINGENHÖLE (CAL); 1♂, TJ, Hissar mountains, south of Anzob pass, 2450 m, 21.VII.2010, N 39°03'47", E 68°51'18", leg. A. LINGENHÖLE (CAL); 1♂, TJ, Hissar mountains, north of Anzob pass, 2150 m, 23.VII.2010, N 39°09'05", E 68°50'50", leg. A. LINGENHÖLE (CAL); 3♂, 17 km NW Hissor, vic. Chusi, 1800–2000 m, 11.VII.2010, N 38°38'23", E 68°25'18", pheromone, leg. D. BARTSCH (CDB); 12♂, 15 km NW Hissor, vic. Chusi, 1600–1900 m, 13.VII.2010, N 38°37'42", E 68°25'28", leg. D. BARTSCH (CDB); 23♂, 15 km NW Hissor, vic. Chusi, 1600–1900 m, 14.VII.2010, N 38°37'42", E 68°25'18", leg. D. BARTSCH (CDB); 1♂, 23.VII.2010, Distr. Dushanbe, Hissar mountain range, northern ascent to Anzob Pass, 2150 m, pheromone, N 39°09'05", E 68°55'50", leg. D. BARTSCH (CDB); 1♂, 24.VII.2010, Distr. Dushanbe, Hissar mountain range, northern ascent to Anzob Pass, 2150 m, pheromone, N 39°09'05", E 68°55'50", leg. D. BARTSCH (CDB). 11♂, 17.VII.2010, Distr. Dushanbe, Hissar mountain range, northern ascent to Anzob Pass, 2200 m, pheromone, N 39°09'06,6", E 68°50'46,5", leg. T. GARREVOET (CTG). 14♂, 7.VIII.2010, Distr. Dushanbe, Hissar mountain range, northern ascent to Anzob Pass, 2200 m, pheromone, N 39°09'05,7", E 68°50'46,8", leg. TH. GARREVOET (CTG).

Etymology. The name is derived from the type locality, the Hissor mountains in Tajikistan.

Description. Holotype, ♂ (Figs 1, 3, 5). Alar expanse 22 mm, antenna 7 mm, forewing length 10 mm, body length 14 mm.

Head. Antenna dark brown, medio-dorsally pale ochreous; labial palp with first and second palpalomere (or joint) ventrally tufted with long hair-like scales, yellowish-white, laterally black; third palpalomere covered with short scales, yellowish-white intermixed with some black; frons yellowish-white; vertex black with some yellow; pericephalic scales yellow, laterally whitish.

Thorax. Blackish-brown with some interspersed yellowish-white scales; patagia black, laterally yellow; tegula black with interspersed pale yellow scales, caudally yellow; metathorax dorsally yellow, dorso-lateral scale tufts pale grey; scapular spot pale yellow.

Forewing. Basally black; costal area and costal margin brown with interspersed pale yellow scales; distal margin and fringes brown; anal area pale yellow, widened proximally; proximal part of anal area mottled with dark black scales; cubital vein brown, proximal end pale yellow; discal spot yellow, proximal third brownish-black; posterior transparent area large, nearly as long as anterior transparent area, almost reaches distal end of discal spot; width of anterior transparent area two third of external transparent area; the latter divided in five cells, much broader than high; apical area narrow, as wide as outer margin, pale yellow; veins M₁ and M₂ yellow with brown scales distally; R₄, R₅, M₃, CuA₁ and CuA₂ brown, scattered with single yellow scales. Wing underside pale yellow, except for dark brownish veins of distal half, fringes, distal part of discal spot and outer margin of forewing.

Hindwing. Hyaline with narrow, brownish-black margins and veins; discal spot narrow, brown, ends at M₂.

Abdomen. First tergite black; second tergite black, pale yellow at posterior half; tergites three and five black with interspersed pale-yellow scales; tergites four and seven pale yellow; sixth tergite black, posterior two-thirds pale yellow; first sternite black; sternites two and four pale yellow with interspersed black scales; third sternite black with some interspersed pale-yellow scales; sternites 5, 6 and 7 black with narrow pale yellow posterior border; anal tuft yellow, laterally black.

Legs. Foreleg: coxa laterally pale yellow, mesally blackish-brown; femur black, dorsally mixed with pale yellow; tibia yellow with some interspersed black scales; tarsi yellow with small black spines. Hindleg: femur black with long, whitish hair-like scales; tibia pale yellow, proximally and distally black; tarsi yellow with black spines; spurs pale yellow.

Male genitalia (Fig. 5). Tegumen-uncus complex rather narrow; gnathos with

long and slender cristae lateralis and well developed, triangular crista medialis; valvae elongate, apically rounded or obtuse angled; cristae sacculi at proximal half doubled into a simple, naked ventral part and a typical dorsal part with a fine line of setae; setae distally indistinctly interrupted, separate group of setae, sharply angled towards ventral margin, at dorsal part; phallus rather short and strong, with dark sclerotized ring at proximal one third.

Female. Unknown.

Variability. The wingspans of the type series vary between 15–25 mm. There is also some variability in the extent of the yellow colour of the abdomen. Specimens from the more humid habitats of the northern slopes of the Anzob pass are distinctly larger.

Diagnosis. The simply formed gnathos, its well developed crista medialis and the almost straight crista sacculi of the valva in the male genitalia of *Bembecia hissorensis* sp. nov. suggest a relationship to the *Bembecia ichneumoniformis* ([DENIS & SCHIFFERMÜLLER], 1775) species group (sensu ŠPATENKA et al. 1999). *Bembecia hissorensis* is very similar and probably closely related to *Bembecia tshatkalensis* ŠPATENKA & KALLIES, 2006 from Kirghizia, but differs by the following criteria (see also Figs 2, 4, 6): all yellow colored parts of *B. hissorensis* appear rather pale (intensive golden yellow in *B. tshatkalensis*); tergites three and five black, in particular dorso-medially with interspersed pale-yellow scales (completely black in *B. tshatkalensis*); second sternite pale yellow (black in *B. tshatkalensis*); sternites 5–7 black with narrow pale yellow posterior border (completely yellow in *B. tshatkalensis*); forecoxa laterally pale yellow (completely black in *B. tshatkalensis*); antenna mediadorsally pale ochreous (without ochreous scales in *B. tshatkalensis*). Male genitalia: apex of valva with indistinct apex (pointed in *B. tshatkalensis*); doubled part of crista sacculi much larger than in *B. tshatkalensis*; setae of crista sacculi with

distal gap (without or with distinctly smaller gap in *B. tshatkalensis*), separated group of setae less recurved than in *B. tshatkalensis*.

Further morphologically similar species from Central Asia are *Bembecia aghana* BARTSCH & ŠPATENKA, 2010; *B. buxea* GORBUNOV, 1989; *B. guesnoni* ŠPATENKA & TOŠEVSKI, 1993; *B. lamai* KALLIES, 1996; *B. karategina* ŠPATENKA, 1997; *B. kreuzbergi* ŠPATENKA & BARTSCH, 2010 and *B. zebo* ŠPATENKA & GORBUNOV, 1987. *Bembecia buxea* is well separated by its whitish colouration. *Bembecia aghana* and *B. lamai* lack a yellow posterior margin of the second abdominal segment, the latter has further a red (not yellow) marked forewing discal spot. *Bembecia guesnoni* has larger transparent areas and bright orange (not pale yellow) forewing markings. The remaining species differ merely by the colouration of the abdomen, in particular of the sternites. *Bembecia karategina* has sternites 1–3 black, 4–7 with broad, yellow caudal margin and the forewing discal spot very broad with fine yellow distal border. *Bembecia kreuzbergi* has the second and fourth sternites yellow, sixth and seventh sternites yellow mottled with black scales and second, fourth and fifth sternites black with some yellow scales. *Bembecia zebo* is distinctly larger, external transparent area rounded with hyaline part between R₃ and stalk of R₄/R₅ and has sternites 1, 3, 5, 6 black (first and third sternites almost black; second and fourth sternites yellow; sternites 5–7 black with yellow posterior border in *B. hissorensis*).

Bembecia hissorensis can further clearly be separated from *B. guesnoni* ŠPATENKA & TOŠEVSKI, 1994, *B. lasicera* (HAMPSON, 1906), *B. lamai* KALLIES 1996, *B. aloisi* ŠPATENKA, 1997 and *B. pogranzona* ŠPATENKA, PETERSEN & KALLIES, 1997 by the lack of a well developed crista medialis of the gnathos in all of these species.

Habitat. Males of *Bembecia hissorensis* were captured in dry grassland and open juniper-forest at 1500–2000 m in the lower Hissor mountain ridge and in hu-

Figs 1–8. Habitus, genitalia and habitats of *Bembecia* species (photos by D. BARTSCH). – 1, 3. *Bembecia hissorensis* sp. nov., holotype, male. 1. Dorsal view. 3. Ventral view. Scale bar 10 mm. – 2, 4. *Bembecia tshatkalensis* ŠPATENKA & KALLIES, 2006, paratype, male, Kyrgyzstan, Tschatkal valley, E Sandalash slopes, Itschke river, 7.–10.VII.2001, leg. K. ŠPATENKA. 2. Dorsal view. 4. Ventral view. Scale bar 10 mm. – 5. Male genitalia of *Bembecia hissorensis* sp. nov., paratype, TJ, Hissar mountains, 10 km NW Hissor, N 38°38'23", E 68°25'18", 2040 m, 10.VII.2010, leg. A. LINGENHÖLE, CAL, gen. prep. no. 256. Scale bar 1 mm. 6. Male genitalia of *Bembecia tshatkalensis*, paratype, Kyrgyzstan, Tschatkal valley, E Sandalash slopes, Itschke river, 7.–10.VII.2001, leg. K. ŠPATENKA. Scale bar 1 mm. – 7, 8. Habitat of *Bembecia hissorensis* sp. nov., TJ, Hissar mountains, Uzun, NW Dushanbe, 13.VII.2010.



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8

mid, alpine grassland vegetation up to 2500 m in the higher Hissor mountains. The lower area is semi-pristine with partially abandoned almond and apple orchards and is partially used for grazing by cattle and sheep. The higher area is alpine grassland vegetation. At both places the vegetation is rich in various Fabaceae (e. g., various species of *Astragalus* spp.).

Distribution. The species is known only from the Hissor mountain ridge (also known as Hissar mountain ridge) west and north of Dushanbe, Tajikistan.

Life history. Almost unknown. Adults were captured in July and beginning of August. The possible host plant is an indeterminate low growing and yellow flowering species of *Astragalus* (Fabaceae). Some specimens of this herb were found infested with Sesiidae larvae close to the finding localities of the males of *B. hissorensis*, but the larvae could not be reared successfully.

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