

Review of the genus *Dipchasphecia* CAPUŠE, 1973

(Lep., Sesiidae)

by

OLEG G. GORBUNOV

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Abstract: The species of the palaearctic genus *Dipchasphecia* CAPUŠE, 1973 are reviewed as based on the examination of the types. At the moment, 10 valid species are recognized. A key to the species, descriptions, diagnoses and other information are given for all the species concerned. Six new species are described: *D. ljustiae* spec. nov. and *D. nigra* spec. nov. from SW-Tadjikistan, *D. naumanni* spec. nov. from E-Afghanistan, *D. rhodocnemis* spec. nov. from SE-Siberia, *D. altaica* spec. nov. from the Altai Mts., and *D. krocha* spec. nov. from SE-Azerbaijan, Caucasus.

The genus *Dipchasphecia* was originally erected by CAPUŠE (1973) as a subgenus of the genus *Chamaesphecia* SPULER, 1910, with the type-species being *Dipsosphecia roseiventris* BARTEL, 1912. HEPPNER & DUCKWORTH (1982) synonymized this subgenus with *Bembecia* HÜBNER, 1819 without any discussion. Finally, LAŠTUVKA (1990) elevated *Dipchasphecia* to full generic rank, incorporated therein three additional species, and both gave a short description of the morphology of the genus and illustrated the genitalia of four males and one female he had at hand.

Having studied the type specimens of all the four hitherto known species of *Dipchasphecia* and also having accumulated some additional material, I believe that this genus includes no less than 10 species now, with 6 of them being new.

Two new species (*D. ljustiae* spec. nov. and *D. nigra* spec. nov.) have been collected as caterpillars from *Limonium otolepis* (SCHRENK) O. KUNTZE (Plumbaginaceae). This is the first record of a host plant for this genus.

The material examined, including the type specimens, has been deposited in the following collections:

- RMS - Naturhistoriska Riksmuseet, Stockholm, Sweden.
- MHB - Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.
- ZIL - Zoological Institute Academy of Sciences, Leningrad, USSR.
- ZMM - Zoological Museum Moscow State University, Moscow, USSR.
- ZMK - Zoological Museum Kiev State University, Kiev, USSR.
- BIN - Biological Institute Siberian division of Academy of Sciences, Novosibirsk, USSR.
- EMEM - Entomologisches Museum Dr. ULF EITSCHBERGER, Marktleuthen, Germany.

- CA - collection of Y. ARITA, Nagoya, Japan.
- CG - collection of the author, Moscow, USSR.
- CL - collection of Z. LAŠTUVKA, Brno, CSFR.
- CN - collection of C. NAUMANN, Bonn, Germany.
- CS - collection of K. ŠPATENKA, Prague, CSFR.
- CT - collection of I. TOSEVSKI, Novi Beograd, Jugoslavia.

Sesiinae BOISDUVAL, 1828
Synanthedonini NICULESCU, 1964
Dipchasphecia CAPUŠE, 1973

CAPUŠE (1973):161; LAŠTUVKA (1990):94.

Type-species: *Dipsosphecia roseiventris* BARTEL, 1912 by original designation.

Alar expanse 11-28 mm; labial palps erect, reaching to vertex, covered by flat scales (at times with a few hairy-like ones); a few scales of body often with pink hue; male genitalia: scopula androconialis long but covered with thin setae; crista gnathi lateralis oval, crista gnathi medialis absent; crista sacculi simple, small, placed in central part of valve; vesica with a small coenutus; female genitalia: tergite no. 8 narrow; lamella postvaginalis at times with two pairs of setae; antrum well sclerotized, slightly funnel-shaped.

Diagnosis: The species of the genus *Dipchasphecia* are very similar in habitus to those of both *Chamaesphecia* SPULER, 1910 and *Synansphecia* CAPUŠE, 1973, but differ from them by the presence of pink hue scales on different parts of the body. Moreover, this genus is easily distinguishable from *Synansphecia* by the absence of a subapical white speck on the antenna. From *Bembecia* HÜBNER, 1819 and *Pyropteron* NEWMAN, 1832, the species of *Dipchasphecia* can easily be distinguished by the absence of red scales on the forewings from above, and from *Synanthedon* HÜBNER, 1819 by the less developed transparent areas on the forewings. There are certain difficulties for the determination of this genus by habitual features, but it readily differs from other genera of the Synanthedonini by characters of genitalia, namely by the absence of a crista gnathi medialis, size, shape and place of the crista sacculi in the male, and the slightly funnel-shaped and well sclerotized antrum in the female.

Bionomics: At the present, this is known for two species only (see below). The known host plant is *Limonium otolepis* (SCHRENK) O. KUNTZE (Plumbaginaceae).

Distribution: From the Balkan Peninsula in the West, across the Transcaucasus, southern Iran, Afghanistan, Central Asia, the Altai to southern Yakutia, Siberia in the East.

I suggest keys for the determination of the species of the genus *Dipchasphecia* both to males and to females separately, because there are species which exhibit sexual dimorphism, but only a single sex is known at the moment.

Key to males

- 1(2) Small, alar expanse less than 15.0 mm; transparent areas of forewing extremely small and completely covered by whitish scales. Genitalia: figs. 26-29. Southeastern Transcaucasus.

D. krocha spec. nov.

- 2(1) Larger, alar expanse over 15.0 mm; transparent areas of forewing better developed and covered by colourless or coloured, but not whitish scales.

- 3(6) Frons white with a grey-brown speck centrally; antenna black with a yellow strip laterally; forewing from above dark brown without admixture of light brown, pinkish or yellowish scales; external transparent area divided into 5 cells.

- 4(5) Vertex black; transparent areas of forewing covered by orange scales; segments nos. 2, 4 and 6 of abdomen dorsally with a narrow, orange, distal strip; abdomen ventrally pinkish-ochreous; anal tuft ventrally pinkish-orange. Genitalia: figs. 1-4. Central Asia, Tien-Shan.

D. roseiventris (BARTEL, 1912)

- 5(4) Vertex black with pink scales; transparent areas of forewing covered by colourless scales; segments nos. 4 and 6 of abdomen dorsally with a narrow, yellowish, distal strip; ventrally segments nos. 2 and 3 with a few yellow scales, and nos. 4-6 with a narrow, yellowish, distal strip; anal tuft ventrally yellow. Genitalia: figs. 22-23. Altai Mts.

D. altaica spec. nov.

- 6(3) Frons yellowish-pink or brown with a white strip laterally; antenna completely black or brown with a few yellow or light brown scales subapically; forewing from above black, dark brown or brown with admixture of pinkish, yellowish or light brown scales; external transparent area divided into 3 or 4 cells.

- 7(8) Frons completely yellowish-pink; antenna completely black; external transparent area divided into 3 cells; distal half of segments nos. 2, 4, 6 and 7 of abdomen dorsally pinkish-ochreous. Genitalia: figs. 13-16. Central Asia, southern Tajikistan.

D. ljustiae spec. nov.

- 8(7) Frons brown with a white strip laterally; antenna brown with a few yellow or light brown scales laterally; external transparent area divided into 4 cells; segments nos. 2, 4 and sometimes 7 of abdomen dorsally with a narrow yellowish, pinkish or white distal strip.

- 9(10) Pericephalic hairs completely white; labial palps with pink scales ventrally; tegula with a narrow pink strip internally; transparent areas of forewing covered by colourless, pinkish and white scales; top of discal spot of hindwing reaching to base of veins M3-Cu1; abdomen ventrally completely pinkish. Genitalia: figs. 5-8. Eastern Kazakhstan, Zaisan.

D. pudorina (STAUDINGER, 1883)

- CA - collection of Y. ARITA, Nagoya, Japan.
- CG - collection of the author, Moscow, USSR.
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Diagnosis: The species of the genus *Dipchasphecia* are very similar in habitus to those of both *Chamaesphecia* SPULER, 1910 and *Synansphecia* CAPUŠE, 1973, but differ from them by the presence of pink hue scales on different parts of the body. Moreover, this genus is easily distinguishable from *Synansphecia* by the absence of a subapical white speck on the antenna. From *Bembecia* HÜBNER, 1819 and *Pyropteron* NEWMAN, 1832, the species of *Dipchasphecia* can easily be distinguished by the absence of red scales on the forewings from above, and from *Synanthedon* HÜBNER, 1819 by the less developed transparent areas on the forewings. There are certain difficulties for the determination of this genus by habitual features, but it readily differs from other genera of the Synanthedonini by characters of genitalia, namely by the absence of a crista gnathi medialis, size, shape and place of the crista sacculi in the male, and the slightly funnel-shaped and well sclerotized antrum in the female.

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- 2(1) Larger, alar expanse over 15.0 mm; transparent areas of forewing better developed and covered by colourless or coloured, but not whitish scales.

- 3(6) Frons white with a grey-brown speck centrally; antenna black with a yellow strip laterally; forewing from above dark brown without admixture of light brown, pinkish or yellowish scales; external transparent area divided into 5 cells.

- 4(5) Vertex black; transparent areas of forewing covered by orange scales; segments nos. 2, 4 and 6 of abdomen dorsally with a narrow, orange, distal strip; abdomen ventrally pinkish-ochreous; anal tuft ventrally pinkish-orange. Genitalia: figs. 1-4. Central Asia, Tien-Shan.

D. roseiventris (BARTEL, 1912)

- 5(4) Vertex black with pink scales; transparent areas of forewing covered by colourless scales; segments nos. 4 and 6 of abdomen dorsally with a narrow, yellowish, distal strip; ventrally segments nos. 2 and 3 with a few yellow scales, and nos. 4-6 with a narrow, yellowish, distal strip; anal tuft ventrally yellow. Genitalia: figs. 22-23. Altai Mts.

D. altaica spec. nov.

- 6(3) Frons yellowish-pink or brown with a white strip laterally; antenna completely black or brown with a few yellow or light brown scales subapically; forewing from above black, dark brown or brown with admixture of pinkish, yellowish or light brown scales; external transparent area divided into 3 or 4 cells.

- 7(8) Frons completely yellowish-pink; antenna completely black; external transparent area divided into 3 cells; distal half of segments nos. 2, 4, 6 and 7 of abdomen dorsally pinkish-ochreous. Genitalia: figs. 13-16. Central Asia, southern Tadjikistan.

D. ljustiae spec. nov.

- 8(7) Frons brown with a white strip laterally; antenna brown with a few yellow or light brown scales laterally; external transparent area divided into 4 cells; segments nos. 2, 4 and sometimes 7 of abdomen dorsally with a narrow yellowish, pinkish or white distal strip.

- 9(10) Pericephalic hairs completely white; labial palps with pink scales ventrally; tegula with a narrow pink strip internally; transparent areas of forewing covered by colourless, pinkish and white scales; top of discal spot of hindwing reaching to base of veins M3-Cu1; abdomen ventrally completely pinkish. Genitalia: figs. 5-8. Eastern Kazakhstan, Zaisan.

D. pudorina (STAUDINGER, 1883)

10(9) Pericephalic hairs dorsally yellow or yellowish-ochreous; labial palps ventrally white; tegula without pink scales internally; transparent areas of forewing covered by colourless scales; top of discal spot of hindwing not reaching to base of veins M3-Cu1; abdomen ventrally without pinkish scales.

11(12) Patagia with a few pale pink scales; tegula with a pale pink speck near base of forewing; thorax dorsally thickly covered by pale pink hairy-like scales, laterally pinkish; abdomen dorsally black, segments nos. 2, 4 and 6 with a narrow, white, distal strip, ventrally black with a few white scales. genitalia: figs. 18-21. Southern Iran, Fars.

D. consobrina (LE CERF, 1938)

12(11) Patagia with a few yellowish scales; tegula with a yellowish-ochreous speck near base of forewing; thorax dorsally thickly covered by ochreous hairy-like scales, laterally brown with a few yellowish-ochreous scales; abdomen dorsally dark brown, thickly covered by yellowish and light brown scales, segments nos. 2 and 4 with a narrow, yellowish, distal strip, ventrally segment no. 2 yellowish and nos. 3-7 covered by dark brown, yellowish and ochreous scales here and there. Genitalia: figs. 9-12. Balkan Peninsula, western Turkey.

D. lanipes (LEDERER, 1863)

Key to the females

1(2) Background colour of various parts of body black. Genitalia: fig. 25. Central Asia, southern Tadjikistan.

D. nigra spec. nov.

2(1) Background colour of various parts of body with admixture of brown, pink, yellow or white scales.

3(5) Frons completely white; tegula with a white speck near base of forewing; segments nos. 2 and 4 of abdomen dorsally with a narrow, white, distal strip.

4(7) Frons with brown or grey-brown scales centrally; tegula without white scales near base of forewing; segments nos. 2 and 4 of abdomen dorsally with a yellowish or pinkish-ochreous distal strip or segments nos. 2, 4 and 6 with a white distal strip.

5(6) Vertex black with a few white scales; antenna dark brown with a short, yellow, apical strip; thorax laterally dark grey with a few white scales; external transparent area of forewing divided into 5 cells; hind tibiae grey-brown with a few white scales centrally; abdomen ventrally black with a few white scales on segments nos. 4 and 5. Genitalia unknown. Eastern Afghanistan, Ghazni.

D. naumanni spec. nov.

6(5) Vertex black with a few pink scales; antenna black with a few pinkish scales sub-apically; thorax laterally dark brown with pinkish and ochreous scales; external transparent area of forewing divided into 3 cells; hind tibiae brown with a broad pinkish-ochreous ring centrally; abdomen ventrally dark brown with a few brown

and ochreous scales on segments nos. 4-6. Genitalia unknown. Southern Siberia, Yakutia.

D. rhodocnemis spec. nov.

- 7(8) Tegula with a pale pink speck near base of forewing; thorax laterally completely pinkish; spurs white; anal tuft dorsally black with two small, elongate, white specks basally in central part. Genitalia unknown. Southern Iran, Fars.

D. consobrina (LE CERF, 1938)

- 8(7) Tegula either with a yellowish-ochreous speck or without such near base of forewing; thorax laterally with yellowish or brownish-pink scales; spurs ochreous; distal strips on abdominal segments yellowish or pinkish-ochreous; anal tuft dorsally without white scales.

- 9(10) Frons pinkish with brown scales centrally; labial palps with pinkish-ochreous scales ventrally; antennae without yellow scales; thorax laterally with brownish-pink scales; background colour of forewing from above with admixture of pink scales; segments nos. 2, 4 and 6 of abdomen dorsally with a broad, pinkish-ochreous, distal strip; anal tuft dorsally with orange-pink scales. Genitalia: fig. 17. Central Asia, southern Tadjikistan.

D. ljustiae spec. nov.

- 10(9) Frons and labial palps without pinkish scales; antenna with yellow scales; thorax laterally with yellowish or yellowish-ochreous scales; background colour of forewing from above without admixture of pink scales; distal strips of abdominal segments yellowish; anal tuft dorsally without orange-pink scales.

- 11(12) Vertex black with a few yellow scales; labial palps with pale yellow scales; tegula without coloured speck near base of forewing; hind tibiae brown with a broad pinkish-ochreous ring centrally; anal tuft completely dark brown. Genitalia: fig. 24. Siberia, Altai Mts.

D. altaica spec. nov.

- 12(11) Vertex black with a few pinkish scales; labial palps with white scales; tegula with a yellowish-ochreous speck near base of forewing; hind tibiae pale brown with a broad white ring centrally; anal tuft brown with an ochreous strip laterally. Genitalia: fig. in LAŠTUVKA (1990). Balkan Peninsula, western Turkey.

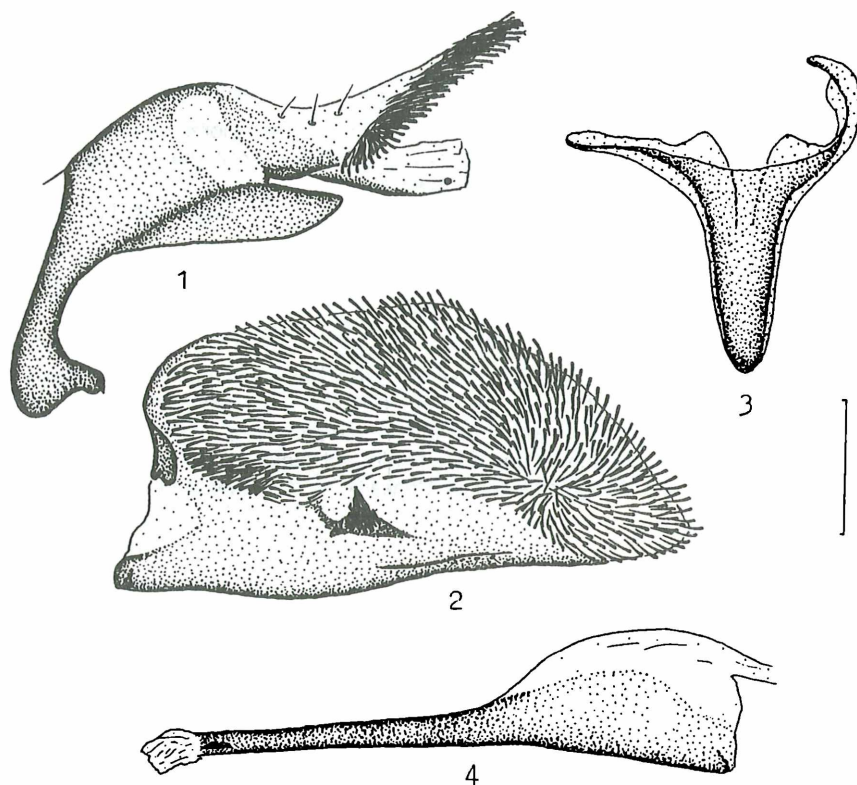
D. lanipes (LEDERER, 1863)

Dipchasphecia roseiventris (BARTEL, 1912) (figs. 1-4; colour plate XXIII, fig. 1)

BARTEL (1912):393 (*Dipsosphecia*); DALLA TORRE (1925):67 (*Dipsosphecia*); ČAPUŠE (1971):277, fig. 19, tab. IV, G-M (*Chamaesphecia*); ČAPUŠE (1973):161 (*Dipchasphecia*); HEPPNER & DUCKWORTH (1981):39 (*Bembecia*); ŠPATENKA & LAŠTUVKA (1988):339 (*Dipsosphecia*); LAŠTUVKA (1990):96, figs. 6, 20 (*Dipchasphecia*).

Type locality: Central Asia, Tien-Shan, Ili.

Type material studied: Holotype ♂, Asia centr., Turkestan, Ili Gebiet, coll. WAGNER (MHB). Additional material studied: 1 ♂, Kirghizia, C-Tien-Shan, Kaiyngdy-Katta Mts., 14.VII.1982, leg. V. A. GANSON (CG).



Figs. 1-4: Male genitalia of *D. roseiventris* (BARTEL, 1912): 1) tegumen-uncus complex; 2) valve; 3) saccus; 4) aedeagus. Line on the right - 0.5 mm.

Description. Male.

Body length 11.9; forewing 8.7 mm; antennae broken off. Head: frons white with a grey-brown speck centrally; vertex black; pericephalic hairs yellowish; labial palps pinkish internally, pinkish with a few black scales dorsally and black ventro-externally; antenna black with a yellow strip on distal half laterally.

Thorax: Patagia black dorsally and pinkish laterally; tegula black with a small pinkish speck near base of forewing and with a few pinkish scales apically; dorsally meso- and metathorax black, laterally dark brown with a few pinkish scales.

Forewing: from above dark brown; distal half of apical area between veins orange; transparent areas extremely small, thickly covered by orange scales, external transparent area divided into 5 cells; discal spot about 2.7 times as narrow as apical area; from below yellow, discal spot dark brown; cilia grey-brown with a few orange scales.

Hindwing: veins yellow with a few dark brown scales; discal spot yellow, triangular with top at base of veins M3-Cu1.

Legs: tarsi grey-brown with a narrow yellow ring on each segment apically; fore tibiae grey-brown dorsally and pinkish ventrally, middle tibiae dark brown with a few pinkish scales centrally, hind tibiae pink-orange; femora and fore coxae black with bluish lustre; spurs pinkish.

Abdomen: background colour black, dorsally segments nos. 2 and 6 with a narrow and no. 4 with a more wide, orange, distal strip; ventrally segments nos. 2-7 pinkish-orange; anal tuft black dorsally and pinkish-orange ventrally.

Genitalia: figs. 1-4.

Female: unknown.

Variability: unknown.

Diagnosis: From other congeners *D. roseiventris* is clearly distinguishable by the intensive pink hue coloration of both hind tibiae and abdomen, as well as by the orange scales on the transparent areas of the forewings.

Habitat: unknown.

Distribution: Central Asia, Tien-Shang.

Dipchasphecia pudorina (STAUDINGER, 1883) (figs. 5-8)

STAUDINGER (1883):396 (*Sesia*); BARTEL (1899):285 (*Sesia*); STAUDINGER & REBEL (1901):404 (*Sesia*); BARTEL (1912):404 (*Chamaesphecia*); HEPPNER & DUCKWORTH (1981):37 (*Chamaesphecia*); ŠPATENKA & LAŠTUVKA (1988):336 (*Sesia*); LAŠTUVKA (1990):96, fig 8, 22 *Dipchasphecia*).

Type locality: eastern Kazakhstan, Zaisan.

Type material studied: Lectotype ♂, "Saisan 77 HBNR.", "Lectotypus ♂ *D. pudorina* (STGR.), K. ŠPATENKA et Z. LAŠTUVKA des. 1985" (MHB).

Description: Lectotype, male.

Forewing 9.5 mm; antennae broken off.

Head: frons white with a brown specj centrally; vertex covered by dark brown and pink scales; pericephalic hairs white; labial palps dorsally white, ventrally dark brown with pink scales.

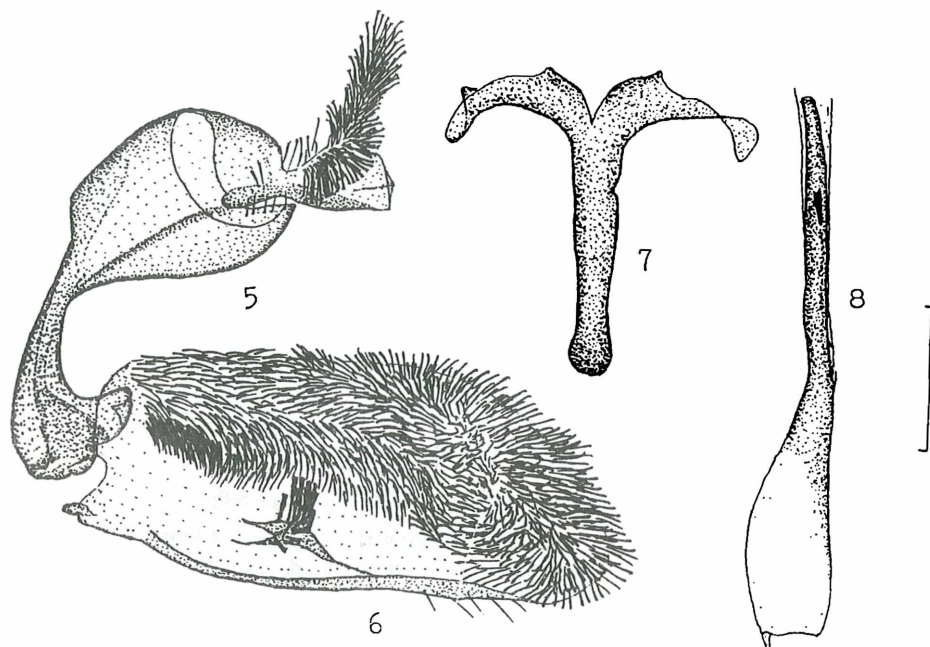
Thorax: patagia dark brown with bronze lustre, with a few pink scales; tegula dark brown with a large pink speck near base of forewing, with a narrow pink strip internally and with a pink top; meso- and metathorax dorsally dark brown, laterally spotted with white, pink and brown scales.

Forewing: from above dark brown, covered by pink, brown and light brown scales, except for discal spot and proximal half of apical area; transparent areas small, thickly covered by colourless, pale pink and white scales; from below pale pink; discal spot and narrow strips around transparent areas dark brown; cilia dark brown with a few pale pink scales.

Hindwing: veins dark brown; discal spot triangular, with top at base of veins M3-Cu1.

Legs: spotted with white, pink and pale pink scales; spurs whitish.

Abdomen: dorsally brown with a few pinkish scales; segment no. 2 with a narrow, white, distal strip, segments nos. 4, 6 and 7 with a narrow, pinkish, distal strip; anal tuft dorsally black with a few pink scales, ventrally pinkish.



Figs. 5-8: Male genitalia of *D. pudorina* (STAUDINGER, 1883), holotype: 5) tegumen-uncus complex; 6) valve; 7) saccus; 8) aedeagus. Line on the right - 0.5 mm.

Genitalia: figs. 5-8.

Female: unknown.

Variability: unknown.

Diagnosis: This species is allied to *D. roseiventris*, but can be distinguished by the absence of orange scales at the transparent areas of the forewings and by the coloration of the abdomen. From other close species (*D. ljustiae* spec. nov. and *D. lanipes*) *D. pudorina* clearly differs in both the character of coloration, especially of the abdomen, and the structure of the genitalia of the male.

Bionomics: unknown.

Habitat: unknown.

Distribution: Known only from the type locality - eastern Kazakhstan, Zaisan.

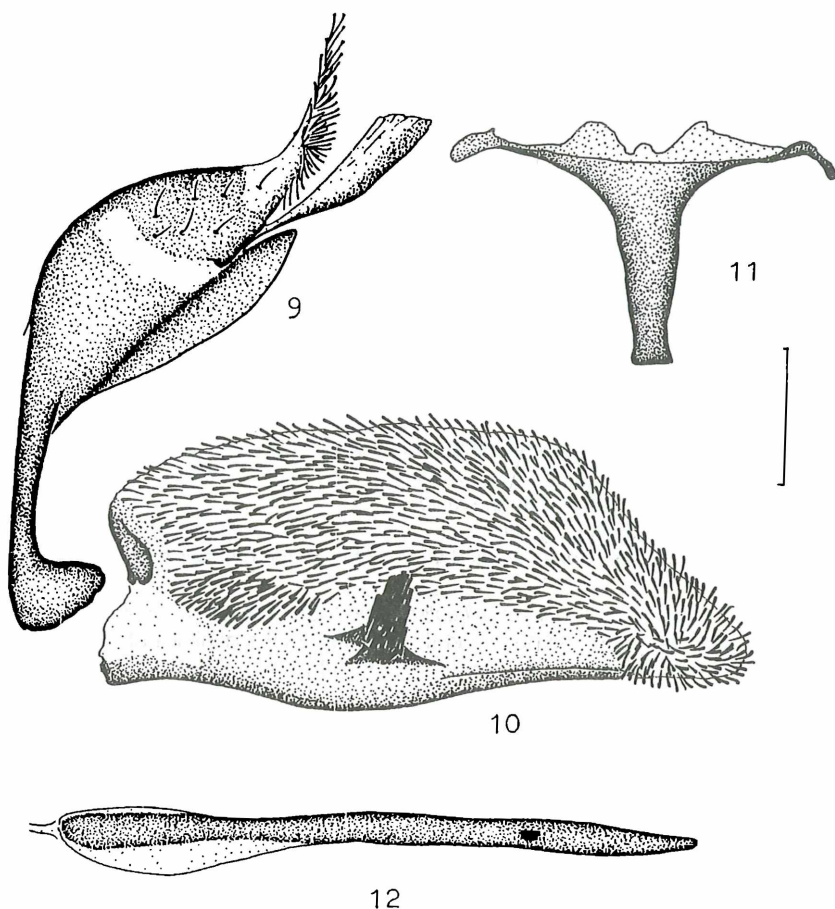
Dipchasphecia lanipes (LEDERER, 1863) (figs. 9-12; colour plate XXIII, fig. 2)

LEDERER (1863):20, tab. 4, fig. 1 (*Sesia*); BARTEL (1899):288 (*Sesia*); STAUDINGER & REBEL (1901):404 (*Sesia*); SPULER (1910):312, 315 (*Chamaesphecia*); DALLA TORRE & STRAND (1925):95 (*Chamaesphecia*); HEPPNER & DUCKWORTH (1981):36 (*Chamaesphecia*); ŠPATENKA & LAŠTUVKA (1988):336 (*Sesia*); LAŠTUVKA (1990):96, figs. 9, 23, 36 (*Dipchasphecia*).

Type locality: Balkan Peninsula, Bulgaria, Sliven.

Type material studied: Lectotype ♂, "Balkan", "Origin", "Lectotypus ♂ *D. lanipes* (LED.), K. ŠPATENKA et Z. LAŠTUVKA des. 1985" (MHB); Paralectotypes 2 ♂♂, same locality and labels (MHB).

Additional material studied: 2 ♂♂, 1 ♀, Bulgaria, Sliven, 29.VI.-1.VII.1985, leg. K. ŠPATENKA (CS); 1 ♀, Bulgaria, Sozopol, VII.1986, leg. K. ŠPATENKA (CS).



Figs. 9-12: Male genitalia of *D. lanipes* (LEDERER, 1863), paralectotype: 9) tegumen-uncus complex; 10) valve; 11) saccus; 12) aedeagus. Line on the right - 0.5 mm.

Description. Lectotype. Male.

Body length 15.3; forewing 10.0; antenna 6.8 mm.

Head: frons brown with a broad whitish strip laterally; vertex black with a few pinkish scales; pericephalic hairs yellowish-ochre dorsally and white laterally; labial palps white with a narrow black strip externally; antenna brown with a few yellow scales laterally.

Thorax: patagia black with a few yellowish scales dorsally and yellowish-ochre laterally; tegula black with a yellowish-ochre speck near base of forewing and yellowish-ochre top; meso- and metathorax black, thickly covered by ochreous hairy-like scales, laterally brown with a few yellowish-ochre scales.

Forewing: from above dark brown; costal and anal margins, veins within external transparent area and distal half of apical area thickly covered by pale yellow and a few light brown scales; transparent areas covered by colourless scales, external transparent area divided into 4 cells (cell between veins R3-R4 extremely small and covered by pale yellow scales); discal spot about 1.5 times as narrow as apical area; from below yellowish-ochre, discal spot brown; cilia brown with a few pale yellow scales.

Hindwing: veins dark brown (vein 1A from below pale yellow); discal spot small, trapeziform with top at midway between bases of veins M2-M3-Cu1.

Legs: tarsi and fore tibiae brown with ochreous scales; middle and hind tibiae pale brown with a broad white ring centrally; fore femora ochreous, middle and hind ones brown with ochreous scales in front; fore coxae white with a few brown scales internally; spurs ochreous.

Abdomen: background colour dark brown, thickly covered by yellowish and light brown scales; dorsally segments nos. 2 and 4 with a narrow, yellowish, discal strip; ventrally segment no. 2 yellowish, segments nos. 3-7 covered by dark brown, brown, yellowish and ochreous scales here and there; anal tuft brown, laterally with a narrow ochreous strip.

Genitalia: figs. 9-12.

Female: somewhat more robust than the male.

Genitalia: see LAŠTUVKA (1990), fig. 30.

Variability: all the other specimens studied vary slightly in the number of the yellow scales on the antennae.

Diagnosis: This species is similar to *D. ljusiae* spec. nov., but easily differs by both the coloration of various parts of the body and the structure of the genitalia of both male and female. More detailed differences are presented in the key.

Bionomics: unknown.

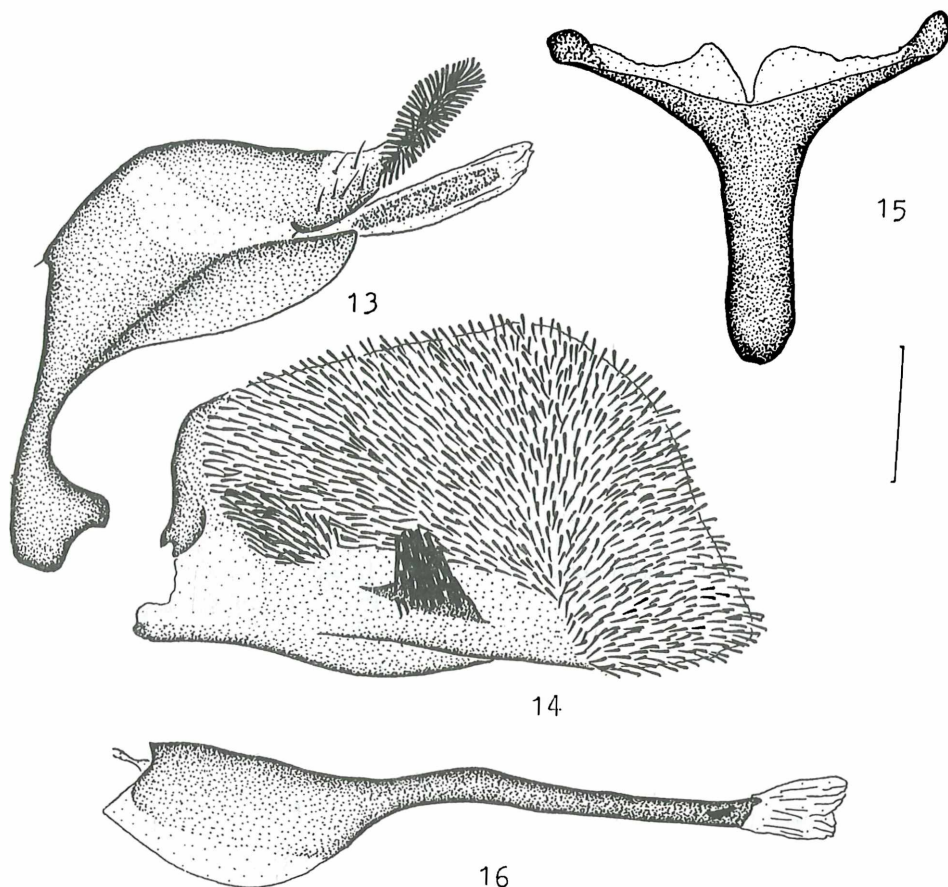
Habitat: xerothermic habitats.

Distribution: Balkan Peninsula, western Turkey.

Dipchasphecia ljusiae spec. nov. (figs. 13-17; colour plate XXIII, figs. 3, 4)

Type locality: southwestern Tadzhikistan, Tigrivaya Balka State Reserve.

Type material: Holotype ♂, USSR, SW Tadzhikistan, ca. 60 km SWW Kurgan-Tyube, Tigrivaya Balka Reserve, 20.-21.IV.1988, ex l., leg. O. GORBUNOV (ZIL). Paratypes: 5 ♂♂, 4 ♀♀, same locality and date, ex l., leg. O. GORBUNOV; 1 ♂, 1 ♀, same locality, 26.IV. and 8.IV.1986, ex l., leg. O. NIKULINA (ZIL, ZMM, CS, CG).



Figs. 13-16: Male genitalia of *D. ljustiae* spec. nov., paratype: 13) tegumen-uncus complex; 14) valve; 15) saccus; 16) aedeagus. Line on the right - 0.5 mm.

Description: Holotype. Male.

Body length: 13.0; forewing 9.0; antenna 6.0 mm.

Head: frons yellowish-pink; vertex black, interspersed by pink hairy-like scales labial palps pinkish-ochreous with a narrow black strip externally; pericephalic hairs pinkish ochre; antenna black.

Thorax: patagia spotted with pink, yellowish, brown and black scales; tegula black, thickly covered by thin pink and brown scales, with pinkish-ochreous top; mesothorax dorsally

black with sparsely thin pink and brown scales, metathorax with two tufts of white hairy-like scales; laterally brownish-pink.

Forewing: from above black but very thickly covered by brown and pink scales; discal spot black with a few brown scales; transparent areas small, covered by colourless and a few pink scales; external transparent area divided into 3 cells; from below yellowish; costal margin and proximal half of anal margin greyish-brown; discal spot brown; cilia black except for brown apices.

Fig. 17: Female genitalia of *D. ljustiae* spec. nov., paratype. Line on the right - 0.5 mm.

Hindwing: veins from above black, from below yellowish; discal spot triangular, black, with top at midway between bases of veins M2 and M3-Cu1.

Legs: tarsi, tibiae and femora pinkish-ochre with a few black scales; fore coxae pinkish-ochre with a black speck centrally; spurs ochreous.

Abdomen: black, thickly covered by brown and a few thin pink scales; dorsally distal half of segments nos. 2, 4, 6 and 7 pinkish-ochre, ventrally pink scales somewhat more numerous than dorsally, segments nos. 4, 5 and 6 with a very narrow orange-pink strip laterally.

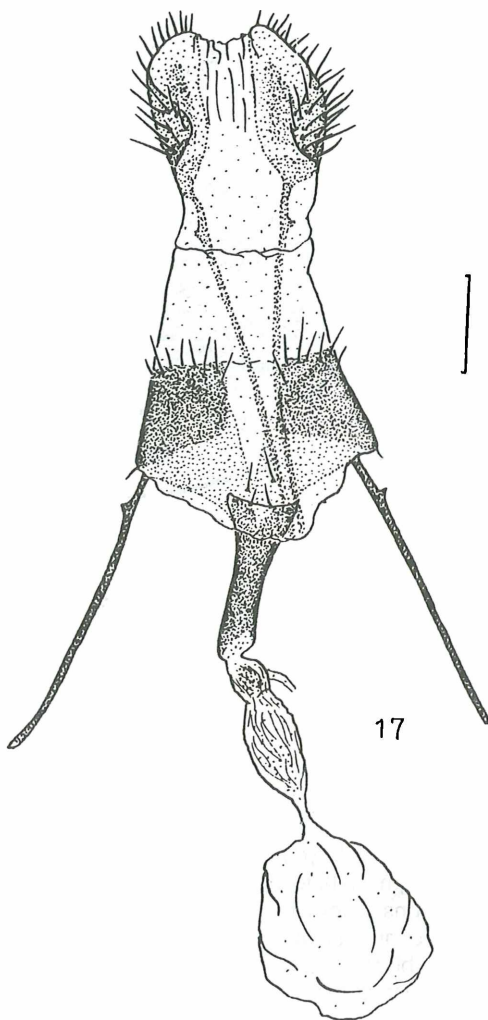
Genitalia: figs. 13-16.

Female: Somewhat more robust and larger than male; frons pinkish with a few brown scales centrally; antenna light brown with a small black speck laterally; metathorax with two tufts of black hairy-like scales; posterior transparent area of forewing practically absent; distal half of segments nos. 4 and 6, and a very narrow distal strip of 2nd segment of abdomen dorsally pinkish-ochre; anal tuft brown with an orange-pink central part dorsally. Other colour pattern as in male.

Genitalia: fig. 17.

Variability: All the other paratypes have differences from the above description in size only, but not in colour pattern.

Males: body length 12.5-13.5; forewing



8.5-9.0; antenna 6.0-6.5 mm. Females: body length 14.5-16.5; forewing 10.5-11.5; antenna 6.0-7.0 mm.

Diagnosis: Habitually *D. ljustiae* spec. nov. is similar to *D. lanipes*, but distinctly differs by the more bright coloration of the forewing and abdomen and by the characters of the coloration of the vertex, legs and abdomen, as well as by the structure of the male and female genitalia.

Bionomics: The host plant of this species is *Limonium otopsis* (SCHRENK) O. KUNTZE (Plumbaginaceae). About 1-4 larvae per plant live inside the root. In late April, the caterpillar makes an exit tunnel 7-12 cm long in one of the stems, braiding it with a dense cobweb. At the end of the tunnel, the larva gnaws the stem circularly and closes the tunnel with boring deposits. This gnawed stem breaks off readily in a breeze, and the pupa is able to easily come out. Such plants with broken stems are well visible, and discovery of both larvae and pupae of this species becomes very simple.

Unlike other clear-wing moths of the Palaearctic Region, the caterpillars of *D. ljustiae* spec. nov., after finishing the construction of the exit tunnel, do not pupate but enter a summer diapause. Collected caterpillars were kept in normal laboratory conditions in polystyrene boxes. In late August and the beginning of September the caterpillars enter pupation without any structural modifications of the previous built exit tunnel. 18-21 days after pupation, the moths appear. Hatching of imagines occurs in nature during the same period, the life cycle of this species is apparently annual.

Habitat: The host plant *L. otopsis* is a typical salsuginous characteristic of the lower flow of Vakhsh River. Among other salsuginous plants supported by the same soils are some *Salsola* spp. and separate specimens of *Alchagi canescens* and *Zygophyllum oxianum*.

Distribution: Known only from the type locality, but a wider range is possible in salinated areas of southern Tajikistan, southern Uzbekistan and northern Afghanistan.

Dipchasphecia consobrina (LE CERF, 1938) (figs. 18-21)

LE CERF (1938):94 (*Chamaesphecia*); HEPPNER & DUCKWORTH (1981):35 (*Chamaesphecia*); LAŠTUVKA (1990):96, figs. 7, 21 (*Dipchasphecia*).

Type locality: southern Iran, Fars, Barm i Firus.

Type material studied: Holotype ♂, "Iran, prov. Fars, Strasse Ardekan-Talashosroc, Barm i Firus, 3750m, 12.-20.VII.1937, leg. W. BRANDT" (RMS).

Description. Holotype. Male.

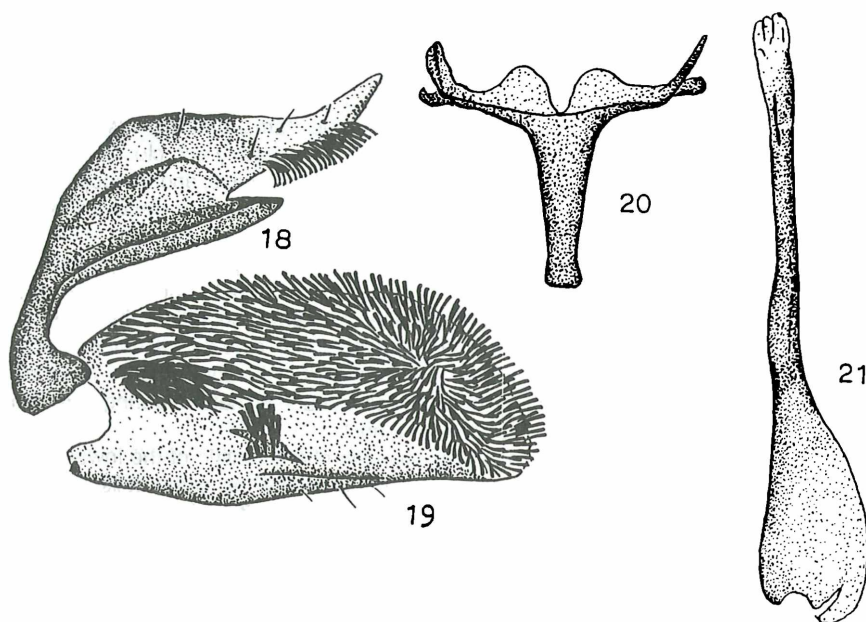
Forewing 8.0; antenna 5.2 mm.

Head: frons grey-brown with a white strip laterally; vertex black with a few pink scales; pericephalic hairs yellow dorsally and white laterally; labial palps white with a few yellow scales, with a narrow dark brown strip externally; antenna black with a few light brown scales latero-apically.

Thorax: patagia grey-brown with a few pink scales cranially; tegula black with pale pink and light brown scales near base of forewing, with a narrow light brown strip internally and with a pale pink top; meso- and metathorax dorsally black, thickly covered by pale pink hairy-like scales; laterally pinkish.

Forewing: from above dark brown, thickly covered by light brown scales; apical area between veins paler; transparent areas small, thickly covered by colourless scales, exter-

nal transparent area divided into 4 cells; from below brown with white and pale pink scales both around transparent areas and at distal part of apical area; cilia brown. Hindwing: veins brown; discal spot narrow with top at base of vein M2.



Figs. 18-21: Male genitalia of *D. consobrina* (LE CERF, 1938), holotype: 18) tegumen-uncus complex; 19) valve; 20) saccus; 21) aedeagus. Line on the right - 0.5 mm.

Legs: tarsi greyish-brown with a narrow white ring at each segment apically; fore tibiae greyish-brown, middle and hind tibiae greyish-brown with a large white speck basally and a small white speck apically; femora greyish-brown, fore coxae greyish-brown with a narrow white strip externally; spurs white.

Abdomen: dorsally black with bronze lustre; segments nos. 2, 4 and 6 with a narrow, white, distal strip (on segment no. 4 wider); ventrally black with a few white scales; anal tuft black with a few white scales at base centrally and with a narrow white strip laterally.

Genitalia: figs. 18-21.

Female (according to LE CERF, 1938): very similar to male; transparent areas less developed, external transparent area divided into 3 cells; abdomen ventrally black with a narrow white strip on each segment distally; anal tuft dorsally black with two small, elongate, white specks at base centrally. Otherwise colour pattern as in male.

Genitalia: not studied.

Variability: unknown.

Diagnosis: Closest to *D. rhodocnemis* spec. nov. and *D. naumanni* spec. nov., from which *D. consobrina* can be separated by the frons grey-brown with a white strip laterally, by the pericephalic hairs yellow dorsally and white laterally (in *D. rhodocnemis* spec. nov. and *D. naumanni* spec. nov. both frons and pericephalic hairs completely white), by the pale pink scales of the tegulae near the base of the forewing (in *D. naumanni* spec. nov. and *D. rhodocnemis* spec. nov. white), and by the character of the coloration of the abdomen. From *D. altaica* spec. nov., *D. consobrina* clearly differs by the absence of pinkish-ochreous scales on the legs and abdomen, and by the character of the coloration of the abdomen dorsally (in *D. altaica* spec. nov. segments nos. 4 and 6 with a narrow, yellowish, distal strip).

Bionomics: unknown.

Habitat: unknown.

Distribution: Southern Iran, Fars.

Dipchasphecia naumanni spec. nov. (colour plate XXIII, fig. 5)

Type locality: eastern Afghanistan, Ghazni.

Type material: Holotype ♀, "E-Afghanistan, grov, Ghazni, 18 km N Ghazni, Qala Mullah Ghazni, 2400m, 22.V.1970, Nr. 1050, leg. C. NAUMANN" (CN).

Description. Holotype. Female.

Body length 12.5; forewing 10.0; antennae 6.2 mm.

Head: frons white, vertex black with admixed white scales; pericephalic hairs white; labial palps white with a narrow black strip externally; antennae dark brown with a short, yellow, apical strip laterally.

Thorax: patagia black with bronze lustre dorsally and white laterally; tegulae grey-brown with a white speck near base of forewing and with white top; mesothorax black, metathorax black with a few white scales; laterally dark grey with a few white scales.

Forewing: from above grey-brown with a few pale pinkish scales at costal and anal margins and at distal part of apical area between veins; transparent areas small and completely covered by pale pinkish scales; external transparent area divided into 5 cells (cell between veins Cu1 and Cu2 extremely small); discal spot twice as narrow as apical area; from below white; discal spot and proximal half of apical area grey-brown; cilia brown with bronze lustre.

Hindwing: veins brown with bronze lustre; discal spot broad, triangular, with top at base of veins M3-Cu1.

Legs: tarsi grey brown with bronze lustre; tibiae grey-brown with a few white scales centrally; femora grey-brown with a few white scales; fore coxae grey-brown with a broad white strip externally; spurs white.

Abdomen: background coloration black; dorsally segments nos. 2 and 4 with a narrow, white, distal strip; ventrally segments nos. 4 and 5 with a few white scales; anal tuft black with a few white scales.

Genitalia: not studied.

Male: unknown.

Variability: unknown.

Diagnosis: *D. naumanni* spec. nov. resembles *D. consobrina* and *D. rhodocnemis* spec. nov., but is distinguished by the coloration of the abdomen and the presence of pale

pinkish scales on the forewing from above, and by the larger size of the external transparent area of the forewing.

Bionomics: unknown.

Habitat: unknown.

Distribution: Known only from the type locality - eastern Afghanistan.

Dipchasphecia rhodocnemis spec. nov. (colour plate XXIII, fig. 6)

Type locality: southeastern Siberia, Yakutsk.

Type material: Holotype ♀, "SE-Siberia, pr. Jakutsk, loc. Sergeljah, 17.VIII.1925, leg. N. MOSKVIN" (CG).

Description. Holotype. Female.

Body length 12.2; forewing 9.8; antenna 5.5 mm.

Head: frons white; vertex black with a few pink scales; pericephalic hairs white; labial palps white with a narrow black strip externally and pale pink top; antenna black with a few pinkish scales laterally.

Thorax: patagia dorsally black with greenish lustre, with a few white scales, laterally white; tegula black with bronze lustre, with a small white speck near base of forewing and a pale ochreous top; mesothorax dorsally black with bronze lustre, with two small ochreous specks caudally; metathorax black; laterally dark brown with pinkish and ochreous scales.

Forewing: from above dark brown, thickly covered by light brown scales at costal margin and veins R4 and R5; veins within external transparent area and distal part of apical area white; transparent areas small, covered by colourless and white scales; external transparent area extremely small, divided into 3 cells; discal spot appr. 2.2 times as narrow as apical area; from below dark brown; veins within external transparent area and distal half of apical area white; cilia brown with bronze lustre.

Hindwing: veins dark brown; discal spot broad, triangular with top at base of veins M3-Cu1.

Legs: tarsi grey-brown with a light brown ring on each segment apically; fore tibiae dark brown dorsally and ochreous ventrally, middle tibiae brown with an ochreous speck centrally, hind ones brown with a broad pinkish-ochre ring centrally and with a small light brown speck apically; femora grey-brown with abroad white strip externally; spurs white.

Abdomen: background colour dark brown; dorsally segment no. 2 with an extremely narrow and segment no. 4 with a more wider white strip distally; ventrally segments nos. 4 and 5 with a narrow, ochreous, distal strip, segments nos. 4-6 covered by brown and ochreous scales; anal tuft brown with a few light brown scales centrally.

Genitalia: not studied.

Male: unknown.

Variability: unknown.

Diagnosis: Closest to *D. naumanni* spec. nov. and *D. consobrina*, from which *D. rhodocnemis* spec. nov. can be separated by the colour of various parts of the body (see diagnosis of *D. consobrina* and *D. naumanni* spec. nov.).

Bionomics: unknown.

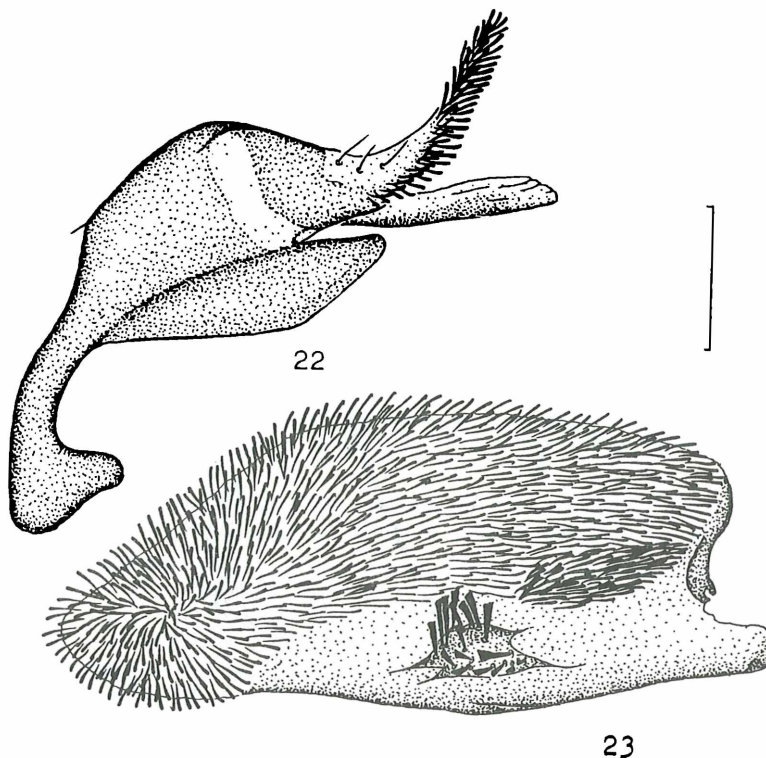
Habitat: unknown.

Distribution: Known only from the type locality - southeastern Siberia, Yakutia.

Dipchasphecia altaica spec. nov. (figs. 22-24; colour plate XXIII, figs. 7, 8)

Type locality: Altai Mts., Ongudai.

Type material: Holotype ♀, "Altai, Ongudai, 21.VI.1908, leg. A. JAKOBSON" (CG). Paratypes 1 ♂, Altai Mts., foot of the Tchiket-Aman Mt., 30.VI.1981, leg. V. DUBATOLOV (BIN); 1 ♂, Altai Mts., Tchemal, 20.VI.1988, leg. E. MATVEYEV; 1 ♀, same locality, 21.VII.1989, leg. E. MATVEYEV (CG).



Figs. 22-23: Male genitalia of *D. altaica* spec. nov., paratype: 22) tegumen-uncus complex; 23) valve. Line on the right - 0.5 mm.

Description. Holotype. Female.

Body length 13.7; forewing 10.0; antenna 6.0 mm.

Head: frons white with a few grey-brown scales centrally; vertex black with admixed yellow scales; pericephalic hairs yellow dorsally and white laterally; labial palps pale yellow with a narrow black strip externally; antenna black with a yellow strip laterally.

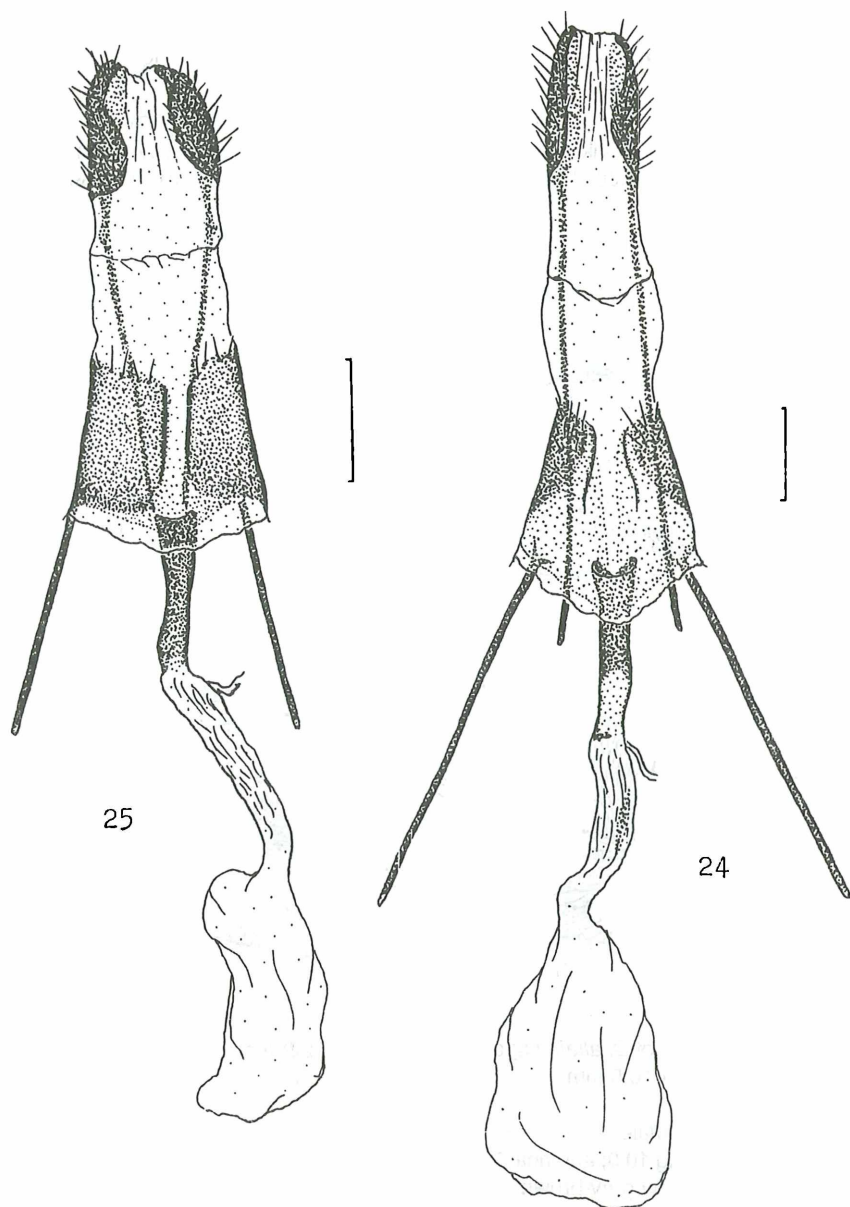


Fig. 24: Female genitalia of *D. altaica* spec. nov., paratype. Line on the right - 0.5 mm.
Fig. 25: Female genitalia of *D. nigra* spec. nov., paratype. Line on the right - 0.5 mm.

Thorax: patagia dark brown with bronze lustre dorsally and yellowish laterally; tegula dark brown with yellowish top; mesothorax dorsally dark brown with two small yellowish specks caudally; metathorax dark brown; laterally dark brown with a few yellowish scales.

Forewing: from above dark brown; veins within external transparent area and small distal specks of apical area between veins white; transparent areas small, covered by colourless scales; external transparent area divided into 4 cells (cell between veins R3-R4+5 covered by white scales); discal spot appr. twice as narrow as apical area; from below dark brown with bronze lustre; costal margin, veins within external transparent area and distal half of apical area between veins yellowish; cilia dark brown with a few yellow scales.

Hindwing: veins dark brown with bronze lustre; discal spot trapeziform with top at base of veins M3-Cu1.

Legs: tarsi and fore tibiae grey-brown with bronze lustre; middle tibiae brown with pinkish-ochre speck centrally, hind one brown with a broad pinkish-ochre ring centrally and with a small orange speck apically; femora grey-brown with a few yellowish scales anteriorly; fore coxae grey-brown with a broad white strip externally; spurs ochreous.

Abdomen: background colour dark brown with bronze lustre; dorsally segments nos. 4 and 6 with a narrow, yellowish, distal strip; ventrally segments nos. 2 and 3 with a few yellowish scales distally, segments nos. 4-6 with a narrow, yellowish, distal strip; anal tuft dark brown.

Genitalia: fig. 24.

Male: vertex black with a few pink scales; thorax laterally dark brown with a pinkish speck; transparent areas better developed, external transparent area divided into 5 cells (cell between veins R3-R4+5 covered by white scales); segments nos. 1 and 2 of abdomen laterally pink; anal tuft ventrally yellow. Otherwise colour pattern as in female.

Genitalia: figs. 22-23.

Variability: Other paratypes have no differences from the holotype and the above paratype male in the details of coloration, but slightly in size: body length 12.2-14.1; forewing 9.5-11.0; antenna 6.0-6.8 mm.

Diagnosis: As in *D. lanipes*, *D. altaica* spec. nov. has yellowish strips on the abdomen dorsally, but only on segments nos. 4 and 6 (in *D. lanipes* on nos. 2 and 4). Besides that, *D. altaica* spec. nov. easily differs by the background colour of the forewing from above and of the abdomen. From *D. rhodocnemis* spec. nov., *D. altaica* spec. nov. can be distinguished by the coloration of the frons, antenna, tegula, legs and abdomen.

Bionomics: unknown.

Habitat: unknown.

Distribution: Southern Siberia, Altai Mts.

Dipchasphecia **nigra** spec. nov. (figs. 25; colour plate XXIII, fig. 9)

Type locality: Southwestern Tadjikistan, Tigrovaya Balka State Reserve.

Type material: Holotype ♀, "USSR, SW Tadjikistan, ca. 60 km SWW Kurgan-Tyube, Tigrovaya Balka Reserve, 28.VI.1987, ex l., leg. O. NIKULINA" (CG). Paratype ♀, same locality, 8.IV.1986, ex l., leg. O. NIKULINA (CG).

Description. Holotype. Female.

Body length 12.0; forewing 8.4; antenna 5.5 mm.

Head: frons white with a few grey scales; vertex and antenna black with blue lustre; pericephalic hairs pinkish-ochre dorsally and white laterally; labial palps black with a few grey scales.

Thorax: patagia black with bronze lustre; tegula black with a short, narrow, white strip internally; meso- and metathorax black, laterally black with a few grey scales.

Forewing: from above black; transparent areas small, covered by colourless and white scales; external transparent area divided into 3 cells, as wide as discal spot; latter appr. twice as narrow as apical area; from below black with bronze lustre; cilia dark grey.

Hindwing: veins black; discal spot broad, triangular with broad top at base of veins M3-Cu1.

Legs: black with bronze lustre; fore coxae black with a broad strip externally.

Abdomen: background colour black with greenish lustre; segment no. 4 dorsally with a few white scales distally, laterally with a white distal speck; anal tuft black with greenish lustre.

Genitalia: fig. 25.

Male: unknown.

Variability: The paratype has differences from the above description only in the availability of a clear white strip on abdominal segment no. 4 distally.

Bionomics: As in *D. ljustiae* spec. nov., the host plant of *D. nigra* spec. nov. is *Limonium otolepis* (Plumbaginaceae). The characters of larval life are very similar to that of *D. ljustiae* spec. nov., but the caterpillars of *D. nigra* have no summer diapause and the moths appear from the middle of June to the beginning of July.

Habitat: Salt marshes of the lower flow of Vakhsh River, Tadjikistan.

Distribution: Known only from the type locality - southwestern Tadjikistan.

Dipchasphecia krocha spec. nov. (figs. 26-29; colour plate XXIII, fig. 10)

Type locality: Southeastern Azernaidjan, Talysh Mts.

Type material: Holotype ♂, "USSR, Transcaucasus, Azerbaidjan, Talysh Mts., ca. 2 km N Gosmalian, 1400m, 4.VII.1989, leg. O. GORBUNOV" (ZIL). Paratypes 46 ♂♂, same locality, 29.VI.-4.VII.1989, leg. O. GORBUNOV (MHB, ZIL, ZMM, ZMK, EMEM, CA, CG, , CS, CT).

Description. Holotype. Male.

Body length 6.7; forewing 4.5; antenna 2.7 mm.

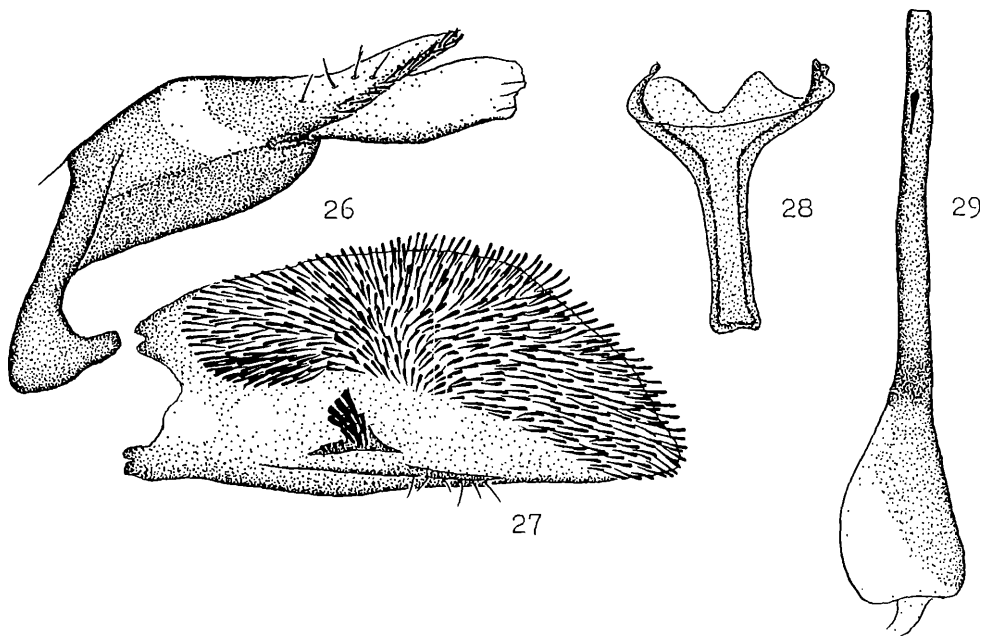
Head: frons white; vertex black with a few white hairy-like scales and with two small white specks near base of antennae; pericephalic hairs yellow; labial palps white with a narrow black strip of hairy-like scales laterally; antennae black with yellow top laterally.

Thorax: patagia black with a few brownish-yellow scales; tegula black with a broad brownish-yellow strip internally; meso- and metathorax black with bronze lustre, laterally dark brown with a few brownish-yellow scales.

Forewing: from above discal spot muddy-brown; transparent areas small, completely covered by whitish scales; top of apical area whitish, other parts covered by dark brown, brown and whitish scales here and there; from below covered by more whitish scales; cilia green-brownish with bronze lustre.

Hindwing: veins brown with bronze lustre; discal spot very small, with top at base of vein M2.

Legs: tarsi muddy-brown with whitish rings at base of all segments; fore tibiae muddy-brown dorsally and whitish ventrally, middle and hind ones whitish with a few dark brown scales apically; femorae muddy-brown with a whitish strip frontally; fore coxae muddy-brown with a lot of whitish scales; spurs white.



Figs. 26-29: Male genitalia of *D. krocha* spec. nov., paratype: 26) tegumen-uncus complex; 27) valve; 28) saccus; 29) aedeagus. Line on the right - 0.5 mm.

Abdomen: background colour of dorsal side black, thickly covered by brown scales, segments nos. 2, 4 and 6 with a very narrow, whitish, distal strip; ventrally black with numerous whitish and brown scales; segments nos. 2-7 with a very narrow whitish strip distally; anal tuft black with a few whitish and brown scales at base dorsally and with a narrow whitish strip laterally.

Genitalia: figs. 26-29.

Female: unknown.

Variability: The rather numerous specimens at hand have practically no essential differences, but vary somewhat in size only: body length 5.7-7.2; forewing 4.2-5.0; antenna 2.5-3.0 mm.

Diagnosis: *D. krocha* spec. nov. is clearly distinguished from other congeners by its extremely small size, and by the character of the coloration of various parts of the body.

Bionomics: unknown.

Habitat: The type series has been captured with a synthetic pheromone for european populations of *Pennisetia hylaeiformis* (LASPEYRES, 1801) on a rocky slope with a lot of perennial plants. In this biotop I also collected other Sesiidae: *Microsphecia brosfiformis* (HÜBNER, [1813]), *Bembecia zuvandica* GORBUNOV, 1987, *B. stiziformis* (HERRICH-SCHÄFFER, 1851), *Chamaesphecia diabarensis* GORBUNOV, 1987 and *Ch. morosa* LE CERF, 1937. **Distribution:** Known only from the type locality - Southeastern Azerbaidjan, Talysh Mts.

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Colour plate XXIII

- Fig. 1: *D. roseiventris* (BARTEL, 1912), male.
 Fig. 2: *D. lanipes* (LEDERER, 1863), male, lectotype.
 Fig. 3: *D. ljustiae* spec. nov., holotype, male.
 Fig. 4: *D. ljustiae* spec. nov., paratype, female.
 Fig. 5: *D. naumanni* spec. nov., holotype, female.
 Fig. 6: *D. rhodocnemis* spec. nov., holotype, female.
 Fig. 7: *D. altaica* spec. nov., holotype, female.
 Fig. 8: *D. altaica* spec. nov., paratype, male.
 Fig. 9: *D. nigra* spec. nov., holotype, female.
 Fig. 10: *D. krocha* spec. nov., holotype, male.

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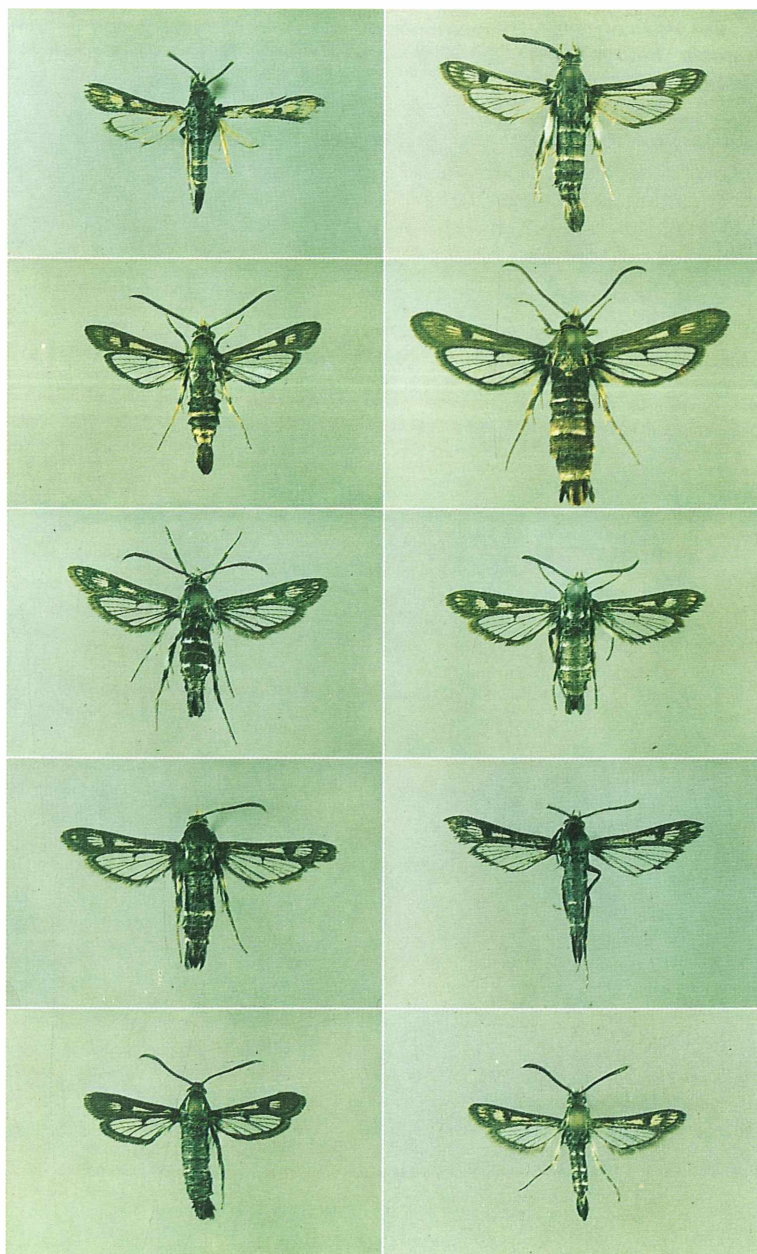
Colour plate XXIII

GORBUNOV, O.: Review of the genus *Dipchasphecia* CAPUŠE, 1973. – *Atalanta* **22**(2/3):145-167.

- Fig. 1: *D. roseiventris* (BARTEL, 1912), male.
 Fig. 2: *D. lanipes* (LEDERER, 1863), male, lectotype.
 Fig. 3: *D. ljustiae* spec. nov., holotype, male.
 Fig. 4: *D. ljustiae* spec. nov., paratype, female.
 Fig. 5: *D. naumanni* spec. nov., holotype, female.
 Fig. 6: *D. rhodocnemis* spec. nov., holotype, female.
 Fig. 7: *D. altaica* spec. nov., holotype, female.
 Fig. 8: *D. altaica* spec. nov., paratype, male.
 Fig. 9: *D. nigra* spec. nov., holotype, female.
 Fig. 10: *D. krocha* spec. nov., holotype, male.

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