

# Review of the *Dyspessa salicicola* (Eversmann, 1848) species group (Lepidoptera, Cossidae: Cossinae)

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Academic editor: A. Matsyura | Received 22 November 2022 | Accepted 11 December 2022 | Published 14 December 2022

<http://zoobank.org/2BC10FA5-AF54-4457-AA3D-62EA59673FF8>

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**Citation:** Yakovlev RV, Shapoval NA, Shapoval GN, Naydenov AE (2022) Review of the *Dyspessa salicicola* (Eversmann, 1848) species group (Lepidoptera, Cossidae: Cossinae). Acta Biologica Sibirica 8: 693–712. <https://doi.org/10.14258/abs.v8.e43>

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## Abstract

The article gives a revision on the species group *Dyspessa salicicola* (Eversmann, 1848) (Lepidoptera, Cossidae, Cossinae). The group comprises six valid taxa, namely *D. salicicola salicicola*, *D. salicicola aschabadensis* Daniel, 1953, *D. saissanica* Yakovlev, 2014, *D. kostjuki* Yakovlev, 2005, *D. arabesca* Yakovlev, 2005 and *D. muelleri* Yakovlev, sp. nov. (type locality: “Nord Jordanien, Totes Meer-Ostufer, Wadi Ibn Hammad”), united by a specific habitus (the yellow forewing with a remarkable pattern of spots). Detailed data on the distribution of all the species are provided, short diagnoses are given. The article is illustrated with images of specimens from different localities and male genitalia of all the considered taxa.

## Keywords

Biodiversity, Carpenter Moths, *Dyspessa*, fauna, Central Asia, Volga-Ural Region, Middle East, Caucasus, Transcaucasia

## Introduction

*Cossus salicicola* Eversmann, 1848 (Lepidoptera, Cossidae, Cossinae) was described on the basis of single specimen “ich nur ein Exemplar dieses Spinners gefangen hatte... Ich kenne bis jezt nur den Mann” (Eversmann 1848: 211; Sinev et al. 2017: 410–411). The holotype and its labels are shown in plate 13, figure 14 (Sinev et al. 2017). Spuler (1910: 303) established a new combination: *Dyspessa salicicola* (Eversmann, 1848). Later, Silbernagel (1944) described from Makedonia (Lake Ochrid) *Dyspessa salicicola* f. *lutescens* Silbernagel, 1944, which was subsequently synonymized with the nominative subspecies (Daniel 1962). Daniel (1953) described the subspecies *Dyspessa salicicola aschabadensis* on a series of specimens from Turkmenistan (“Aschabad, Suljukli, Aidere, Merw”) and Armenia (“Eriwan”). “Aschabad” was chosen as the type locality. At the further revision of Cossidae (Yakovlev 2005, 2014) based on significant differences in the structure of antennae and male genitalia, we described three species: *Dyspessa kostjuki* Yakovlev, 2005, *D. arabesca* Yakovlev, 2005 and *D. saissanica* Yakovlev, 2014. In this article we analyse in detail the taxonomy of the species group *Dyspessa salicicola* (Eversmann, 1848), united by a specific habitus (the yellow forewing with a remarkable spotty pattern), and describe a new species *D. muelleri* sp. nov. from Jordan.

## Material and methods

Male genitalia were mounted in euparal on slides following Lafontaine and Mikkola (Lafontaine and Mikkola 1987). The imagoes were photographed using digital camera of iPhone 7. The genitalia preparations were photographed using an Olympus DP74 camera attached to an Olympus SZX16 stereomicroscope.

## Abbreviation list

- AHU – collection of Armin Hauenstein (Untermünkheim, Germany);
- APC – collection of Alexander N. Poltavsky (Rostov-on-Don, Russia);
- HMIM – Hayk Mirzayans Insect Museum (Tehran, Iran);
- MGT – Simon Janashia Museum of Georgia (Tbilisi, Georgia);
- MWM – Museum of Thomas Witt (Munich, Germany);
- RYB – collection of Roman Yakovlev (Barnaul, Russia);
- SKO – collection of Svyatoslav Knyazev (Omsk, Russia);
- VSC – collection of Valeryi I. Shchurov (Krasnodar, Russia);
- ZIA – Institute of Zoology, Kazakh Academy of Science (Almaty, Kazakhstan);
- ZISP – Zoological Institute of the Russian Academy of Science (Saint-Petersburg, Russia);
- ZMKU – Zoological Museum, Taras Shevchenko National University of Kiev (Ukraine);
- ZSM – Zoologische Staatssammlung Munich (Munich, Germany).

## Results

### *Dysspessa salicicola* (Eversmann, 1848)

Figs 1–9, 27–31

*Cossus salicicola* Eversmann, 1848, Bull. Soc. Imp. Nat. Moscou 21 (3): 211.

Type locality: Saratovischen Gouvernement, in der Gegend von Wolsk [Russia, Saratov Reg., Volsk]. Type material (holotype) in ZISP.

### *Cossus salicicola salicicola* Eversmann, 1848

Synonymy:

= *Dysspessa salicicola* f. *lutescens* Silbernagel, 1944, Z. Wien. Ent. Ges. 29: 187.

Type locality: Ochrid (Lake Ochrid) [Macedonia].

Type material (holotype) in MWM.

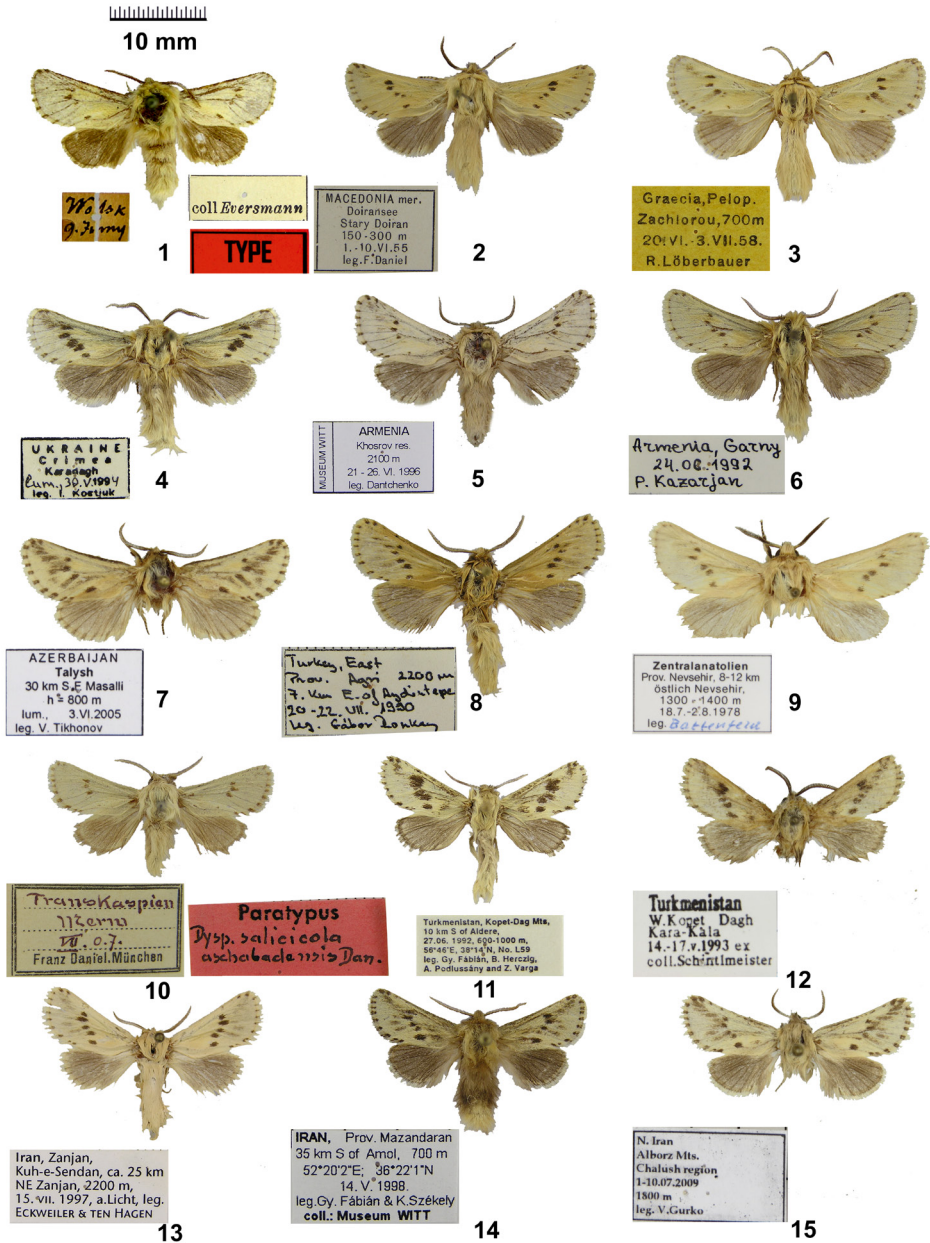
**Distribution:** Bulgaria, Macedonia, Albania, Greece, Ukraine, SW Russia, Transcaucasia, Turkey, Central Kazakhstan (Romanoff, 1885; Spuler, 1910; Daniel, 1962; Didmanidze, 1978; Didmanidze & Zurashvili, 1981; de Freina, 1983, 1996; Efetov & Budashkin 1990; de Freina & Witt, 1990; Gevorkian, 1986; Yakovlev, 2004, 2005; Didmanidze & Yakovlev, 2007; Kazenas & Baizanov 2009; Yakovlev, 2009, 2011; Bayanov et al. 2015; Yakovlev et al., 2015, 2020; Yakovlev & Witt, 2016; Streltsov et al. 2022). Additionally, some localities in Popasnaya and Novoaydar districts of Lugansk Region (Ukraine) (<https://www.inaturalist.org/observations/127394200>; <https://www.inaturalist.org/observations/63887630>; <https://www.inaturalist.org/observations/102396142>) and Greece, Ditiki Makedonia, Siatista (western Kozani) (<https://www.inaturalist.org/observations/62710006>) are provided on iNaturalist.

**Material examined. Russia:** male (holotype), Wolsk, 9 Juny, coll. Eversmann (ZISP); 1 male, 1 female, Rostov Reg., Krymskij vill., 7.vi.2010, leg. E. Khachikov (RYB); 1 male, Beta, viii.[19]28, O. Chernova (ZISP); 2 males, Kerch (ZISP); 3 males, Stavropol, 12.vi.920, Filipiev (ZISP); 2 males, Taganrog, 15.vi.1817 (ZISP); 7 males, Groznyi, 17.v.908, Rodnensky leg. (ZISP); 8 males, Mashuk Mt., 9.vi.908 (ZISP); 1 male, Gelendzhik, 9.vi.908 (ZISP); 2 males, Stavropol, 12.vi.920, Filip'jev leg. (ZISP); 2 males, [Dagestan], Tarki, 2.vii.945, Rjabov leg. (ZISP); 1 female, Caucasus boreal, Fl. Kuma, 21.v.[18]90, Kozhannchikov (ZISP); 2 males, Neftekumsk (MWM); 2 males, Derbendt (MWM, ZISP); 1 male, 1 female, Rostov Don Reg., Lake Manytch Gudilo (MWM); 2 males, Daghestan, Kapchugaj (ZMKU); 1 male, Gigant, 17.vi.2014 (APC); Rassvet, 9 males, 23–25.v.2013, 6 males, 12–18.vi.2014, 3 males, 2.vii.2014 (APC); 4 males, 1 female, Sober-Oaschkh, 19.vi.1999, 5 male, 2 females, 29.vi.2006 (VSC); 2 males, Janina Gorge, 26.vi.2000, 11 males, 1 female 27.v.2008 (VSC); 6 males, 1 female, Jakhno, 13–15.vi.2003, 11 males, 13.vii.2003, 1 male, 3.vi.2005, 3 males, 2 females, mass flying in light trap, 31.v–1.vi.2007 (VSC); 1

male, Shize, 22.vi.2004 (VSC); 1 female, Voronezhskaja, 31.vi.2006 (VSC); 3 male, Lysaja 3, 31.v.2007, 3 males, 20.vi.2007, 1 male, 5.vii.2010 (G. Schemberger) (VSC); 4 males, Akhilleon, 13.vi.2009 (VSC); more than 30 individuals for 150 minutes, Shakhan, 17.vi.2009 (VSC); 3 males, mass flying in light trap, Oblego, 18.vi.2009 (VSC); 3 males, Leninskiy Put, 25.06.2009 (VSC); 1 male, Suzdal'skaja, 26.vi.2009 (VSC); 1 male, 1 female, Gajduk, 3.vi.2010 (VSC); 2 males, Red October, 23.vi.2011 (VSC); 1 male, Sapun, 22.vii.2011 (VSC); 3 males, 1 female Lysaja 3, 26.vi.2004, 3 males, 7.07.2014 (VSC); 1 male, Il'skaja, 16.vi.2014, 1 male, 29.vi.2014 (E. Zhukov) (VSC); 3 males, Russia, Saratov Reg., Khvalynski distr., 5 km W Khvalynsk, Dacha Khrenova, 902 m, 4–10.vii.2011, leg. V.V. Anikin (RYB); 6 males, 1 female, Saratov Reg., Khvalynski distr., 5 km W Khvalynsk, Dacha Khrenova, 902 m, 1–10.vii.2017, leg. V.V. Anikin (RYB); 1 male, Volgograd region, Olkhovskiy district, Mikhaylovka, 7.vii.2018, leg. S. Legotin, M. Elistratov & S. Didenko (RYB); 8 males, Guberli (ZISP); 8 males, Russia, S. Ural, Orenburg Reg., Guberlya village, 22.vi.2003, leg. V. Zurilina (RYB); 29 males, 3 females, S. Ural, Orenburg Reg., near Kuvandyk, 12.vi.1999, V. Zurilina leg. (RYB); 13 males, 2 females, S. Ural, Orenburg Reg., near Kuvandyk, 12.vi.1997, V. Zurilina leg. (RYB); 18 males, 1 female, Russia, S. Ural, Orenburg Reg., near Kuvandyk, 21–23.vi.2004, V.O. Zurilina leg. (RYB); 8 males, Russia, S. Ural, Orenburg Reg., near Kuvandyk, 17.vi.2016, V.O. Zurilina leg. (RYB); 22 males, Russia, S. Ural, Orenburg Reg., near Kuvandyk, 25–29.v.2019, V.O. Zurilina leg. (RYB); 13 males, Russia, S. Ural, Orenburg Reg., near Kuvandyk, 13–18.vi.2020, V.O. Zurilina leg. (RYB); 3 males, Russia, S. Ural, Orenburg Reg., near Kuvandyk, 26–29.vi.2021, V.O. Zurilina leg. (RYB); 2 females, Bashkortostan Rep., Yantysh village, 19.vi.2007, leg. V. Zurilina (RYB). **North Macedonia:** 2 males, Mazedonien, Ochrid, 700 m, 23–27.vi.1936, coll. V. Bartha (MWM, ZSM); 2 males, Mazedonien, Ochrid, 700 m, 22.vi.1959, G. Thurner (MWM, ZSM); 18 males, Mazedonien, Drenovo bei Kavadar, 1–9.vi.1957, Thurner leg. (MWM, ZSM); 20 males, Stari Doiran, 150–300 m, Daniel leg. (MWM); 1 male, Katlanovo, 10.vi.1979, Schaidler (MWM). **Bulgaria:** 1 female, Kozuch, 10.vi.1981, leg. Ganev (MWM); 1 male, Mičurin-lozenec, 22.vi.1971, V. Felix legit (MWM). **Greece:** 16 males, 3 females, Nordgriechenland, Olympos Gebiet, Litochoron, 500 m, 12–23.vi.1957, leg. Daniel (MWM); 1 female, Peloponnes, Zachlerou, Mitte vi.1959, Demelt leg. (MWM); 2 males, Peloponnes, Chelmosgeb. 700 m, 19–20.vi.1960, Thurner leg. (MWM). **Crimea:** 1 male, Bakhchisaraj distr., Sokolinov vill., 900–1100 m, 6–11.vii.2014, leg. V. Anikin (RYB); 17 males, Feodosiya distr., Kurortnoe vill., 8.vi.1997, E. Rutjan (RYB); 2 males, Feodosiya distr., Kurortnoe vill., biostation, 44°54'49.08"N 35°12'6.48"E, 7–8.v.2016, leg. S. Knyazev (RYB); 1 female, Agarmysh (ZISP); 1 male, Burulcha, 17.v.902 (ZISP); 1 male, Alupka, 20.vi.18[94], Melioranski (ZISP); 1 male, Sudak (ZISP); 2 males, [Crimea], Belbek station, v.1907, N.Y. Kuznetsov (ZISP); 8 males, Staryi Krym, 14.vi.1913, S. Tschetverikov (ZISP); 1 male, Alsu, Krim, 28.vi.[19]07, W. Pliginski (ZISP); 3 males, Sebastopol, 2.v.[19]06, W. Pliginski (ZISP); 2 males, Simferopol, 6–8.vi.1920, V. Kuznetsov (ZISP). **Ukraine:** 1 male, Odessa (ZISP). **Armenia:** 2 males, Ararat Prov., Khosrov Reserve, 2000 m, 01.

vii.1996, S. Andreev (RYB); 1 male, Ararat Prov., 7 km SW Surenavan vill., 1300 m, N39°48'36"; E 44°50'8", 4.vii.2011, P. Romantsov leg. (RYB); 3 males, Ararat Prov., Khosrov Reserve, Garni, N 40°06'01"; E 44°46'47", 1600–1800 m, 22–27.vi.2010, A.V. Krupitskiy leg. (RYB); 1 male, Vayots Dzor Prov., 12 km SW Ehegnadzor, 3 km NW Noravank Monastery, 1250 m, 39°42'12" N; 45°12'26" E, 8.vii.2011, leg. P. Romantsov leg. (RYB); 14 males, Garni, 28.vi.2000, leg. Kazaryan (RYB); 6 males, Ararat district, Dvin village, Yeranos Mts., 1600 m, 11–15.vi.2009, leg. Yu. Shevnin (RYB); 26 males, Yeghegnadzor suburbs, Aioldzorsky Range, 150 km SE Yerevan, 2000 m, 1–27.vii.2009, leg. Yu. Shevnin (RYB); 5 males, Erivan, 15.vi.[19]28, Ryabov (ZISP); 12 males, Armenia, Inaklyu, 18.vii.1936, Ryabov (ZISP); 1 male, Lenakan [Gyumri], 7.vii.1957 (ZISP). **Georgia:** 1 male, South Ossetia, Tskhinval Distr., 2 km NW Grom, 42°10'6" N / 44°11'53" E, 930 m, 22–25.06.2021, A. Streltsov, P. Ustjuzhanin & R. Yakovlev leg. (RYB); 3 males, Kakheti Prov., Sagarejo distr., 41°29'41"N; 45°17'32"E, 750 m, 28.vi.2013, leg. E. Rutjan (RYB); 6 males, 2 females, Tiflis, 14.vi.1907 (MGT); 4 males, Achatala, 17.vi.1910 (MGT); 1 female, Shida Kartli, the Saguramskii reserve, 550–600 m, 7.vii.1970, E. A. Didmanidze leg. (MGT); 5 males, Kaheti, the Vashlovanskii reserve, 10.v.1973, 30.vi.1973, 31.vii.1973, 29.vi.1974, E.A. Didmanidze leg. (MGT); 5 males, 1 female, Kaheti, Shirak-Eldari Steppe, 10.v.1973, 28.vi.1973, E. A. Didmanidze leg. (MGT); 1 male, Meskhet-Dzhavakheti, Hando vill., near Ahalkalaki, 14.vii.1964, E. A. Didmanidze leg. (MGT); 2 males, Chachuny, Tiflis g., 19.v.[18]96, Mlokosevich (ZISP); 3 males, Kodzhory, Tiflis gub., 17–18.vi.916, Andrievski (ZISP); 1 male, Lagodekhi, 10.v.[18]93, Mlokosevich (ZISP); 3 males, Borzhom (ZMKU). **Azerbaijan:** 17 males, Helendorf [Goygol] (ZISP); 1 male, Lerik, 2.vii.1964, leg. A. Zagulyaev (ZISP); 2 males, Kusarchaj vill., 4.vi.1964, Pastukhov (ZISP); 1 male, Talysh, Astara distr., 8 km SW Gomushan vill., 1700 m, 28.vi.2003, I. Pljustch (RYB); 1 male, Talysh, 30 km SE Masalli, 800 m, 3.vi.2005, leg. V. Tikhonov (MWM). **Turkey:** 1 male, Ankara, Kizilcahaman, 1000 m, 28.v.71, leg. et coll. Kunz (MWM); 2 males, 1 female, Kars, vic. Kagizman, 10 km NW Kötek, 1750 m, leg. de Freina (MWM); 1 male, Agri, nördl. Cumachay, 1900–2100 m, 18.–19.vii.80, 1 cf, leg. de Freina (MWM); 1 male, Agri, 7 km E Agristepe, 2200 m, 20–22.vii.1990, leg. Gabor Ronkay (MWM). **Kazakhstan:** 1 male, 50 km NE Aktobe, Karabulak river, 50°53'N / 57°54'E, 370 m, 29.vi.2007, leg. P. Gorbunov (MWM); 5 males, Karaganda reg. Bektau-Ata Mts., 47.46°N / 74.79°E, 581 m, 2.vi.2015, S.V. Titov & M. Černila leg. (RYB); 6 males, Karaganda Province, Takrau River, Saryterek aul, 700 m, 48°05'N / 75°18'E, 29.v.2015, leg. P. Gorbunov (RYB); 1 male, [Akmola reg.], Kokshetau hills near Terisakkan river, 2.vii.1958, leg. Falkovich (ZISP); 1 male, Karaganda Reg., Zhana-Arka distr, 6.vi.1959, leg. Aibasov (RYB); 5 males, Karaganda Province, Zhaksy-Arganaty mountain, 49°19'N / 67°05'E, 19.vi.2010, P. Gorbunov (RYB); 1 male, Karaganda Reg., Zhana-Arka distr, Kok-Sengir Mts., 10.vi.1959, leg. Aibasov (ZIA); 1 male, Kazakhstan, Karagandy Reg., Bektau-Ata Mts., 70 km N of Balkhash, 47°26'52.20"N / 74°41'5.92"E, 7.vii.2018, at light, S.A. Knyazev leg. (SKO).





**Figures 1–15.** *Dyspessa salicicola* (Eversmann, 1848), imago males: 1. *Cossus salicicola* Eversmann, 1848, holotype (ZISP); 2. *D. s. salicicola*, Northern Macedonia (MWM); 3. *D. s. salicicola*, Greece (MWM); 4. *D. s. salicicola*, Crimea (MWM); 5. *D. s. salicicola*, Armenia (MWM); 6. *D. s. salicicola*, Armenia (MWM); 7. *D. s. salicicola*, Azerbaijan (MWM); 8. *D. s. salicicola*, Turkey, Agri Province (MWM); 9. *D. s. salicicola*, Turkey, Nevsehir Province (MWM); 10. *D. s. aschabadensis*, Paratype, Turkmenistan (MWM); 11. *D. s. aschabadensis*, Turkmenistan (MWM); 12. *D. s. aschabadensis*, Turkmenistan (MWM); 13. *D. s. aschabadensis*, Iran, Zanzan Province (MWM); 14. *D. s. aschabadensis*, Iran, Mazandaran Province (MWM); 15. *D. s. aschabadensis*, Iran, Alborz Mountains (MWM).

**Diagnosis.** Extremely variable subspecies, distinctive in its big size (length of male forewing 11–14 mm, female 13–15 mm). Antenna bipectinate, setae 2–2.5 times longer than antenna stem diameter (in medium third). Forewing light-yellow, frame mottled, series (3–5) dark-brown spots discally. In rare cases, this series of discal spots completely reduced. Hindwing without pattern, colour from light-grey to grey. Valve apically lanceolate, with expressed crest on costal margin, proximal edge of crest sharply expressed, distal edge smooth; phallus 1/3 shorter than valve, poorly curved, gradually narrowing to apex (Figs 28–31).

**Taxonomical remarks.** We believe that the opinion of Daniel (1953, 1962) on the attribution of the Armenian populations to the subspecies *D. s. aschabadensis* Daniel, 1953 is incorrect. A large comparative material, including the serially studied male genitalia clearly showed the consubspecificity of Armenian (and other Transcaucasian and Turkish) populations with a nominative subspecies. There are minor differences in the wing pattern, the Armenian populations are characterized by a more stable spotty pattern on the forewing, than the specimens from the southern Urals, which have a very variable wing pattern (Figs 40–41).

### *Dyspessa salicicola aschabadensis* Daniel, 1953

Figs 10–15, 32–33

Daniel, 1953, Mitt. Münch. Ent. Ges. 43: 260.

Type locality: Asia centr., Aschabad [Turkmenistan].

Type material (holotype) in ZSM.

**Distribution:** Turkmenistan, Iran (Daniel 1962; Yakovlev & Witt 2016; Alipanah et al. 2021).

**Material examined. Turkmenistan:** 2 males (paratypes), Merw, 7.vii. (MWM); 3 males (paratypes), Ashkhabad, coll. Tancre (MWM); 2 males (paratypes), Achal-Tekke (MWM); 1 male, Kara-Kala, 14–17.v.1993 (MWM); 5 males, Kopet-Dagh Mts., 10 km S of Aidere, 27.vi.1992, 600–1000 m, 56°46E, 38°14N, leg. B. Fabian, B. Herczig, A. Podlussany and Z. Varga (MWM); 7 males, Kopet-Dagh Mts., 1000 m, Sayvana valley, cca 5 km SW of Saivana, 56°50E, 38°17N, 28.vi.1992, leg. B. Fabian, B. Herczig, A. Podlussany and Z. Varga (MWM); 1 male, Dushak, 1800 m, 23.vi.1992, leg. M. Danilevsky (MWM); 1 male, Kara-Kala distr., N slope of Syunt Mt., 12.v.1953, Kuznetsov (ZISP). **Iran:** Alborz Prov.: 1 male, 6 km E zadbar-Tâleghân Rd., 2350 m, 21.vii.1988, leg. Mirzâyâns, Badii (HMIM); Ardebil Prov.: 1 male, Ardebil, Namin, 1860 m, 20.vi.2002, leg. Hâjiesmailiân, Mofidi-Neyestânak, Deuve, Montreuil (HMIM), 1 male, Neur Lake, 2500 m, 26.viii.2010, leg. Khâni, Mofidi-Neyestânak (HMIM), 1 male, Hashtchin-Khalkhâl Rd., N 37°26'54.5", E 48°24'50.6", 837 m, 16.vii.2013, leg. Afsariân, Sarafrâzi (HMIM); East Azarbâijân

Prov.: 1 male, Kaleybar, Ghaleh Bâbak, 1500 m, 5.vii.1997, leg. Mofidi-Neyestânak, Barâri (HMIM); Gilân Prov.: 1 male, Eshkevar, Gilânchâkân, 1820 m, 27.vi.1997, leg. Barâri, Mofidi-Neyestânak (HMIM), 1 male, Rudbâr, Darreh Dasht, 900 m, 25.vi.2002, leg. Hâjiesmailiân, Serri, Mofidi-Neyestânak, Deuve, Monteuil (HMIM); Golestân Prov.: 2 males, 2 females, Golestân National Park, Dasht, 960 m, 18.vi.1977, leg. Pâzuki, Abâi (HMIM), Golestân National Park, Ghush Cheshmeh, 1000 m, 29.vi.2001, leg. Ebrâhimi, Osten, Mofidi-Neyestânak (HMIM), 2 males, Golestân National Park, Koylar, 1250 m, 23.vii.1996, leg. Ebrâhimi, V. Nazari (HMIM), 1 male, Golestân National Park, Koylar, 1350 m, 29.vii.2001, leg. Gilâsiân, Moghaddam, Ghayurfar (HMIM), 2 males 1 female, Golestân National Park, Mazârli, 350 m, 19.–20.vi.1977, leg. Pâzuki, Abâi (HMIM), 5 males, 1 female, Golestân National Park, Tang-e Gol, 620 m, 23.–25.v.1986, leg. Pâzuki (HMIM), 1 male, Golestân National Park, Tang-e Gol, 700 m, 24.–27.vii.1996, leg. Ebrâhimi, V. Nazari (HMIM), 1 female, Golestân National Park, Tang-e Râh, 930 m, 7.v.2000, leg. Badii, Ebrâhimi, Mofidi-Neyestânak (HMIM), 1 male, Khânbebin, Shir båd, 80 m, 5.vii.2001, leg. Mofidi-Neyestânak, Osten, Ebrâhimi (HMIM), 2 males, gh Ghalâ, Chinsivly, 0 m, 2.vii.2001, leg. Ebrâhimi, Osten, Mofidi-Neyestânak (HMIM), 3 males, Gorgân, Loveh forest, 10.viii.1967, leg. Abâi, 4 males, Tuskastân, Gorgân- Shâhrud Rd., N 36°44'37.6", E 54°34'02.6", 660 m, 15.vii.2007, leg. Zahiri, Karimzâdeh (HMIM); Khuzestân Prov.: 1 male, Izeh, Susan, 600 m, 26.iv.1995, leg. Badii, Ardeh, Parchami-Arâghi (gen. prep. No. HA-2386, HMIM); Fârs Prov.: 1 male, Firuz båd, Ghir, 11.iv.1975, 1160 m, leg. Borumand (HMIM); North Khorâsân Prov.: 14 males, Golestân National Park, Imeh, 1600 m, 26.–29.v.1986, leg. Pâzuki (HMIM), 8 males, Golestân National Park, Imeh, 1650 m, 17.–25.v.1988, leg. Pâzuki (HMIM), 3 males, Golestân National Park, Imeh, 1590 m, 6.v.1999, leg. Mofidi-Neyestânak, Barâri, Manzari (HMIM), 16 males, Golestân National Park, Sulgerd, 1150 m, 8.v.1999, leg. Moghaddam, Barâri, Manzari (gen. prep. No. HA-1926, HMIM), 2 males 1 female, Yâkhti Kalân, 2.vi.1986, leg. Pâzuki; Mâzandarân Prov.: 1 male, Marzan båd, 400 m, 6.vii.1995, leg. Badii, Sarafrâzi, Linnavori, 1 male, Siâhbisheh, 10.vi.1974, leg. Abâi (HMIM), 1 male, Behshahr, Pasand, Pasand Res. Sta., 5.vi.1981, 6.vii.1981, no collector given (HMIM); West zarbâijân Prov.: 1 male, Mâku, vâjigh, Bâshkand, 1400 m, 16.vi.1976, leg. Pâzuki, Borumand (HMIM); Zanjân Prov.: 1 male, Elburz Mt., Gharâvol Dâgh, 2500 m, 3,4.vii.1999, leg. Hofmann, Meineke (HMIM), 2 males, Zanjân- Gilvân Rd., Gharâvol Dâgh, 2500 m, 9, 26, 27.vi.2001, leg. Hofmann, Meineke, Tremewan (HMIM), 1 male, Armaghân Khâneh, Mâri vill., N 36°59'52.0", E 48°28'39.0", 2300 m, 21.vi.2015, leg. Nâserzâdeh, Hâjiesmailiân, Montreuil (HMIM); 2 males, Iran, Zanjân, Kuh-e-Sindân (= Sandân Mt.), 25 km NE Zanjân, 2200 m, 15.vii.1997, leg. Eckweiler & Ten Hagen (MWM); 7 males, NO Persien, Khorassan (= Khorâsân), Abassabad (= Abbâs båd) NP, 1200 m, 12.v.?, leg. de Freina (MWM); Mazandaran, Mt. Sah (= Shâhkukh), Azedsahr (= zâd Shahr which is located in Golestân Province) distr., 1000 m, 2.vi.1999, leg. Gasko (MWM); Mazandaran prov., 35 km S Amol, 700 m, 14.v.1998, leg. Fabian & Szekely (MWM); 2 males, 15 km S of Azad Shar (= zâd Shahr), 28–29.vi.2000, leg. K. Gasko (MWM);



2 males, Azarbaigan-e, Sarked (an erroneous spelling of Sharghi = East Azarbâijân), Dizaj, 15.vi.2000, leg. K. Gasko (MWM). 1 male, road Tehran-Chalus, Marzanabad area, 2 km SE Tovir v., 900 m, 23.vi.2010, N 36°22'26"; E 51°17'23", leg. K. Kolesnichenko (RYB); 2 males, Golestan, 20 km S Gorgant (= Gorgân), 900 m, 2.vi.2009, leg. K. Kolesnichenko (RYB); N. Persia, Astrabad, 26.v.1905, Filippovich (ZISP).

**Diagnosis.** Subspecies differs in relatively small size (length of male forewing 10–13 mm, females not examined). Forewing yellow or dark-yellow, with mottled frame and series (from 3 to 5) dark-brown spots discally, often fusing into band, spots bigger than in nominative subspecies; root, discal and postdiscal area almost always with dense sputtering of grey or brown scales. Hindwing without pattern, colour from light-grey to grey. Valve apically lanceolate, crest on costal margin more expressed than in nominative subspecies, proximal and distal margins of crest sharp, well-defined; phallus 1/3 shorter than valve, poorly curved, gradually narrowing to apex (Figs 32–33).

**Taxonomical remarks.** We provisionally define all the Iranian specimens as the subspecies *D. s. aschabadensis* (Alipanah et al. 2021). Probably, the populations from northwestern portion of Iran can belong to the nominative subspecies, this suggestion needs a separate study.

### *Dyspessa saissanica* Yakovlev, 2014

Figs 16–18, 34–35

Yakovlev, 2014: 657.

Type locality: E. Kazakhstan, Kurchum distr., Bukombaj Mts., 48°13'N / 84°43'E.

Type material. Holotype in ZISP, examined.

**Distribution:** E. Kazakhstan, Zaisan Valley; North-Western China (Yakovlev et al. 2016).

**Material examined.** Kazakhstan. Holotype, male, E. Kazakhstan, Kurchum distr., Bukombaj Mts., 550 m, 48°13'N / 84°43'E, 9–10.vi.2012, leg. R. & A. Yakovlev (ZISP); paratype, male, Zaisan (SW part of Altai), coll. A. Meinhardt (ZISP). Not type material: 16 males, E. Kazakhstan, Altai Mts., Kurchum distr., 26 km SE of Barak-Batyr vill., unnamed mountain massif, gravelly slopes, 610 m, 48°29'14"N / 84°07'02"E, 20.vi.2014, Volynkin A.V. & Titov S.V. lg. (RYB); 14 males, 1 female, North-East Kazakhstan, South Altai., Kyzyltas Mts., 6 km W of Kyzyltas vill., 620 m, 48°16'N / 85°26'E, 6.vi.2016, leg. P. Gorbunov (RYB); 1 male, Eastern Kazakhstan, Saur Mts, 20 km SEE Zaisan, 47°22'N / 85°09'E, 1225–1250 m, 20.vi.2018, R. Yakovlev, V. Doroshkin, V. Rudoj & A. Naydenov leg. (RYB); 1 female, Eastern Kazakhstan, Saur Mts, Kenderlik river Valley (left bank), 2 km W Kenderlik village,

24.vi.2018. 47°28'N / 85°12'E, 740 m, R. Yakovlev, V. Doroshkin, V. Rudoj & A. Naydenov leg. (RYB). China: 1 male, Chamil-hami, Tancre (ZSM).

**Diagnosis.** Length of forewing 13–15 mm, light-coloured, forewing creamy, with thin grey frame (in *D. salicicola*, frame mottled), with poorly noticeable series of dark spots discally (often reduced), hindwing light-grey. Valve more narrow than that of *D. salicicola*, crest on costal margin of valve less expressed, phallus 1/4 shorter than valve.

Length of forewing in females 14–15 mm. Forewing light-yellow, almost without pattern; hindwing dark-grey.

### ***Dyspessa kostjuki* Yakovlev, 2015**

Figs 19–21, 36

Eversmannia 3/4: 22.

Type locality: Ukraine, “Proval’skaya Stepp” Naturschutzgebiete.

Type material (holotype) in MWM.

**Distribution:** SE Ukraina, Crimea and SW Russia (Yakovlev 2005, 2007, 2011; Yakovlev et al. 2015; Suchkov 2019).

**Material examined. Ukraine:** Holotype (male), Ukraine, “Proval’skaya step” Naturschutzgebiete, licht, 11.vii.1997, I. Kostjuk leg. (MWM); 19 males (paratypes), same data (MWM); 1 male (paratype), Ukraine, Nikolaevskaja-Gebiet, Pervomajskij-Bezirk, Kuziptschino, 20.vi.1992, leg. A. Bidzilja & Kljutschko (MWM); 1 male, Donetsk Reg., Khomutovskaya Steppe, 15.vi.1975, leg. A. Korovin (RYB); 1 male, 1 female, Donetsk Reg., Amvrosievka, 15.vi.1975, leg. A. Korovin (RYB). **Crimea:** 2 males (paratypes), Ukraine, Krim, Karadag, 4.vii.1995, leg. Z.F. Kljutschko; 10 males (paratypes), Ukraine, Crimea, Karadagh, 16.-24.vi.1993, leg. Budashkin (MWM); 15 males (paratypes), same data, 30.v.–20.vi.1994, leg. Budashkin (MWM); 4 males (paratypes), Ukraine, Krym, Karadagh, 24.vi.1974, Z. Klyuchko (AHU); 1 male (paratype), Krym, Karadagh, 6.vii.1994, leg. Budashkin (AHU); 2 males (paratypes), Krym, Feodosia distr., Kurortnoe vill., 8.vi.1997, E. Rutjan leg. (AHU); 9 males, Simferopol distr., Krasnolesie vill., balka Tavelchuk, 26.v.2013, leg. V. Savchuk (RYB); 10 males, Bakhchisaraj distr., Nauchnyi vill., Sel-Bukhra Mt., 11.vi.2013, leg. V. Savchuk (RYB); 2 males, Feodosia distr., Kurortnoe vill., 13.vi.1997, E. Rutjan leg. (RYB); 1 male, Tarkhankut, Dzhangul, 15.vi.1996, A. Belov leg. (RYB). **Russia:** 9 males (paratypes), Russland, Rostov-Don, 40 km W Nedwigovka, 12.vi.1993, ex coll. Schintlmeister (MWM); 2 males, Dagestan Rep., Rutul district, Rutul vill., Lalaan riv., 1400 m, 31.v.2021, leg. V. Zurilina (RYB); 1 male, Dagestan Rep., Urban district of Makhachkala, Talgi vill., 8.vi.2021, leg. V. Zurilina (RYB); 1 male, 8 km S Makhachkala (MWM); 1 male, Daghestan, Makhachkala city,

Karaman-2 distr., 25.vi.2009 (APC); 1 male, Daghestan, Makhachkala city, Karaman-2 distr., 21.vi.2011 (APC); 1 male, Bessergenevskaja, 3.vi.2009 (APC); 1 ex., Volochaevsky, 7.vii.2009 (APC); Gigant, 1 male, 7.vi.2011, 2 males, 4.vi.2012 (APC); 2 males, Kamensk, 9.vi.2008 (APC); Konygin, 1 male, 16.vi.1993, 3 males, 2–18.vi.2007, 1 male, 5.vi.2010 (APC); 2 males, Kuibyshevo, 20.v.2009 (APC); 4 males, Nesvetay, 9.vi.2008 (APC); 4 males, Nizhnesazonov, 22.vi.2011 (APC); 7 males, Olympia-camp, 6–8.vi.2011 (APC); Rasswet, 1 male, 29.v.2013, 6 males, 9–30.vi.2013 (APC); 1 male, Ternovoy, 10.vi.2012 (APC).

**Diagnosis.** Length of forewing in males 9–12 mm. Setae 1.5 times longer than antenna stem diameter (in its medium part), gap between setae processes wider than the process thickness. Forewing light-yellow or ochre, with mottled frame and fringe, postdiscally on wing – series of small, sometimes poorly expressed 2–4 dark round spots. About one third of specimens have completely reduced spots (particularly, pattern reduced in specimens from eastern Ukraine). Hindwing grey, fringe light-yellow. Valve extended in medium third, with trapezoidal process on costal margin. Phallus thin, poorly curved, twice shorter than valve.

Length of forewing in female 9–11 mm, pattern resembles that of male.

### *Dyspessa arabeska* Yakovlev, 2005

Figs 22–24, 37

Eversmannia 3/4: 23.

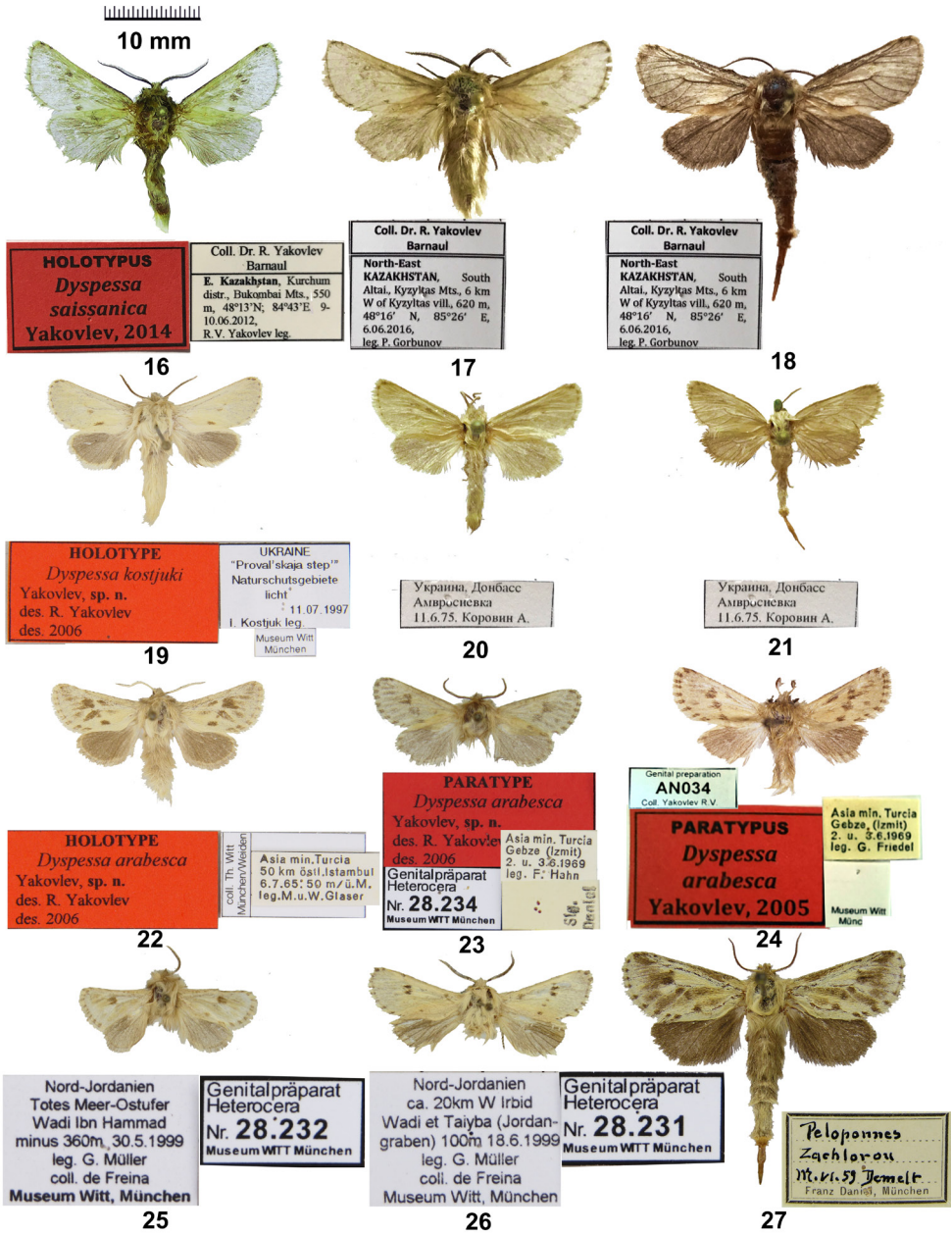
Type locality: Asia min., Turcia, 50 km östl. Istanbul.

Type material (holotype) in MWM.

**Distribution:** Western Turkey (Istanbul prov.).

**Material examined.** Male (Holotype) Asia min., Turcia, 50 km östl. Istanbul, 6.vii.65, 50 m/ü.M., leg. M. u W. Glaser (MWM). Paratypes: 8 males, same data, GenPr MWM: 9823, 9822, 9812 (MWM); 4 males, Asia min., Turcia, Gebze (Izmit), 2 u. 3.vi.1969, leg. F. Hahn (MWM).

**Diagnosis.** Length of forewing in males 8–10 mm. Setae equal to antenna stem diameter (in medium third). Forewing light-yellow, with mottled yellow frame and fringe, on wing postdiscally – series of elongated brown spots forming longitudinal stripes, often fused between each other and making bands, brown stroke in discal cell, similar stroke underlining discal cell from below. In a few specimens, thin brown stroke along costal margin of forewing. Hindwing grey, fringe light-yellow. Valve extended in middle, crest on costal margin poorly expressed, semicircular. Phallus 1/3 shorter than valve, poorly curved.



**Figures 16–27. *Dyspessa*, imago specimens:** 16. *D. saissanica*, male, Holotype (ZISP); 17. *D. saissanica*, male, NE Kazakhstan (RYB); 18. *D. saissanica*, female, NE Kazakhstan (RYB); 19. *D. kostjuki*, male, Holotype (MWM); 20. *D. kostjuki*, male, Ukraine (RYB); 21. *D. kostjuki*, female, Ukraine (RYB); 22. *D. arabesca*, male, Holotype (MWM); 23. *D. arabesca*, male, Paratype (MWM); 24. *D. arabesca*, male, Paratype (MWM); 25. *D. muelleri*, male, Holotype (MWM); 26. *D. muelleri*, male, Paratype (MWM); 27. *D. salicicola salicicola*, female, Greece (MWM).

***Dysoessa muelleri* Yakovlev, sp. nov.**

<http://zoobank.org/3844667C-9EA8-40EA-9F94-ED8644CD47A0>

Figs 25–26, 38–39

**Material:** *Holotype* (male), “Nord Jordanien, Totes Meer-Ostufer, Wadi Ibn Ham-mad, minus 360 m, 30.v.1999, leg. G. Müller” (GenitalPräparat Heterocera MWM: 28.232). *Paratypes*: 6 males, “Nord Jordanien, ca. 20 km W Irbid, Wadi et Taiy-ba, Jordan graben, 100 m, 18.vi.1999, leg. G. Müller” (GenitalPräparat Heterocera MWM: 28.231).

**Diagnosis.** The new species is similar to the small species *D. kostjuki* and *D. arabesca*. The poorly expressed pattern of the forewing is similar to that of *D. kostjuki*, but the new species reliably differs in the male genital structure: the valve is not extended in the medium third and the bump on the costal margin of the valve is poorly expressed.

**Description.** Length of forewing in male 9–12 mm. Antenna bipectinate, setae 1.5 times longer than antenna stem diameter (in medium third). Forewing ochre-yellow, with mottled frame and series of poorly expressed blurred brown spots (2–4 in number) postdiscally, fringe yellow. Hindwing grey, without pattern.

Male genitalia. Uncus triangular, with poorly sclerotized apex; gnathos arms thick, of medium length; gnathos poorly structured; valve lanceolate, poorly curved, costal margin (on border between medium and distal thirds) with small bumpy process, sclerotized more than the rest of valve surface; transtilla process short, poorly curved, basally very thick, apically curved as a hook; juxta small, saddle-like; saccus semicircular, quite robust; phallus 1/3 shorter than valve, almost straight, poorly narrowing to apex, vesica aperture in dorso-apical position, in length about 1/3 of phallus, vesica without cornuti.

Female unknown.

**Distribution.** Northern Jordan.

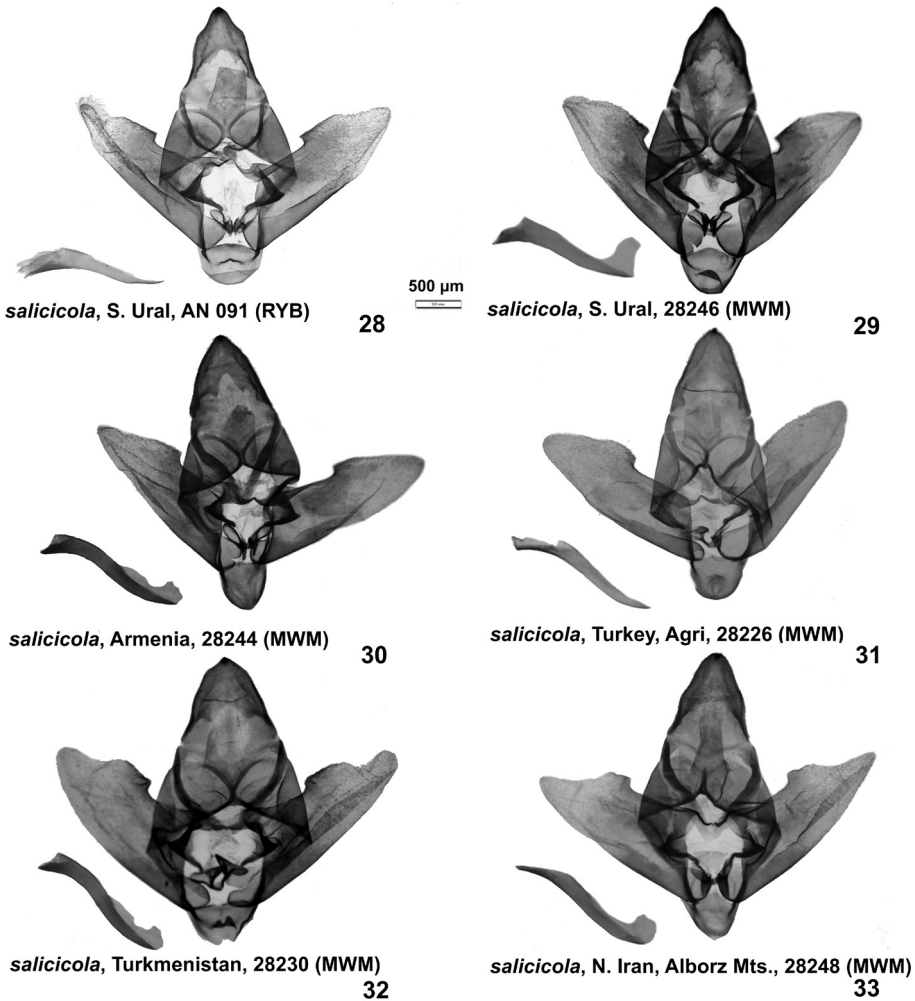
**Etymology.** The new species is named after the well-known German entomologist, researcher in tropical medicine and fauna of Lepidoptera of Eurasia and Africa, Dr. Günter Müller (Munich).

## Discussion

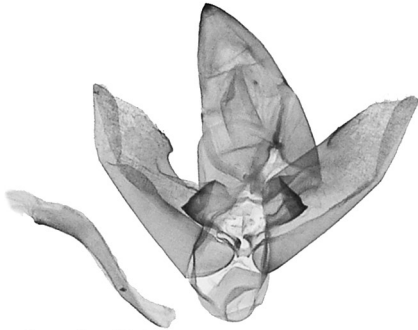
Members of the *Dysoessa salicicola* species group are widespread in western Palaearctic (Fig. 42), the eastern limit of its distribution range lies in Eastern Kazakhstan and Northwestern China (*D. saissanica*). *D. salicicola* is the most widely distributed species of the group, however the question about the boundaries of its subspecies'



ranges remains open. It seems promising to conduct a molecular genetic study of this species group representatives to confirm the status of the taxa indicated here, as well as to clarify the subspecies affiliation of *D. salicicola* populations from the Transcaucasus and Turkey.

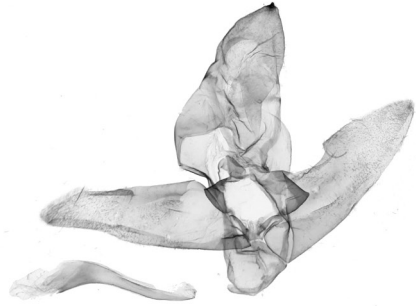


**Figures 28–33.** *Dyspessa salicicola* (Eversmann, 1848), male genitalia: 28. *D. s. salicicola*, Russia, Southern Ural, Orenburg Reg., Kuvandyk (RYB); 29. *D. s. salicicola*, Russia, Southern Ural, Orenburg Reg., Kuvandyk (MWM); 30. *D. s. salicicola*, Armenia, Garni (MWM); 31. *D. s. salicicola*, Turkey, Agri Province, Cumaçay (MWM); 32. *D. s. aschabadensis*, Turkmenistan, Kopet-Dagh, Kara-Kala (MWM); 33. *D. s. aschabadensis*, Iran, Alborz Mts., Chalush Region (MWM).



*saissanica*, Holotype

34



*saissanica*, Kazakhstan, South Altai, AN 036 (RYB)

500  $\mu$ m

35



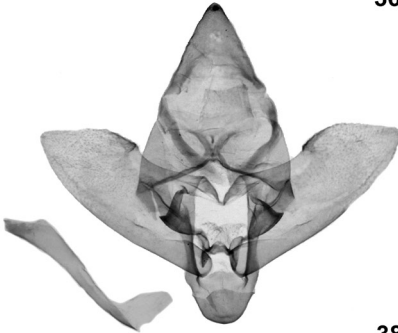
*kostjuki*, Paratype, Crimea, 28235 (MWM)

36



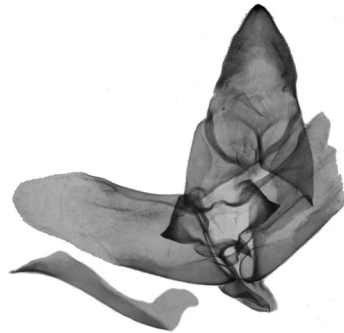
*arabesca*, Paratype, 28234 (MWM)

37



*muelleri*, Holotype, 28232 (MWM)

38



*muelleri*, Paratype, 28231 (MWM)

39

**Figures 34–39. *Dypsessa*, male genitalia:** 34. *D. saissanica*, Holotype (ZISP); 35. *D. saissanica*, NE Kazakhstan, Southern Altai (RYB); 36. *D. kostjuki*, Paratype, Crimea (MWM); 37. *D. arabesca*, Paratype (MWM); 38. *D. muelleri*, Holotype (MWM); 39. *D. muelleri*, Paratype (MWM).



**Figures 40–41.** Series of males of *Dyspessa salicicola* (RYB): 40. S. Ural, Orenburg Region, near Kuvandyk; 41. Armenia, Yeghegnadzor suburbs, Aioltdzorsky Range, 150 km SE Erevan.



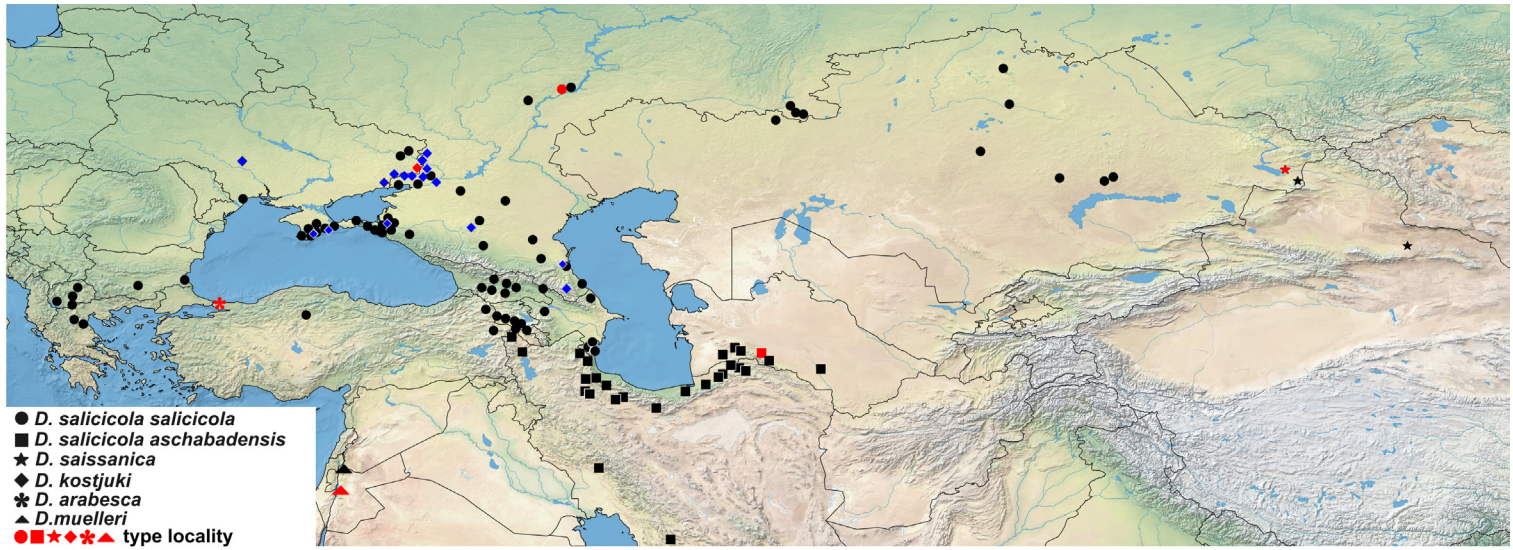


Figure 42. Map showing distribution of *Dyspessa salicicola* species group.

## Acknowledgments

The authors are indebted to Mr. Thomas Witt† and Mr. Harald Sulak (Museum Witt, Munich), Sergei Sinev (Sankt-Petersburg), Helen Alipanah (Tehran), Axel Hausmann and Günter Müller (Munich), Eteri Didmanidze (Tbilisi), Igor Kostjuk and Igor Pljushtch (Kiev), Armin Hauenstein (Untermünkheim), Svyatoslav Knyazev (Omsk), and Valeryi I. Shchurov (Krasnodar) for their kind assistance provided during the study of the deposited material, and to Anna Ustjuzhanina (Tomsk) for language improvements.

This study was supported by the grant of the Russian Science Foundation No. 22-24-00265 “Cossoid Moths (Lepidoptera, Cossoidea) of tribus Endagriini Duponchel, 1844 of the World: systematic, phylogeny and evolution of the group”, <https://rscf.ru/project/22-24-00265/>

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