

# **Lepidopterologica Hungarica**

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## Four new taxa of the genus *Xenotrachea* SUGI, 1958 from China (Lepidoptera, Noctuidae)

Péter Gyulai

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**Abstract.** Description three new species: *Xenotrachea cattusungula* sp. n., *Xenotrachea geminaspica* sp. n. and *Xenotrachea hreblayi* sp. n.; and one new subspecies, *Xenotrachea cattusungula sichuana* sp. n. from China are given with 12 colour imagines and 11 genitalia figures.

**Keywords.** Asia, taxonomy, Noctuidae, new descriptions.

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### Introduction

*Xenotrachea* Sugi, 1958 is a south-eastern Palaearctic and Oriental genus of Noctuidae. The species of this genus are rather small Noctuidae, with olive greenish suffusion detectable in the forewing of fresh specimens, which becomes faded pale-ochreous and brownish over time. Separation of species needs careful study, due to the very strong resemblance in the external features and basic configuration of the genitalia. Most of the species are local and rare. The types are males; females of a lot of species are not known, since they are much rarer than males.

The northernmost species is *X. niphonica* Kishida & Yoshimoto, 1979 in the Pacific subregion, but the highest diversity can be observed in China, the Himalayas and tropical SE Asia; two species and one subspecies are restricted to the island of Taiwan. While the Himalayan species are more or less well known (most of the species have been described from that region), the forthcoming researches very likely will reveal the existence of more species in tropical SE Asia. Here, the diagnosis and description of three new species and one new subspecies from China are given.

List of taxa of *Xenotrachea* Sugi, 1958 (Type species: *X. albidisca* Moore, 1867)  
*albidisca* Moore, 1867

ssp. *pseudodisca* Hreblay & Ronkay, 1998

*cattusungula* sp. n.

*cattusungula sichuana* sp. n.

*atra* Hreblay & Ronkay, 1998

*geminaspica* sp. n.

*aurantiaca* (Hampson, 1894)

*hreblayi* sp. n.

*isolata* Hreblay & Plante, 1995

*disseminata* Hreblay & Plante, 1995

*tsinlinga* (Draudt, 1950)

- thaiensis* Yoshimoto, 1992  
*irrorata* Yoshimoto, 1992  
*auroviridis* (Moore, 1867)  
*chrysochlora* Hampson, 1908  
*albiclausa* (Warren, 1916)  
*niphonica* Kishida & Yoshimoto, 1979  
*lucisquama* (Warren, 1912)  
*albifusa* (Hampson, 1908)  
*carnefusa* Warren, 1912 (probably ssp. of the previous species)  
*leucopera* (Hampson, 1906)

The last four tropical species are more distinctive from all the previous taxa, both in the external and genitalia features; probably can be placed in a different subgenus.

The taxonomic status of the Australian *X. trichroma* (Meyrick, 1902) is debatable since the abdomen of the type is missing.

Abbreviations for personal and institutional Collections used herein: HNHM = Hungarian Natural History Museum (Budapest, Hungary); HT = holotype; PT = paratype; MDC = collection of Marek Dvorak (Smrcna, Czech Republik); PGM = collection of Péter Gyulai (Miskolc, Hungary); GYP = genitalia slide Péter Gyulai.

### Description of new taxa

#### *Xenotrachea cattusungula* sp. n. (Figs 3, 4, 15, 16)

**Holotype:** Male (Fig. 3), China, Shaanxi, Tai Bai Shan, 33° 35' N; 107° 43' E; 1500 m; 20. VIII. – 4. IX. 1998., leg. V. Murzin & V. Siniae, slide no. GYP 3361 (coll. PGM, later to be deposited in the HNHM).

**Paratypes:** 3 males, with the same data; 1 male, China, Shaanxi, Tsinling Mts., S Taibaishan range, 3000 m., Houzhenzi vill., 33° 53' N, 107° 49' E; 22. VIII. - 25. X. 1999, leg. local collector (coll. PGM). slide nos.: GYP 5460m, 5464m

**Diagnosis.** *X. cattusungula* sp. n. (Figs 3, 4) is externally similar to *X. albidisca* Moore, 1867 (Figs 1, 2) but the male genitalia are very distinctive. The new species is in average smaller (wingspan 21–22 mm, versus 24–29 mm), the light greyish patch below the reniform stigma is smaller, postmedian line is sinuous and rather lacy. Also similar to *X. aurantiaca* (Figs 10, 11) and *X. hreblay* sp. n. (Fig. 9), but somewhat smaller, the foresection of postmedian line is less prominent, the white comma-like formation in the diffuse brown claviform stigma is shorter, but extended and pointed towards the inner costa.

The new species (Figs 15, 16) can be distinguished very easily from all of the externally similar species by the configuration of the vesica, in which the four (or rarely three) strong, claw-like cornuti are situated in a paw-like arrangement.

**Description** (Figs 3, 4). Wingspan 21–24 mm. Antennae of males filiform. The vesture of body and ground colour of forewings pale ochre, with slight olive suffusion in the fresh ones, darker brown in the median area and with small whitish patches, spots and dots in the apex-subapex, costal and marginal area. Orbicular stigma finely more or less white encircled, reniform stigma white, conjoining with a pale and small light greyish patch in the centre; claviform stigma a small white comma, extended and pointed towards the inner costa. Crosslines fine, brown, with fine white ghost; antemedian line oblique, zigzag, postmedian line arcuate and sinuous-lacy; subterminal line fi-

ne, with small, more or less wedge-like light greyish spots in the inner side; terminal line fine, whitish. Hindwings brown, discal spot darker. Female unknown.

**Male genitalia** (Figs 15, 16). Uncus medium long, distally evenly tapered, apically slightly hooked; tegumen high, juxta trapezoid, dorso-medially slightly depressed; vinculum short, v-shaped; valvae elongate, slender, distally evenly tapered and curved inward with dorsally prominent, densely setose cucullus section with strong, densely bristled corona; harpe large, thick, curved. Aedeagus with sclerotized carina, vesica spacious, the four (or rarely three) strong, claw-like cornuti are situated in a paw-like arrangement.

**Biology and distribution.** The new species was found in the lower elevation of Shaanxi.

**Etymology.** The new species is named after the paw-like arrangement of the claw-like cornuti.

***Xenotrachea cattusungula sichuana* Gyulai et Saldaitis ssp. n.** (Figs 5, 17)

**Holotype.** Male (Fig. 5), 1 male, China, N. Sichuan, Jiuzhaigou, H-2100 m, N 33° 18, 955", E103°55,531", 24.VII. 2011, leg. Floriani & Saldaitis, slide no. GYP 5469 (coll. PGM, later to be deposited in the HNHM).

**Paratype.** 1 male, China, NE. Sichuan, Guangyuan, Longmen Shan, H-630 m, N 32°36, 009", E105°31,913", 2.VIII. 2016, leg. Floriani & Saldaitis (coll. MDC).

**Diagnosis.** The new, southern subspecies (Fig. 5) of *X. cattusungula* sp. n. (Figs 3, 4) is slightly larger than the nominotypical subspecies (Figs 3, 4); wingspan 24-25 mm, versus 21-22 mm, ground colour of wings darker. In the male genitalia, the harpe is somewhat shorter, vesica slightly longer but less spacious, the four strong cornuti are twin (cornuti are basally armed with a much shorter, but strong additional cornutus) and arranged medially-subterminally and not in a paw-like fashion.

**Description** (Fig. 5). Wingspan 24-25 mm. The vesture of body and ground colour of the forewings brownish-dark ochre, with olive suffusion in the fresh ones, darker brown in the middle area and with small whitish patches, spots and dots in the apex-subapex, costal and marginal area. Orbicular stigma white bordered in the inner and outer side; reniform stigma irregular, white, conjoining with a light greyish patch in the median area; claviform stigma a small but conspicuous white comma. Crosslines fine, brown, with white ghost. Hindwings brown, discal spot large, darker; median line brown, diffuse. Female unknown.

**Male genitalia** (Figs 17). Uncus medium long, distally evenly tapered, apically slightly hooked; tegumen high, juxta trapezoid, dorso-medially slightly depressed; vinculum short, v-shaped; valvae elongate, slender, distally evenly tapered and curved inward, with dorsally prominent, densely setose cucullus section with strong, densely bristled corona; harpe thick, distally slightly curved. Aedeagus with sclerotized carina, vesica elongate-spacious, the four strong, twin cornuti (basally armed with a much shorter, but strong additional cornutus) are situated medially-subterminally.

**Biology and distribution.** The new subspecies was found in the lower elevations of Sichuan.

**Etymology.** The new subspecies is named after its range of distribution.

***Xenotrachea geminaspica* sp. n.** (Figs 7, 8, 18, 19)

**Holotype:** Male (Fig. 7), China, prov. N-Yunnan, West coast of Lugu lake, 3000 m., 30-31. VII. 2005, leg. S. Murzin, slide no. GYP 5462 (coll. PGM, later to be deposited in the HNHM).

**Paratype:** one male, same data, slide no. GYP 3357 (coll. PGM).

**Diagnosis.** *X. geminaspica* sp. n. (Figs 7, 8) differs from most of the similar, related species by the regression of the white, whitish, light greyish colouration in the apical-subapical and marginal fields and in typical Noctuidae maculation. These elements of wing pattern in the new species are not white or whitish, but the ground colour of forewings has the same dark olive green (or ochreous in faded specimens); the postmedian line is wavy-sinuous, but not arcuate and lacy in the fore section as in the externally most similar *X. chrysochlora* Hampson, 1908 (Fig. 12). Only the tiny comma-like spot in the claviform stigma and the narrow inner and outer edges of the orbicular stigma are white.

The male genitalia of new species (Figs 18, 19) differ from those of all the externally similar species in the straight harpe, which is unique in the genus (in *X. niphonica* the harpe is similar, but much larger, and the other parts of the male genitalia of new species are very distinctive).

**Description** (Figs 7, 8). Wingspan 22-23 mm. Antennae of males filiform, palpi white and brown, third joint long. The vesture of body and the ground colour of the forewings are dark olive green suffused which fades over time to dark ochre, variegated with brown, particularly in the basal and medial area. Orbicular stigma tiny, light brown, partly finely encircled with white; reniform stigma and the conjoining light patch in the middle area as the lighter shade of ground colour; claviform a diffuse brown streak with a tiny white comma inside. Antemedian and postmedian crosslines fine, dark brown, antemedian line oblique and zigzag, postmedian line arcuate and wavy-sinuous; subterminal line fine, with a few small wedge-like brown spots in the inner side. Hindwings unicolorous brown, discal spot darker. Female unknown.

**Male genitalia** (Figs 18, 19) characterized by the medium long, thin, apically pointed uncus; elongate tegumen; elongate, distally evenly narrowed and inwardly curved valvae with slender, dorsally prominent, apically pointed, densely setose cucullus section with densely bristled long corona; low and broad juxta with wide dorso-medial depression; almost straight, apically hooked harpe (the right one is somewhat shorter); straight aedeagus with strongly sclerotized, long ventral carinal plate; spacious vesica, with a large, globular basal diverticulum-like extension and with two short but strong cornuti positioned medially.

**Comment.** There are a few slight differences in structure of the male genitalia of the two known specimens; the most conspicuous of which are the much shorter aedeagus and longer carina and the position of the two cornuti in the vesica. However, the latter one is up to the coverage, the harpe are straight in both specimens. The paratype is rather worn, but the label data of the two specimens are the same. Therefore, there is not enough evidence and available material to separate them to two distinct species.

**Biology and distribution.** The two specimens of new species were found in the high mountain near Lugu Lake in Yünnan.

**Etymology.** The new species is named after the two, same sized cornuti in the vesica.

**Xenotrachea hreblayi sp. n.** (Figs 9, 21)

**Holotype:** Male (Fig. 9), East Tibet, Tongme Pelung, 2000 m, 24. VI. 1996, leg. W Fickler, slide no. GYP 1128 (coll. PGM, later to be deposited in the HNHM).

**Paratypes.** 2 males, prov. Shanxi, S Tai-bei-shan, Tsinling Mt, Houzhenzi, 1350-2000 m, 27.V.- 8 VI.1999, leg. Murzin, slide nos. Hreblay 13105, 13271 (coll. Hreblay).

**Diagnosis.** *X. hreblayi* sp. n. (Fig. 9) is closely related to *X. aurantiaca* (Hampson, 1894) (Figs 10, 11). The best feature for separation is the postmedian line; in, the whitish ghost is more defined, the small quadrangular extension at the initial is more prominent and the last section is perpendicular toward the inner edge of the forewing, whereas in *X. aurantiaca* it is oblique. The last, perpendicular section of the postmedial line also distinguishes *X. hreblayi* from the externally also similar *X. tsinlinga* (Draudt, 1950) (Fig. 6), in which it is oblique and rather zigzag.

The main distinctive key features of the male genitalia of new species (Fig. 21) are in the length of valvae, vinculum and in the configuration of the vesica and its cornuti field; all of which provide useful diagnostic characters. The new species differs from *X. aurantiaca* (Fig. 22) in the shorter valvae and vinculum; subquadrangular juxta, without dorso-medial depression (which is unique in the Palaearctic species of the genus) and basally-subbasally more spacious, diverticulum-like, double extended vesica, with longer, subterminal cornuti arranged in a star shape. This arrangement of cornuti has not been found any of the related taxa.

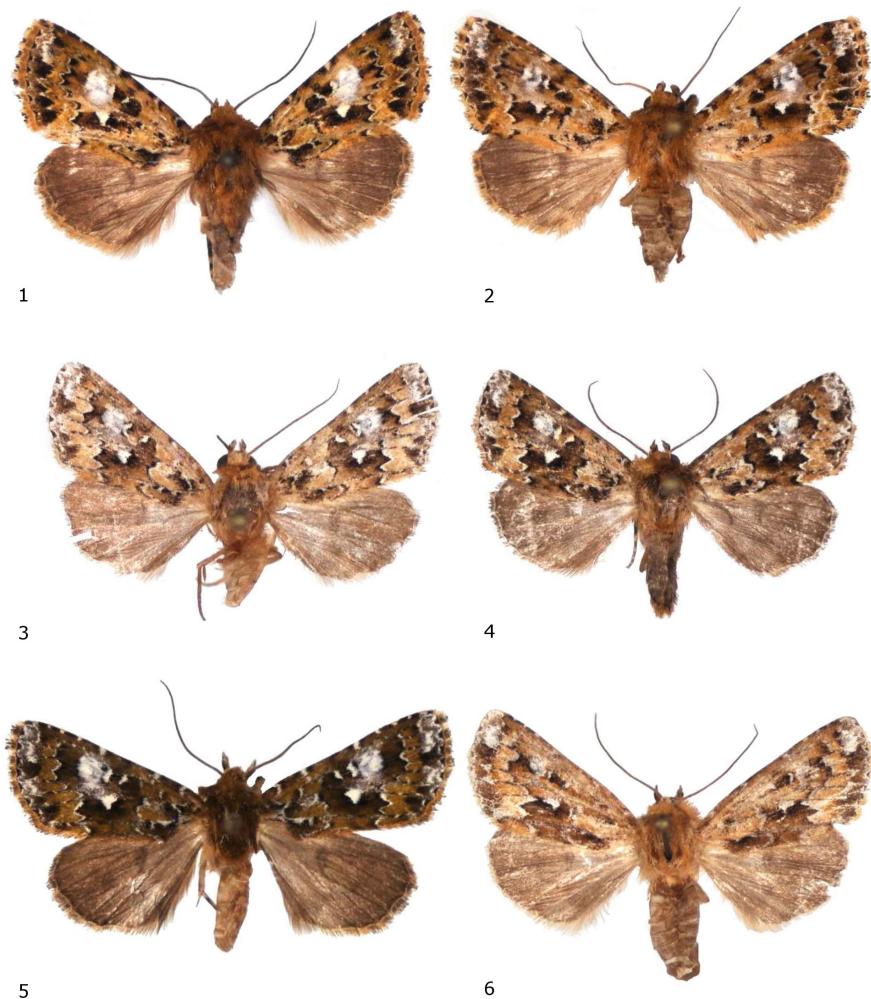
**Description** (Fig. 9). Wingspan 30 mm. Antennae of male filiform. The vesture of body and the ground colour of forewings varied; reddish-ochre and light brown, darker brown in the median area and basal dash; variegated with whitish dots and patches, particularly in the apex-subapex, costal and marginal area. Orbicular and reniform stigma more or less white encircled, reniform stigma greyish whitish, conjoined with a light greyish patch in the middle area; claviform a diffuse light brown streak with a fine white horizontal exact comma. Crosslines fine, brown, with fine white ghost; antemedian line zigzag, postmedian line arcuate and sinuous-lacy, with a small quadrangular extension at the costal and the dorsal ends is perpendicular toward the inner edge of the forewing; subterminal line fine, with more or less small wedge-like light greyish spots in the inner side; terminal line fine, whitish. Hindwings brown, discal spot darker. Female unknown.

**Male genitalia** (Fig. 21) characterized by the thin uncus; elongate tegumen with densely bristled globular penicular lobes; strong, subquadrangular juxta; small vinculum; elongate, distally slightly evenly broadened valvae with dorsally prominent, densely setose cucullus section with strong, densely bristled corona; large, thick, curved, harpe. Aedeagus with more sclerotized carina, vesica spacious, basally-subbasally more spacious diverticulum-like, double extended, with long, subterminal cornuti arranged in a star-shape

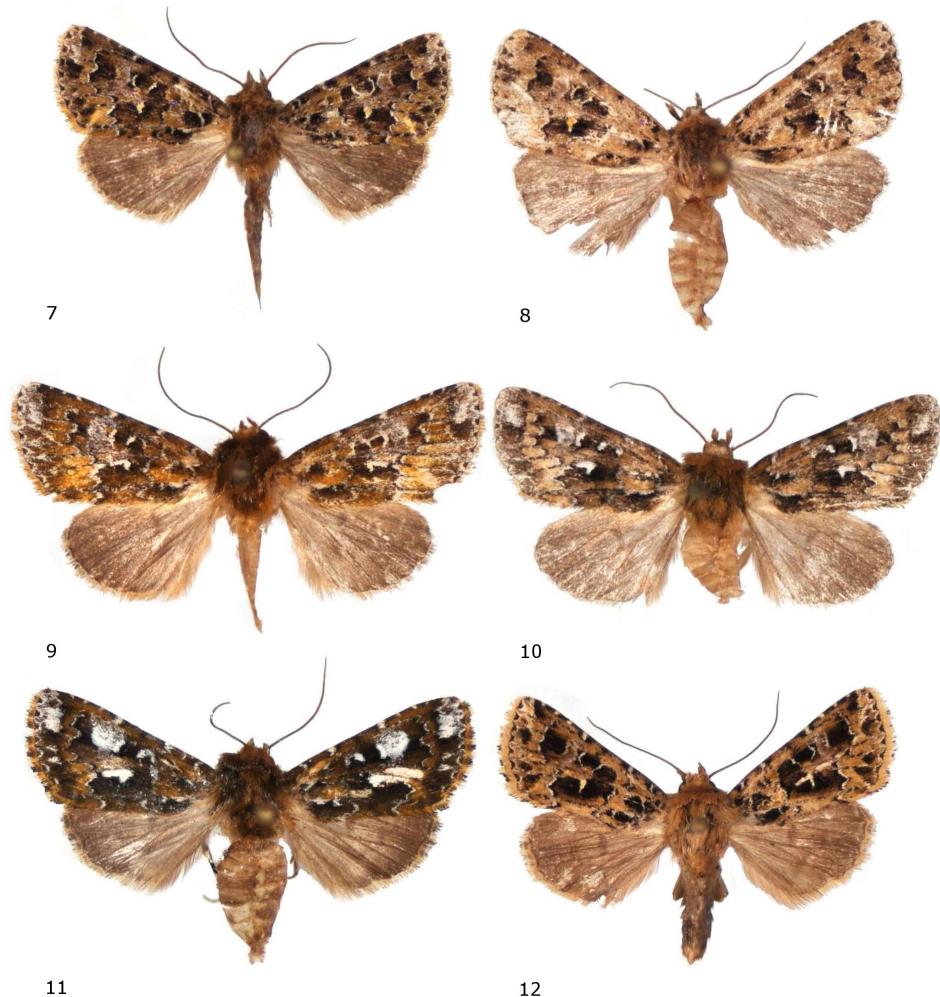
**Biology and distribution.** The single specimen of new species was found in the lower elevation of Tibet.

**Etymology.** The new species is named in honour of the late Márton Hreblay, renowned lepidopterologist, discoverer of many new Asian Noctuidae.

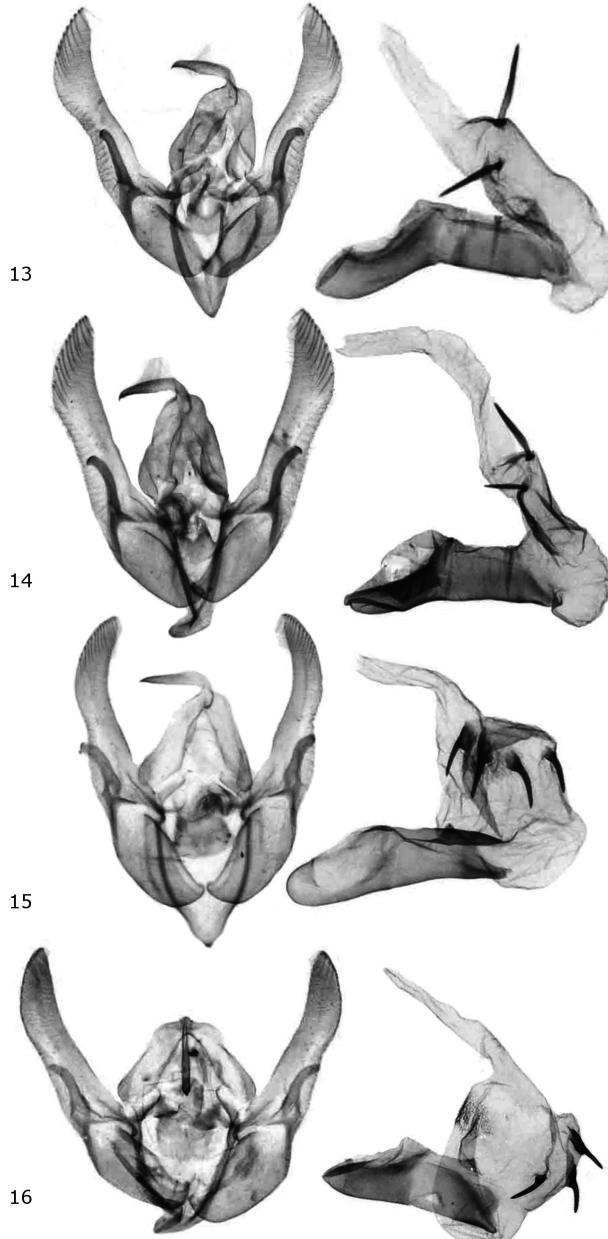
**Acknowledgements.** The author is grateful to his wife Adrienne Gyulai-Garai (Miskolc, Hungary) for much help with the computer work; to Zsolt Bálint and Balázs Tóth (HNHM, Hungary) for the genitalia photo of a paratype of *X. hreblay* sp. n.; to Barry Goater (Hampshire, UK) for linguistic improvements; to Imre Fazekas (Pannon Institute, Pécs, Hungary) for the publication of the manuscript and to the reviewers.



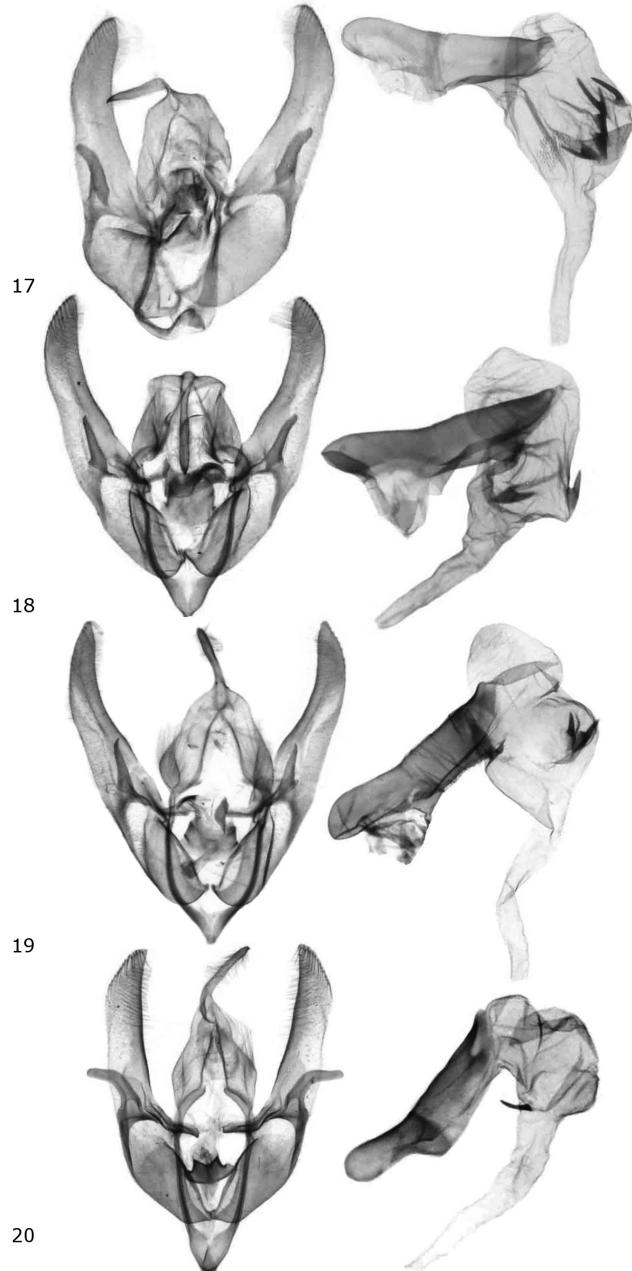
**Figures 1–6.** *Xenotrachea* spp. adults. **1.** *Xenotrachea albidisca* Moore, 1867, Nepal, Ganesh Himal, 2 km S. of Diyale, 1300 m, 12-13. IX. 1995, leg. P. Gyulai & A. Garai, GYP 5466 (PGM); **2.** *Xenotrachea albidisca* Moore, 1867, China, Jiangxi, Wuyi Shan, Xipaihe vill., 1500 m, N 24°54', E 117°20', 1-30. VI. 2003, leg. V. Siniaev/loc. collector, GYP 5463 (PGM); **3.** *Xenotrachea cattusungula* sp. n. HT, China, Shaanxi, Tai Bai Shan, 33° 35' N; 107° 43' E; 1500 m; 20. VIII. – 4. IX. 1998., leg. V. Murzin & V. Siniaev, GYP 3361 (PGM); **4.** *Xenotrachea cattusungula* sp. n. PT, China, Shaanxi, Tai Bai Shan, 33° 35' N; 107° 43' E; 1500 m; 20. VIII. – 4. IX. 1998., leg. V. Murzin & V. Siniaev, GYP 5460 (PGM); **5.** *Xenotrachea cattusungula sichuana* ssp. n. PT, China, N Sichuan, Jiuzhaigou, H-2100m, N 33°18', 955", E103°55', 531", 24.VII. 2011, leg. Floriani & Saldaitis, GYP 5469 (PGM); **6.** *Xenotrachea tsinlinga* (Draudt, 1950), China, Shaanxi, Tai Bai Shan, 33° 35' N; 107° 43' E; 1300 -1500 m, 20. VIII. – 4. IX. 1998., leg. V. Murzin & V. Siniaev, GYP 3367 (PGM).



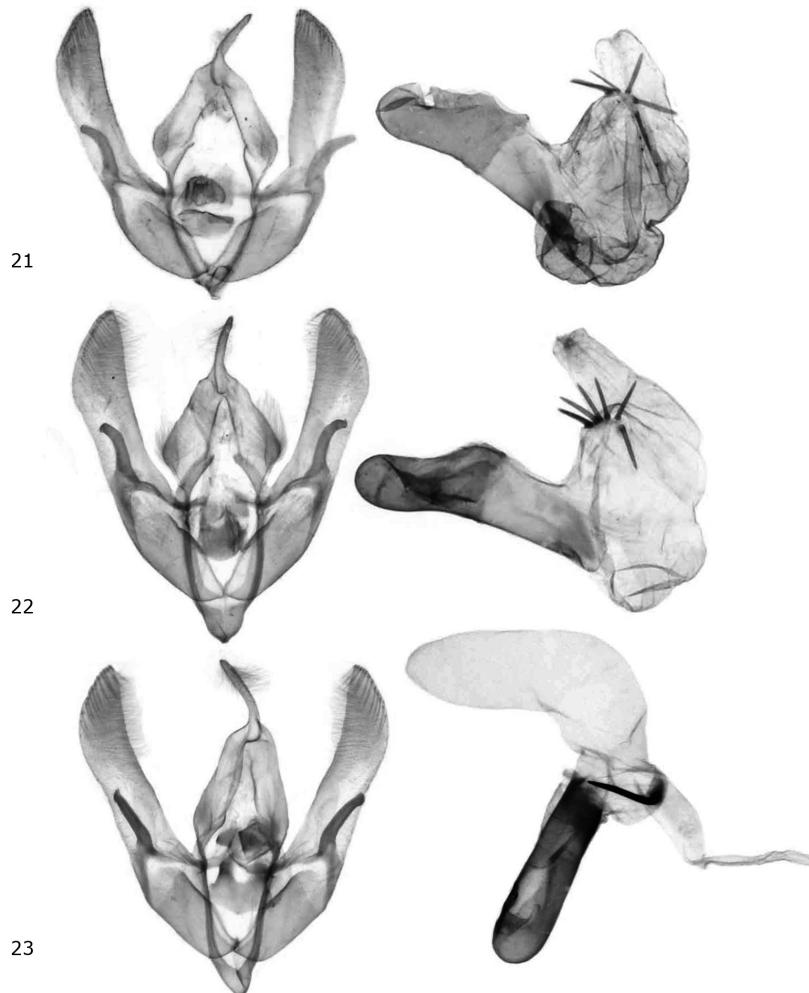
**Figures 7–12.** *Xenotrachea* spp. adults. **7.** *Xenotrachea geminaspica* sp. n. HT, China, N Yünnan, West coast of Lugu lake, 3000 m., 30-31. VII. 2005, leg. S. Murzin, GYP 5462 (PGM); **8.** *Xenotrachea geminaspica* sp. n. PT, China, N Yünnan, West coast of Lugu lake, 3000 m., 30-31. VII. 2005, leg. S. Murzin, GYP 3357 (PGM); **9.** *Xenotrachea hreblayi* sp. n., HT, China, Tibet, Tongme Pelung, 2000 m, 24. VI. 1996, leg. W Fickler, GYP 1128 (PGM); **10.** *Xenotrachea aurantiaca* (Hampson, 1894), China, N Sichuan, near Lixian, 2100 m, N 33°24', 087", E103°09', 522", 30. VII. 2011, leg. Floriani & Saldaitis, GYP 2862 (PGM); **11.** *Xenotrachea aurantiaca* (Hampson, 1894), China, Shaanxi, Tsinling Mts., Fopin, 33° 35' N; 108° 01' E, 1800 m; 1-31. VIII. 2005, leg. V. Siniaev, GYP 3355 (PGM); **12.** *Xenotrachea chrysochlora* Hampson, 1908, Nepal, Kanchenjunga region, Deorali Danda, Anpan, 6-7. VIII. 2000, leg. M. Hreblay & T. Csőváry, GYP 5468 (PGM).



**Figures 13–16.** *Xenotrachea* spp. male genitalia. **13.** *Xenotrachea albidisca* Moore, 1867, Nepal, Deorali Danda, GYP 5467 (PGM); **14.** *Xenotrachea albidisca* Moore, 1867, Nepal, Ganesh Himal, GYP 5466 (PGM); **15.** *Xenotrachea cattusungula* sp. n. HT, China, Shaanxi, GYP 3361 (PGM); **16.** *Xenotrachea cattusungula* sp. n., PT, China, Shaanxi, GYP 5460 (PGM).



**Figures 17–20.** *Xenotrachea* ssp. and spp. male genitalia. **17.** *Xenotrachea cattusungula sichuana* ssp. n. PT, China, N Sichuan GYP 5469 (PGM); **18.** *Xenotrachea geminaspica* sp. n. HT, China, N Yunnan, GYP 5462 (PGM); **19.** *Xenotrachea geminaspica* sp. n. PT, China, N Yunnan, GYP 3357 (PGM); **20.** *Xenotrachea tsinlinga* (Draudt, 1950), China, Shaanxi, GYP 3367 (PGM);



**Figures 21–23.** *Xenotrachea* ssp. male genitalia. **21.** *Xenotrachea hreblayi* sp. n., HT, China, Tibet, Tongme Pelung, GYP 1128 (PGM); **22.** *Xenotrachea aurantiaca* (Hampson, 1894), China, Sichuan, GYP 2862 (PGM); **23.** *Xenotrachea chrysochlora* Hampson, 1908, Nepal, Deorali Danda GYP 5468 (PGM).

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***Eugnorisma depuncta* (Linnaeus, 1761) és a *Dryobotodes monochroma* (Esper, 1790) elterjedése Magyarországon és a Dél-Dunántúlon  
**Distribution of *Eugnorisma depuncta* (Linnaeus, 1761) and *Dryobotodes monochroma* (Esper, 1790) in Hungary and South Transdanubia  
(Lepidoptera: Noctuidae)****

Fazekas Imre

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**Abstract.** This study investigates the geographical distribution and bionomics of two noctuid moths, *Eugnorisma depuncta* (Linnaeus, 1761) and *Dryobotodes monochroma* (Esper, 1790), which occur sporadically in Hungary. It summarizes the results of the research conducted so far. It describes the habitats, the flight period and the food plants. It illustrates the wing pattern of the imago and shows the genitalia. It presents the differential features of the wings and genitalia of similar species. The geographical distribution of the European sites is shown on two maps. The Hungarian distribution of two noctuid species is given by summarizing all available locality data on Google maps. The study includes 14 very detailed figures that make it easier to distinguish between similar species.

**Keywords.** Lepidoptera, Noctuidae, *Eugnorisma depuncta*, *Dryobotodes monochroma*, geographical distribution, bionomics, Hungary

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**Summary.** Research on butterfly and moth faunistics in Hungary began in the mid-19th Century. The number of known Lepidoptera species exceeds 3500 (Pastoralis *et al.* 2016). The number of Noctuidae species is 448, including many that are very local and rare in the geographical area. This paper examines the geographic distribution and bionomics of two species, *Eugnorisma depuncta* and *Dryobotodes monochroma*, and summarises the results of previous research.

*Eugnorisma depuncta* is widespread in the Western Palearctic; it has been observed in many places from the Urals, Armenia to Asia Minor and Western Europe to the Pyrenees. In Armenia, Chechnya, Kabardino-Balkaria and NE Turkey it is represented by ssp. *transcaucasica* Varga, Ronkay, Ronkay & Gyulai, 2015. It has been collected almost everywhere in Hungary. Habitat preferences of *E. depuncta* in Hungary are warm, dry oak forest and forest clearings, locally frequent. In the Mecsek Mountains of southern Hungary, it prefers valleys with a cooler, more humid microclimate and the hornbeam-oak and beech forests. Examining the distribution pattern of the Hungarian sites, it can be concluded that the main distribution area of the species is the hilly and mountainous parts of Transdanubia. It prefers places with an average annual mean temperature of 9–10 °C and an average annual precipitation of 700–800 mm. In the northern central mountains and lowlands, it is localised and only found in small numbers.

It has been observed that imagos move into nearby buildings during the cooler, wetter days of October.

Flight period from mid-August to mid-October. The caterpillar is polyphagous on species of *Lamium*, *Primula*, *Rumex*, *Salvia* and *Urtica*. On hatching in the autumn,

the larvae immediately crowd together in hollow grass stems without feeding. After hibernation, they emerge and feed up, pupating in May. Barry Goater reared larvae from eggs. He put the larvae in the fridge for the winter. When he took them out of the fridge in the spring, the larvae came to life and fed up on *Rumex obtusifolius* without any trouble (B. Goater pers comm.).

A very interesting observation in the Mecsek Mountains (Southern Hungary) was made in September 2013, when a newly emerged male *E. depuncta* was found in a pheromone trap set for monitoring *Tuta absoluta* [Gelechiidae], followed by other specimens. No other moth species were observed in the pheromone traps. This pheromone observation triggered a comprehensive study of *E. depuncta*.

*Dryobotodes monochroma* a Holomediterranean-Iranian faunal element, but less widespread than *D. eremita*. According to literature, the northern limit of its range is in the northern Carpathian Mountains. New record from Poland: Bieszczady Mountains, Krzywe near Cisna, in a grassy mountain meadow area (Nasala & Matuszewski 2017). It is possible that it is gradually expanding northwards as the climate warms. The size of the Polish population is unknown.

So far, few sites are known in the Hungarian Great Plain. According to recent studies, it is very local and rare in the Danube-Tisza region, especially in the protected areas of the Kiskunság National Park. These are certainly relict populations. This is an area with a continental climate, where the original forested steppe has almost completely disappeared. The area is in the former low-lying floodplain of the Danube River. The bed of former water courses can still be seen in the hydrologic and botanical patterns of the area. After the area was drained, salinisation of the soil has increased. Now, the landscape is dominated by alkaline carbonate-rich steppes, saline meadows, pastures, playas and, embedded among these, ridges formed by sandy-loessy wind-blown deposits.

*D. monochroma* favours warm hillsides and the southern, rocky sides of the low mountains. Its characteristic habitats are oak scrub forests, where it is very local and rare. The adults fly in a single generation from August to the end of October. The eggs overwinter. The caterpillars live on *Quercus pubescens* and *Q. virginiana*. Pupation occurs in the soil.

Surprisingly, the species was first recorded in eastern Serbia (Brestovačka Banja, Bela Zemlja-Užice), some 350–400 km south of Hungary, only recently (Stojanović & Dodok 2007) from collections made in 1995, 1998 and 2001. In other Balkan areas it was known earlier (Hacker 1989, Thurner 1964). The morphology of the male genitalia examined by Stojanović and Dodok (2007) is identical to that of the specimen from Mecsek Mountains.

Remarks: The author modified and further developed the method of Wanke & Rajai (2018) in the study of genitalia. New procedures have been proposed and are illustrated.

## Bevezetés – Introduction

Magyarországon lepkafaunisztikai kutatások a 19. század közepén kezdődtek el. Az eddig ismert lepkefajok száma meghaladja 3500-at (Pastoralis et al. 2016). A Noctuidae fajok száma 448. Közöttük számos olyan fajt találunk melyek igen lokálisak és ritkák a földrajzi térségben. A tanulmány két bagolylepke faj, a *Eugnorisma depuncta* és a *Dryobotodes monochroma* földrajzi elterjedését, bionomiáját vizsgálja, és összegzi az eddigi kutatások eredményeit, valamint morfológiailag, és a genitáliák tekintetében összehasonlíta a közelrőkon fajokkal.

### Anyag és módszer – Material and methods

A tanulmány a szerző 50 éven át végzett éjszakai lámpázásos (160 Wattos kevertfényű HMLI izzók, 125 Wattos higanygóz lámpák) és fénycsapdás gyűjtéseit, illetve bionómiai megfigyeléseinek adatait dolgozza fel. Az irodalmi adatok közül csak a hivatkozásokban publikált lelőhelyek kerültek az elterjedési térképekre. A kopott, töredékessé vált fénycsapda példányok genitália vizsgálatát Robinson (1976), Fazekas (2020) és Wanke & Rajaei (2018) általam részben módosított, egyszerű és gyors módszerével végeztem.

Szükséges anyagok: 3,5x5 cm-es porcelán tálka (esetleg Petri-csésze vagy tárgylemez), műanyag pipetta, borotvapenge, szuperragasztó (átlátszó, erősen folyékony ragasztó, etil-cianoakrilát ECA alapú).

1. A műanyag pipetta hegyét kb. 3–5 mm hosszan le kell vágni (a pipetta hegy átmérőjét a méretnek megfelelően kell megválasztani a genitália méretének megfelelően, 1a. ábra). Alternatívaként műanyag fecskendők hegye is használható, illetve szilikon csövek valamint átlátszó szívócsövek is alkalmazhatók.

2. A levágott cső darabját a hossztengely mentén félbe kell vágni (1b. ábra).

3. Az egyik felet szuperragasztóval rögzítse a Petri-csésze, a porcelántálka, vagy tárgylemez aljára (1c. ábra), hogy létrejöjjön egy alagút alakú tartó.

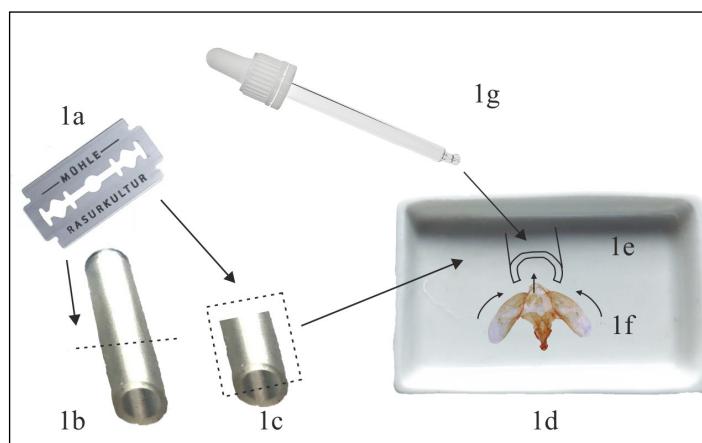
4. A genitáliákat a standard módszerek szerint fél kell boncolni, s meg kell tisztítani (Fazekas 2020, Robinson 1976).

5. A megtisztított genitáliáit részben be kell tolni, vagy húzni az alagút-tartóba (lásd az 1c. és 3A. ábrát), a kívánt pozícióba, hogy sztereó mikroszkóp alatt jól vizsgálható és fényképezhető legyen.

6. Fedjük le az alagút-tartót és a genitáliákat 70%-os etanollal vagy glicerinnel.

7. Fényképezze le a mintát a mikroszkópra szerelt digitális kamerával.

8. A fényképeket Photoshop, Corel Draw vagy Corel Photo-Paint programokkal elemezni, módosítani, mérni stb. lehet.



**1. ábra.** A genitáliák vizsgálata és előkészítése a fényképezésre. **1ab**, vágjon le 3-5 mm-t az átlátszó csőből ; **1c**, válassza szét a levágott csődarabot két félre; **1def**, a csődarab felét ragassza a porcelán tálka, vagy a Petri-csésze aljára, az ivarszervet húzza, vagy tolja be a rögzített alagút-tartóba, **1g**, ezután a genitáliát fedje le 70%-os etanoljal vagy glicerinnel.

A szaggatott vonalak a vágási irányokat jelölik.

**Figure 1.** Examination and preparation of genitalia for photography. **1ab**, cut 3-5 mm from the clear tube; **1c**, separate the cut piece of tube into two halves; **1def**, glue half of the tube to the bottom of the porcelain dish or Petri dish, pull or push the genital organ into the fixed tunnel holder; **1g**, then cover the genitalia with 70% ethanol or glycerol.  
Dashed lines indicate the cutting directions.

Az imágók képei Sony DSC-H100v fényképezőgéppel és Zeiss sztereó mikrosz-kópra szerelt BMS tCam 3,0 MP digitális kamerával készültek, a ScopePhoto 3.0.12 szoftver segítségével. A genitália fotókat a Scopium XSP-151-T-Led biológia mikroszkóppal és a számítógéphez csatlakoztatott MicroQ 3.0 MP digitális kamerával készítettem 20x-os és 50x-es nagyítással. Az így elkészített habitus és preparátum fotókat a Corel Draw/Paint és Photoshop programokkal elemeztem.

Vizsgálati anyag a következő gyűjteményekben található / The material examined is in the following collections: Bakonyi Természettudományi Múzeum (Zirc); Janus Pannonius Múzeum (Pécs); Jász Múzeum (Jászberény); Magyar Természettudományi Múzeum (Budapest); Komlói Helytörténeti és Természettudományi Gyűjtemény (Komló); Pannon Intézet (Pécs); Rippl Rónai Múzeum (Kaposvár); Savaria Múzeum (Szombathely).

## Eredmények – Results

### *Eugnorisma depuncta* (Linnaeus, 1761) [őszi földibagoly]

*Ph. Noctua depuncta* Linnaeus, 1761, Fauna Suecica, 2: 321. Locus typicus: Svédország.

**Irodalom – References:** Abrahám 1992ab; Abrahám & Uherkovich 1994, 1998, 2000, 2001; Fazekas 2006; Fiebiger 1990; Forster & Wohlfahrt 1971; Heath 1979; Kovács 1953; Nagy 2014; Nowacki 1998; Rézbányai 1974; Ronkay G. & Ronkay L. 2006; Uherkovich 1978abc, 1981abc, 1983, 1984; Uherkovich & Ábrahám 1995; Varga & Ronkay 1987. Varga, Ronkay, Ronkay & Gyulai, 2015.

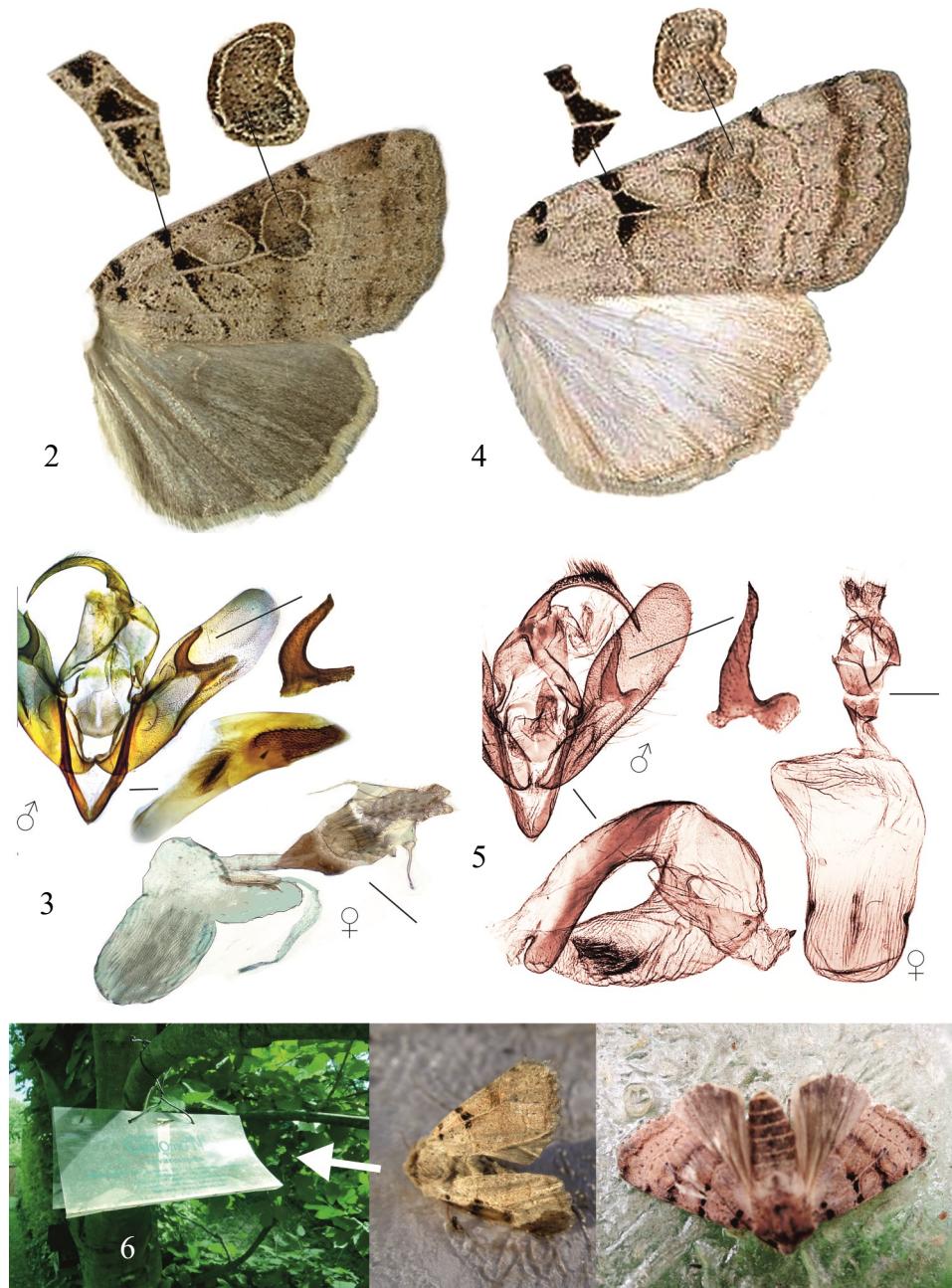
**Diagnózis – Diagnosis.** Az elülső szárnyak (esz.) fesztávolsága 31–43 mm. Az esz. alapszíne többnyire világos szürkés-, vagy vörösesbarna. A tővonal 2 vagy 3 fekete. apró nyújtott foltból áll, a belső keresztronval szintén fekete foltokból áll, a középső trapéz alakú. A körfolt ovális, belül világos, a vesefolt nagy, kívülről homorú, belsőjének alsó része barnás. A rojttó barnás, befelé mutató, apró fekete nyilakkal. A hátulsó szárnyak alapszíne világos vagy sötét barnásszürke, változékony.

**Hasonló faj – Similar species.** *Eugnorisma pontica* (Staudinger, 1891). Hazánk határihoz legközebb lévő előfordulása Herkulesfürdő (RO-Baile Herculane). Magyarországi előkerülése lehetséges. A *M. pontica* elülső szárnya nyújtottabb, a vesefolt külső szegélye mélyebben homorú, a szegélytér hullámvonala enyhébb, mint a *M. depuncta*-é. A hátulsó szárnyak alapszíne világos, szürkés, míg a *depuncta*-é minden sötétebb barnás. A *pontica* hím genitáliaiban a harpe hosszabb, mint a *depuncta*-é. A nőstények genitáliajában a ductus bursae rövidebb.

**Bionómia – Bionomics.** Hazánkban szinte az összes tájegységen gyűjtötték, de sehol sem gyakori faj. Ronkay G. & Ronkay L. (2006) szerint csalétken és mesterséges fényen is megjelenik, augusztus közepétől október elejéig. Nyugat- és Közép-Európában főleg júliustól szeptemberig gyűjthető (Heath 1979, Forster & Wohlfahrt 1971). Az áttelelő, polifág hernyók *Lamium*-, *Primula*-, *Rumex*-, *Salvia*- és *Urtica*-féléken élnek, majd a tavasz végén, májusban bábozódnak.

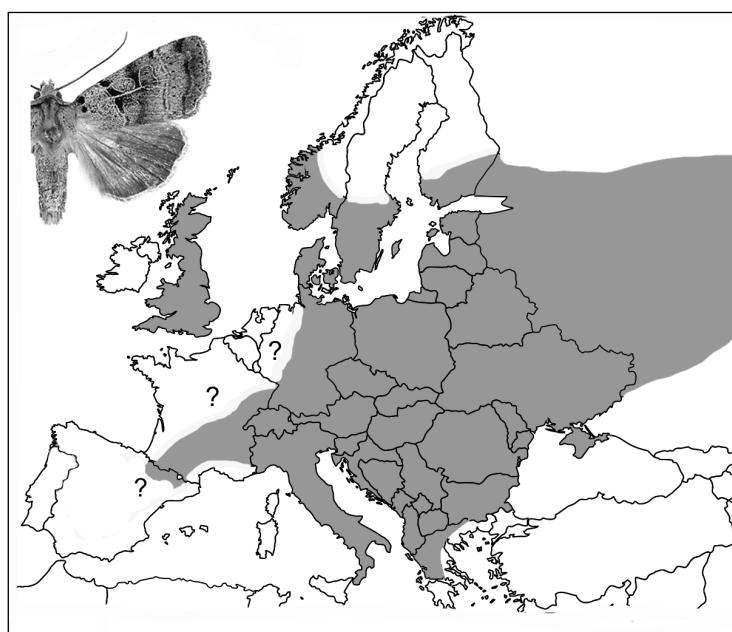
**Area.** Svédországból leírt faj, melynek alfaja a ssp. *transcaucasica* (vö. Varga & Ronkay 1987). Az Ural hegységtől a Kaukázus vidékén át Kis-Ázsiáig, valamint Európa számos országában, egészen Spanyolországig (csak Pireneusokig) ismert. A Brit-szigeteken főleg Skóciában elterjedt a lomberdő zónában, másutt szóríványos (Heath 1979). Közép-Európában lokális, nem gyakori (Forster & Wohlfahrt 1971, Nowacki 1998), s a hegységekben eléri 1500–1700 m-es magasságokat.

**Magyarországi elterjedése – Distribution in Hungary.** Ronkay L. & Ronkay G. (2006) szerint „szinte mindenütt gyűjtötték, de sehol sem tömeges”. Megvizsgálva a magyarországi lelőhelyek elterjedési mintázatát, megállapítható, hogy a faj fő elterjedési területe a Dunántúl domb- és hegyvidéke. Leginkább azokat a földrajzi területeket



**2–5 ábra.** *Egnorisma depuncta* (Mecsek hegység): 2. szárnymintázat, 3. hím és nőstény genitália; *E. pontica* (Törökország): 4. szárnymintázat, 5. hím és nőstény genitália; 6. *Tuta absoluta* (Gelechiidae) feromoncsapda *E. depuncta* példányokkal (Komló, 2013)

**Figures 2–5.** *Egnorisma depuncta* (Mecsek Mountains): 2. wingpattern, 3. genitalia of male and female; *E. pontica* (Turkey): 4. wingpattern, 5. genitalia of male and female; 6. Feromontrap of *Tuta absoluta* (Gelechiidae) with *E. depuncta* specimens (Komló, 2013)

7. ábra. Az *Eugnorisma depuncta* lelőhelyei MagyarországonFigure 7. Localities of *Eugnorisma depuncta* in Hungary8. ábra. Az *Eugnorisma depuncta* földrajzi elterjedése EurópábanFigure 8. Geographical distribution of *Eugnorisma depuncta* in Europe

preferálja, ahol az évi átlagos középhőmérséklet 9–10 °C, és az évi csapadék átlagosan 700–800 mm. Az Északi-középhegységben és az alföldeken lokális, s csak kis egyedszámban figyelhető meg.

**Dél-dunántúli elterjedése – Distribution in South Transdanubia.** A Mecsekben csupán 9 lelőhelye ismert ez idáig, az 54 vizsgálati helyszínről (Fazekas 2006, p. 274). 2013 szeptemberében Komlón, a *Tuta absoluta* (paradicsom sarlósmoly) [Gelechiidae] monitoring céljából kihelyezett feromon csapdából egy teljesen friss *Eugnorisma de-*



**9–10 ábra.** Az *Eugnorisma depuncta* különböző habitatjai a Dél-Dunántúlon: **9.** Máriagyűd (Villányi-hegység), molyhostölgyes–sziklagyep komplex, **10.** Püspökszentlászló (Mecsek), gyertyános tölgyesek, bükkösök

**Figures 9–10.** Different habitats of *Eugnorisma depuncta* in Southern Transdanubia: **9.** Máriagyűd (Villányi Hills), mossy oak-rocky meadow complex, **10.** Püspökszentlászló (Mecsek Mountains), hornbeam oak forests, and beech forests

*puncta* hím példány került elő, melyet további példányok követtek. A város közigazgatási területén minden össze Zobákpusztán fogta a Balogh Imre által üzemeltett fénycsapda még az 1960-as években. Így az új adatok megerősítették a faj korábbi komlói előfordulását.

A Villányi-hegységen csak Máriagyűd környéki délies hegyoldalakról került elő (Ábrahám & Uherkovich 2000), az ottani molyhos tölgyes és sziklagyep mozaikokból (9. ábra).

Ábrahám (1992) több helyen gyűjtötte a Boronka-melléki Tájvédelmi Körzetben: Böhönye, Homokpuszta, Hosszúvíz, Nagybajom.

Ábrahám, Uherkovich (1998): Somogyudvarhely (Vecsenyei-erdő [keményfa ligeterdő]).

Uherkovich (1976): Máriagyűd (9. ábra).

Uherkovich (1977): Mike.

Uherkovich (1978a): Pécs (Tettye).

Uherkovich (1981a): Zselici Tájvédelmi Körzet

Uherkovich (1981a): Vásárosbéc

Uherkovich (1982): Bakóca–Nagymátépuszta.

Uherkovich (1983): Palé.

Uherkovich (1984): Nagy-mély-völgy.

Uherkovich (1987): Cserkút.

Uherkovich (2018): Abaliget, üdülők; Bükkösd, Bükkösi-v.; Cserkút, DK; Cserkút, Szentmiklós; Kővágószőlős, Kajdács-dűlő; Mánfa, Nagy-Mély-v.; Pécs, Deindol; Pécs, Mecsekszentkút, Szunyola; Pécs, Tettye.

Új adatok: ♂, Komló, Hasmány-tető, 2013.09.05., gen. prep. Fazekas I. No. 3288-G; 2013.09.10.-én újabb hím példányt repült a csapdába. ♂, 2013.10.01., épületbe behúzódva. ♂, 2013.10.12.; 2♂, Kárász, 2013.10.18.; 5♂, Nagymányok, 2013.10.18.

**Jegyzetek – Notes.** 2013 szeptemberének utolsó hetében a legmagasabb nappali hőmérséklet 10–15°C volt erős és tartós esőzésekkel. Az éjszaki hőmérséklet 7–8°C-ra süllyedt. Október első hetében az éjszaka már 0 °C körül alakult. Az Északi-középhegységben – 8–9,3 °C-ra csökkent. Ezután fokozatosan emelkedett a hőmérséklet, s napközben már meghaladta a 20 °C-ot (okt. 12–14.). Október 20. és 23. között a

nappali hőmérséklet elérte a 23–25 °C-ot és 22-én este 7 órakor 20 °C-ot lehetett mérni.

Saját mecseki vizsgálataim szerint főleg Püspökszentlászlón (10. ábra), a magyar-egregyi Vár-völgyben és Kárászon lépett fel nagyobb egyedszámban, de sohasem tömegesen. Úgy tűnik, hogy a Mecsekben inkább a párásabb, hűvösebb mikroklímájú völgyeléseket, valamint a gyertyános-tölgyesek és a bükkösök övezetét preferálja. Megfigyelhető, hogy az imágók a hűvösebb, csapadékosabb októberi napokban behúzódnak a közelí épületekbe.

#### ***Dryobotodes monochroma* (Esper, 1790) [szürke tölgybagoly]**

*Phalaena (Noctua) monochroma* Esper, 1790, Die Schmett. in Abb. nach der Natur 4, p. 521. Locus typicus: I-Firenze.

**Irodalom – References:** Ábrahám 1990; Ábrahám & Uherkovich 1994, 2000, 2001; Fazekas 2006; Forster & Wohlfahrt 1971; Hacker 1989; Nagy 2014; Nowacki 1998; Rézbányai 1972; Rezbányai-Reser 2010; Ronkay et al. 2001; Ronkay G. & Ronkay L. 2006; Szabó 2007; Thurner 1964; Wymann et al. 2015.

**Diagnózis – Diagnosis.** Az elülső szárnyak (esz.) fesztávolsága 31–39 mm. Az ivari dimorfizmus jelentős; a hímek esz.-a szélesebb, alapszíne világosszürke, a nőstényeké sötétebb, feketésszürke. A vesefolt a costa irányából lefelé enyhén kiszélesedik, de variabilis.

**Hasonló faj – Similar species.** *Dryobotodes eremita* (Fabricius, 1775); erősen változékony faj, vannak közöttük igen sötét és világos példányok is, de nincs ivari dimorfizmus. Az elülső szárnyak nyújtottabbak, alapszínük sötétebb szürkésbarna, a vesefolt alakja eltérő, kitöltése variabilis. A kopott, sérült példányok a genitáliák alapján jól elkülöníthetők (12., 15. ábrák).

**Bionómia – Bionomics.** Magyarországon főleg a dombságokon, a középhegységek déli oldalainak száraz tölgyeseiben, és leginkább a molyhos tölgyeseiben lokális. Univoltin faj, repülése augusztus harmadik dékájában indul és október végéig, olykor november első napjaiig tart. Tojás alakban telel át. A sárgás, halványzöldes hernyókat ez idáig *Quercus cerris*, *Qu. petraea*, *Qu. dalechampii*, de főképpen *Quercus pubescens* valamint *Qu. virginiana* (saját megfigyelés) leveleken találták meg április végétől június végéig, bábozódásuk a talajban történik.

**Area.** Holomediterrán faunaelem. A Fekete-tenger térségtől, a Balkánon, a Kárpát-medencén át, majd északabbrá Csehországig, nyugaton Franciaországig, az Ibériai-félsziget és ÉNy-Afrikáig lokálisan elterjedt faj.

**Magyarországi elterjedése – Distribution in Hungary.** Ronkay G. & Ronkay L. (2006) szerint Magyarországon lokális és ritka, s főként a dombságok és középhegységek bokorerdeiben. A síkvidékek rölk „nagyjában-egészében hiányzik”.

Újabban számos lelőhelye bizonyított a Duna-Tisza közén, sőt a Körös-vidéken is (Gerla). Lelőhelyek felhalmozodási terület a Villányi-hegység és a Mecsek, a Dunántúli-középhegység, az Északi-középhegységben pedig főként a Bükk vidéke (lásd 17. ábra).

**Dél-dunántúli elterjedése – Distribution in South Transdanubia.** Pécs”, Kárász, Hosszúhetény; Püspökszentlászló, arborétum (Fazekas 2006), Pécs, Dömörkapu (Gyulai pers comm.); Pécs, Misina (Szabó 2007).

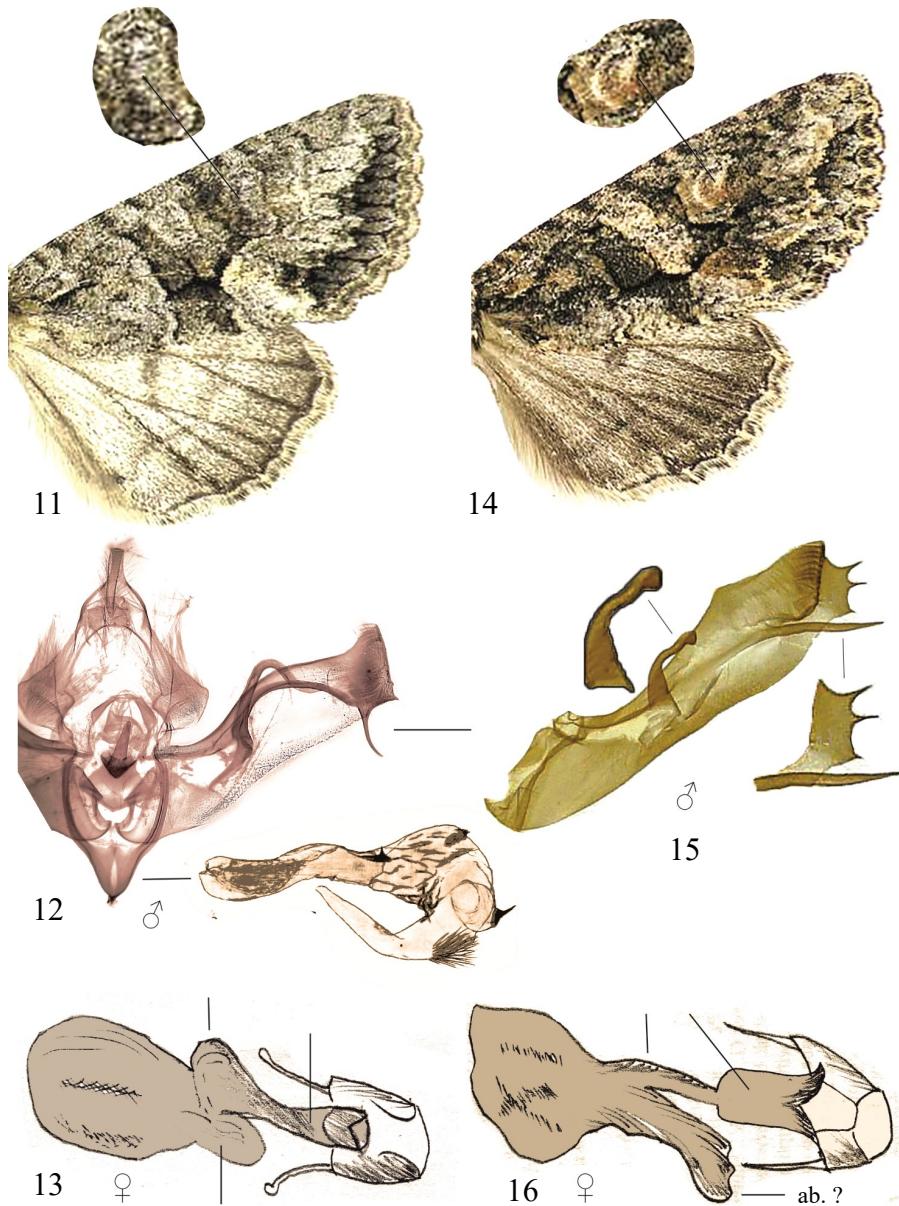
Villányi-hegység: Bisze (Tenkes, ÉNy-i lejtő), Nagyharsány (Szásomlyó, szoborpark mellett) (Ábrahám & Uherkovich 2000).

Ábrahám (1990): Nattán-gyűjtemény.

Ábrahám és Uherkovich (1994): Zselic I.

Uherkovich (2018): Kővágószőlős, Kajdács-dűlő; Pécs, Deindol.

**Jegyzetek – Notes.** A kárászi, püspökszentlászlói fénycsapdákba bekerült erősen sérült példányok csak részben lettek azonosítva. Ez idáig egyetlen genitália vizsgálat

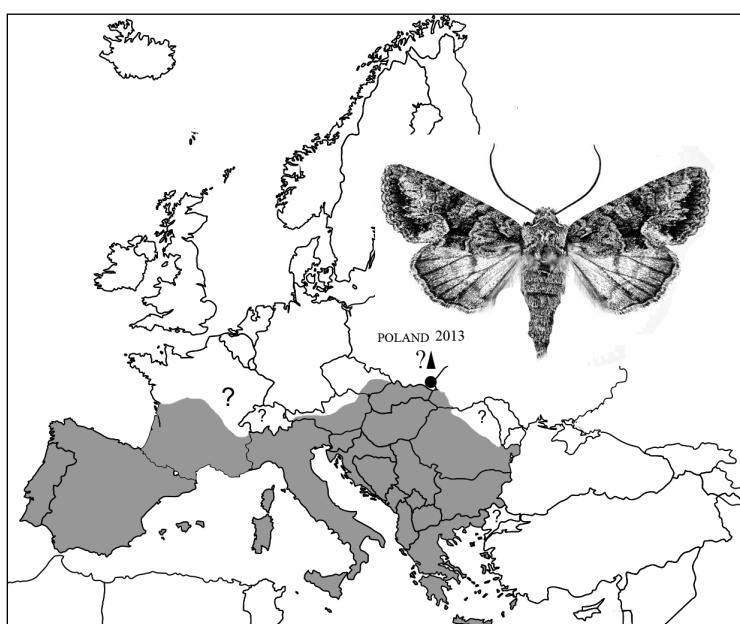


**11–16. ábra.** *Dryobotodes monochroma* (Mecsek): 11. szárnymintázat (vesefolt kinagyítva), 12. hím genitália (aedeagus kiemelve, nagyítva), 13. nőstény genitália; *D. eremita* (Mecsek): 14. szárnymintázat (vesefolt kinagyítva), 15. hím genitália részletek (valva, harpe), 16. nőstény genitália (eltérő méretarányok)

**Figures 11–16.** *Dryobotodes monochroma* (Mecsek): 11. wingpattern (reniform stigma enlarged), 12. male genitalia (aedeagus highlighted, enlarged), 13. female genitalia; *D. eremita* (Mecsek): 14. wingpattern (reniform enlarged), 15. male genitalia details (valva, harpe), 16. female genitalia (different scales)



17. ábra. Az *Dryobotodes monochroma* lelőhelyei Magyarországon  
Figure 17. Localities of *Dryobotodes monochroma* in Hungary



18. ábra. Az *Dryobotodes monochroma* földrajzi elterjedése Európában  
Figure 18. Geographical distribution of *Dryobotodes monochroma* in Europe

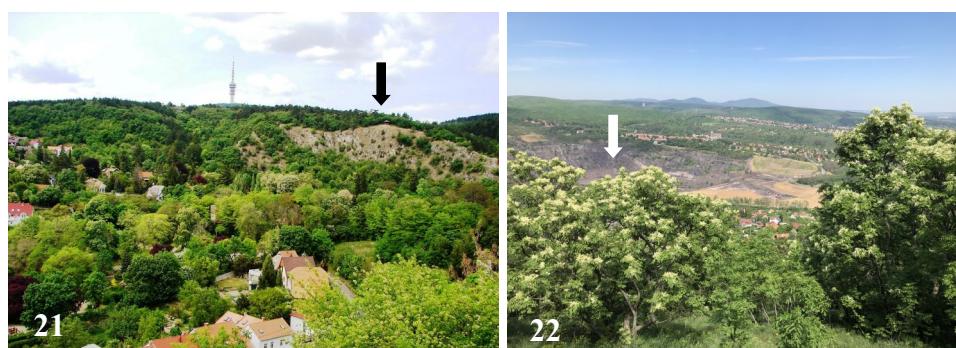
készült a Mecsekben; ♂, Hungaria m., Kárász, 1985. 8. 30., leg. et gen. prep. Fazekas I. No. 2034 (19. ábra). A pécsi xerotherm lelőhelyeken kívül a többi mecseki gyűjtőhely vagy a hűvösebb szubmontán bükkös övbe (Püspökszentlászló) vagy a mezofil jellegű gyertyános-tölgyesek (pl. Kárász) zónájába tartozik.

Meglepő, hogy a holomediterrán fajt Magyarországtól délre, mintegy 350–400 km-re lévő Kelet-Szerbiában (Brestovačka Banja, Bela Zemlja-Užice) először csak közel-múltban mutatták ki (Stojanović & Dodok 2007) egy-egy 1995-ös, 1998-as és 2001-es gyűjtésből. Más balkáni területeken már korábban is ismert volt (Hacker 1989, Thurner 1964). Stojanović és Dodok (2007) által vizsgált hím genitália morfológia képe azonos a mecseki példányéval.



**19–20. ábra.** *Dryobotodes monochroma* habitat: **19.** Kárász település, a Mecsek hegység északi oldalán, a gyertyános tölgylesek övében. **20.** A fehér nyíl a fénycsapda helyét mutatja 1985–86-ban. A fénycsapda 125 Wattos higanygőz égővel üzemelt, minden évben márciustól november végéig.

**Figure 19–20.** Habitat of *Dryobotodes monochroma*: **19.** the settlement of Kárász, on the northern side of the Mecsek Mountains, in the hornbeam oak belt. **20.** The white arrow shows the location of the light trap in 1985–86. The light trap was operated with a 125 Watt mercury vapour burner from the beginning of March to the end of November each year.

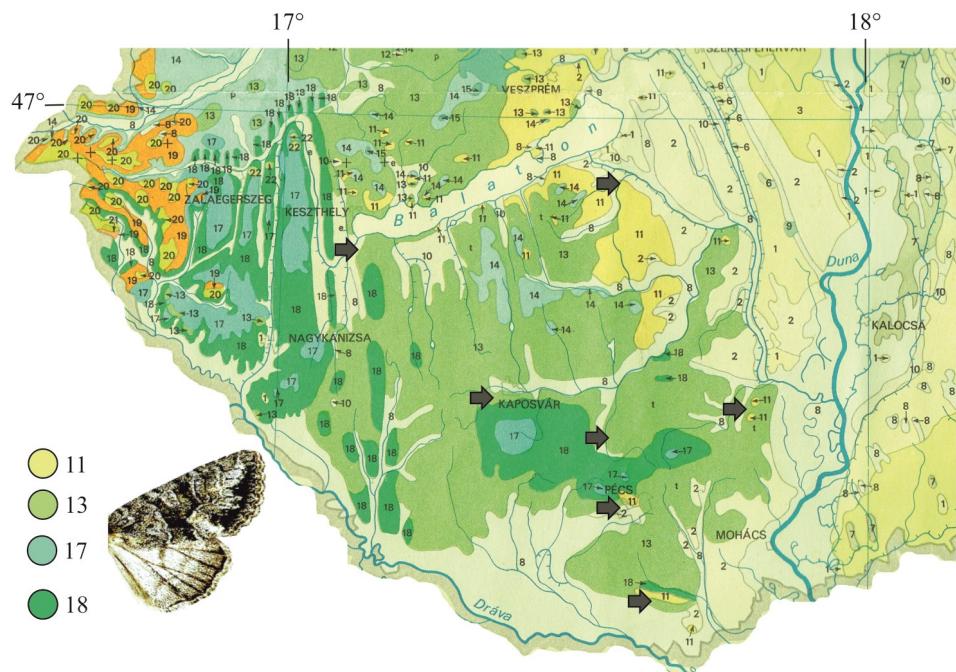


**21–22. ábra.** A *Dryobotodes monochroma* tipikus habitatjait veszélyeztető tényezők a Mecsek hegységben: **21.** a kőbányászat, a fekete fenyvesek telepítése, az építkezések; **22.** a külszíni feketőszén bányák. A bányákat bezárták, ezekben az években elkezdődött a rekultiváció.

**Figures 21–22.** Factors threatening typical habitats of *Dryobotodes monochroma* in the Mecsek Mountains: **21.** quarrying, plantation of black pine forests, construction works; **22.** open-cast black coal mines. The mines were closed down, and in those years reclamation started.

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**21. ábra.** A *Dryobotodes monochroma* populációk (fekete nyilak) elterjedési trendje a Dél-Dunántúlon a természetes vegetációk alapján (alaptérkép Zólyomi nyomán): 11. illír jellegű molyhostölgyes karsztbokorerdők, 13. cseres tölgyesek, 17. illír jellegű bükkösök, 18. illír jellegű gyertyános-tölgyesek.

**Figure 21.** Distribution trend of *Dryobotodes monochroma* populations (black arrows) in South Transdanubia based on natural vegetation (base map after Zólyomi): 11. Orno-Quercetum pubescens, 13. Quercetum-petraeae-cerris, 17. Helleboro-Fagetum, 18. Helleboro-Carpinetum.

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## A pomázi Majdán-fennsík nappali lepkéinek megfigyelései 2000 és 2020 között (Lepidoptera: Rhopalocera)

Observations of butterflies in the Majdan plateau of Pomáz (Hungary) between 2000 and 2020 (Lepidoptera: Rhopalocera)

Gergely Péter

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**Abstract.** Observations of Rhopalocera species between 2000 and 2020, northwest of Budapest, in Pomáz, on a dry limestone plateau. The author presents data on 96 species, 38 of which are protected in Hungary.

**Keywords:** Lepidoptera, butterflies, faunistic data, protected species, Pomáz, Hungary

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**Summary.** Majdán-plateau (Pomáz, northwest of Budapest, Hungary) is an uninhabited dry calcareous grassland surrounded with thickets; a small stream (Dera-patak), houses and woodland comprising mainly pubescent and Turkey oak, ash and manna (flowering) ash. Thickets have grown in abandoned vineyards and orchards. Despite its relatively small size, there are plenty of biotopes within this area. Typical flowers are pheasant's eye (*Adonis vernalis*), salad burnet (*Sanguisorba minor*), viper's bugloss (*Echium vulgare*), kidney vetch (*Anthyllis vulneraria*), Cantabrian morning glory (*Convolvulus cantabrica*), dwarf bearded iris (*Iris pumila*); biting stonecrop (*Sedum acre*); thyme (*Thymus pannonicus*); wild pink (*Dianthus plumarius*; subsp. *regis-stefani*); milkwort (*Polygala major*), white lace flower (*Orlaya grandiflora*), Jerusalem sage (*Phlomis tuberosa*), woolly foxglove (*Digitalis lanata*) and burning bush (*Dictamnus albus*).

Between 2000 and 2020, 96 species of butterflies, 36 of which are protected, have been observed and photo-documented during systematic visits: 11 Skippers, 4 Festoons/Apollos and Swallowtails, 12 Whites and Yellows, 1 Metalmark, 31 Coppers/Hairstreaks/Blues, and 37 Fritillaries/Admirals/Gliders/Browns/Heaths.

Typical, and relative common, protected species are Orbed Red Underwing Skipper (*Spialia orbifer* (Hübner, 1823); Clouded Apollo (*Parnassius mnemosyne* (Linnaeus, 1758); Southern Festoon (*Zerynthia polyxena* ([Denis & Schiffermüller], 1775) Common Swallowtail (*Papilio machaon* (Linnaeus, 1758), Scarce Swallowtail (*Iphiclides podalirius* (Linnaeus, 1758), Black Hairstreak (*Satyrium pruni* (Linnaeus, 1758), Large Copper (*Lycaena dispar rutilus* (Werneburg, 1864), Eastern Short-tailed Blue (*Cupido decoloratus* (Staudinger, 1886), Eastern Baton Blue (*Pseudophilotes vicrama schiffermuelleri* (Hemming, 1929), Checkered Blue (*Scolitantides orion* (Pallas, 1771), Green-underside Blue (*Glaucoopsyche alexis* (Poda, 1761), Amanda's Blue (*Polyommatus amandus* (Schneider, 1792), Turquoise Blue (*Polyommatus dorylas* ([Denis & Schiffermüller], 1775), Twin-spot Fritillary (*Brenthis hecate* ([Denis & Schiffermüller], 1775); Marbled Fritillary (*Brenthis daphne* ([Denis & Schiffermüller], 1775); Silver-washed Fritillary (*Argynnis paphia* (Linnaeus, 1758); Lesser Spotted Fritillary (*Melitaea trivia* ([Denis & Schiffermüller], 1775) and False Grayling (*Arethusana arethusa* ([Denis & Schiffermüller], 1775).

## Bevezetés – Introduction

A pomázi Majdán-fennsíkon 2000-óta rendszeresen figyelem meg és fényképezem a nappali lepkéket kora tavasztól késő őszig. A Pomázhöz tartozó Majdán (Majdánpol) édesvízi mészkő fennsík számos mészkőszikla kibúvással, melyet nyugatról erdő, északról a Dera-patak, ill. a patak mentén épült házak, keletről Pomáz, délről pedig mezőgazdasági terület, főleg nagyüzemi gyümölcsös határol.

Növényvilága összetett és értékes, számos, a régió flórájára jellemző faj megtalálható itt. A területnek csak egy része áll Natura 2000 védeottság alatt, de szervesen illeszkedik a Duna-Ipoly Nemzeti Parkba. A 1840-es években, a katonai felmérés szerint (<https://mapire.eu/hu>) a délkeleti rész kivételével szőlők voltak itt, melyek a filoxéra járvány után elpusztultak. Korábban, mint a neve: „pola/polje” is mutatja = mező, kaszáló és/vagy legelő lehetett. A jelenlegi gyepterület legnagyobb része másodlagos. Később, főleg a peremterületeken újra szőlőket és gyümölcsösöket alakítottak ki, majd a kitelepítések után ezek elvadultak és bozótosokká váltak. A fennsík sokáig katonai gyakorló terület volt, így kimaradt a mezőgazdasági művelésből. Maga a fennsík különféle biotópokat tartalmaz, zárt dolomit sziklagyepeket, lejtősztyepp-réteket, szálkaperje réteket, cserjés vegetációt, illetve a szélén zömmel csertölgyből, virágos kőrisből és molyhos-tölgyből álló erdőket. A fennsík leggyakoribb virágai a fenti biotópokra jellemzőek: így – többek között – tavaszi hérics (*Adonis vernalis*), csaba íre (*Sanguisorba minor*), közönséges kígyószisz (*Echium vulgare*), nyúlszapuka (*Anthyllis vulneraria*), borzas szulák (*Convolvulus cantabrica*), apró nőszírom (*Iris pumila*); borsos varjúháj (*Sedum acre*); magyar kakukkfű (*Thymus pannonicus*); Szent István király szegfű (*Dianthus plumarius*; ssp. *regis-stefani*); nagy pacsiarfű (*Polygala major*), Orlay murok (*Orlaya grandiflora*), macskahere (*Phlomis tuberosa*) és gyapjas gyűszűvirág (*Digitalis lanata*), az erdők szélén gyakori a nagy ezerjófű (*Dictamnus albus*).

A sokféle biotóp nagyszámu nappali lepkének ad otthont. Tizenegy busalepke, 4 pillangó, 12 fehérlepke, 1 mozaiklepke, 31 boglárka, 37 tarkalepke, összesen 96 nappali lepke faj él – bizonyítottan – ezen a területen, ebből 38 faj védett.

## Anyag és módszerek – Material and methods

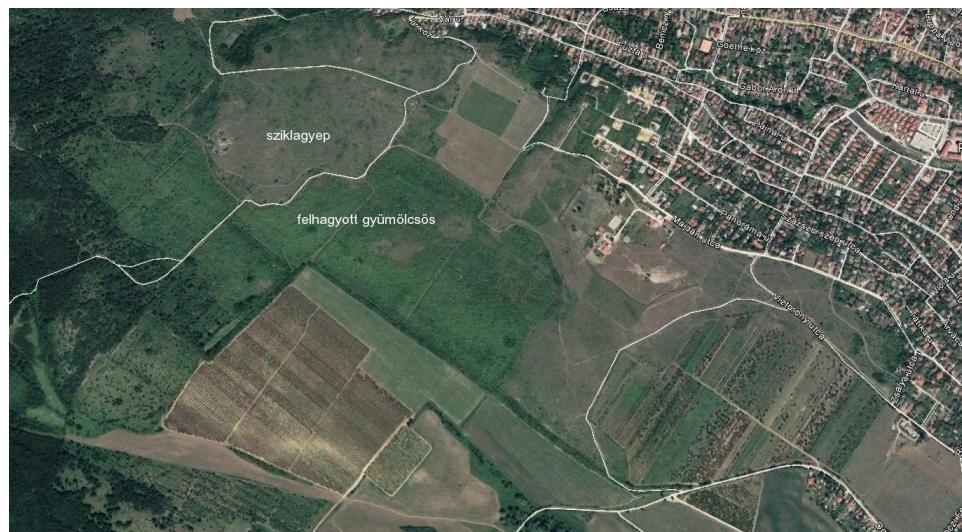
Bejárás: márciustól novemberig, hetente legalább egyszer, áprilistól augusztusig hetente többnyire kétszer (csak kedvezőtlen időjárás esetén maradt el a bejárás).

Fényképezés: Nikon fényképezőgéppel, makró objektívvel történt a dokumentáció (a gépek változtak az évek folyamán). Ha a meghatározáshoz erre szükség volt, a felszín mellett a fonákat is lefényképeztem. *Colias*-ok esetén minden ellenfényben fényképeztem a példányokat, ill. ha nem sikerült, a fajt nem határoztam meg.

A meghatározáshoz használt irodalom az idők során változott, eleinte Gozmány (1968), majd Tolman & Lewington (2009), később Haahtela et al. (2011) könyvét használtam, sőt egy időben felkértem Dietzel Gyulát, aki volt olyan kedves, hogy vagy húsz-harminc fotót meghatározott. A jelenlegi meghatározás a saját (Gergely et al. 2017) könyvem alapján történt. Befogás, preparálás nem történt. Nevezéktan: Varga (2010) által szerkesztett könyv alapján.

Dietzel Gyula (1945–2017)





**1. ábra.** A pomázi Majdán-fennsík (Google Earth)  
**Fig 1.** Majdán plateau in Pomáz (Google Earth)



2



3



4



5

**2–5. ábra.** (2) Sziklagyep részlet Orlay murokkal és borzas szulákkal; (3)sziklagyep borsos varjúhájjal; (4) Lejtősztyep részlet árvályhajjal és macskahével; (5) Lejtősztyep gyapjas gyűszűvirággal.

**Figures 2–5.** (2) Calcareous grassland with white laceflower and dwarf morning glory; (3) calcareous grassland with biting stonecrop; (4) calcareous grassland with feather grass and *Phlomis tuberosa*; (5) calcareous grassland with woolly foxglove

### Védett fajok – Protected species

- Törpe busalepke – *Spialia orbifer* (Hübner, 1823) – tápnövénye, a *Sanguisorba minor* elsősorban a legmelegebb, sovány talajú sziklagyepeken nő. Áprilisban és májusban lehet leggyakrabban találkozni vele.
- Kis apollólepke – *Parnassius mnemosyne* (Linnaeus, 1758) – a közel erdei tisztásokon sokkal gyakoribb, de egyes példányai a fennsíkra is elköborolnak.
- Farkasalmalepke – *Zerynthia polyxena* ([Denis & Schiffermüller], 1775) – tápnövénye, a farkasalma (*Aristolochia clematitis*) több nagy telepben is megtalálható az elhangzott, elbozótosodott gyümölcsösökben, de a lepke a mélyebb fekvésű, nedvesebb területeket kedveli, ott repül nagyobb számban.
- Fecskefarkú lepke – *Papilio machaon* (Linnaeus, 1758) – rendszeresen előfordul. Hernyóit egy ízben szürke gurgolyán (*Seseli osseum*) figyeltem meg (2015.06.05).
- Kardoslepke – *Iphiclides podalirius* (Linnaeus, 1758) – rendszeresen előfordul, de előszeretettel keresi fel a közelí hegycsúcsokat (Majdán-hegy, Oszoly-csúcs).
- Citromlepke – *Gonepteryx rhamni* – elég gyakori, már kora tavasztól megfigyelhető.
- Nyírfalepke – *Thecla betulae* (Linnaeus, 1758) – csak néhány megfigyelés; inkább a szomszédos erdei utakon mutatkozik, főleg, ha a talajon szívogat.
- Tölgyfalepke – *Favonius quercus* (Linnaeus, 1758) – csak egyesével észlelhető.
- Tölgyfa-csücsköslepke – *Satyrium ilicis* (Esper, 1779) – csak egyesével észlelhető (2015.06.07; 2016.06.27)
- Kökénylepke – *Satyrium spinii* ([Denis & Schiffermüller], 1775) – csak egyesével található (2004.06.27; 2004.07.18; 2011.06.18; 2016.06.14).
- Szilvafalepke – *Satyrium pruni* (Linnaeus, 1758) – egyes években több példány is észlelhető – főleg a bozótos szélén lévő elvadult szilvafákon (2004.06.27; 2004.07.18; 2011.06.18; 2016.06.14).
- Nagy tűzlepke – *Lycaena dispar rutilus* (Werneburg, 1864) – a mélyebb, nedvesebb rézsíken rendszeresen megtalálható.
- Ibolyás tűzlepke – *Lycaena alciphron* (Rottenburg, 1775) – bár megfelelő az élőhelye, csak egyetlen alkalommal figyeltem meg és fényképeztem le (2018.05.26).
- Kis tűzlepke – *Lycaena thersamon* (Esper, 1784) – három alkalommal figyeltem meg, két alkalommal készült fénykép is (2013.07.14; 2019.05.01)
- Fakó boglárka – *Cupido decoloratus* (Staudinger, 1886) – főleg a második nemzedék (júliusi-augusztusi) gyakori.
- Apró boglárka – *Pseudophilotes vicrama schiffermuelleri* (Hemming, 1929) – mindenkor nemzedék (áprilisban, ill. júliusban) gyakori.
- Szemes boglárka – *Scolitantides orion* (Pallas, 1771) – egyes években gyakoribb.
- Nagyszemes boglárka – *Glaucopsyche alexis* (Poda, 1761) – meglehetősen gyakori.
- Szürkés hangyaboglárka – *Maculinea alcon* ([Denis & Schiffermüller], 1775) – egyszeri megfigyelés (2017.06.19), a Majdán fennsíkon nem találkoztam a tápnövényével, de viszonylag közelí élőhelyei vannak pl. a Hosszú-hegyen.
- Északi boglárka – *Plebejus idas* (Linnaeus, 1761) – rendszeresen észlelhető, de nem gyakori.
- Szerecsenboglárka – *Aricia agestis* ([Denis & Schiffermüller], 1775) – a korábbi években gyakori volt, az utóbbi években kevésbé. Utolsó megfigyelések: 2016.08.29; 2019.07.15.
- Csillagog boglárka – *Polyommatus amandus* (Schneider, 1792) – pomázi élőhelye régóta ismert (Bálint et al., 2006), egyes években gyakori.
- Fényle boglárka – *Polyommatus dorylas* ([Denis & Schiffermüller], 1775) – nem gyakori.

- Csőrőslepke – *Libythea celtis* (Laicharting, 1782) – elsősorban áttelelő példányok figyelhetők meg.
- Kis színjátszólepke – *Apatura ilia* ([Denis & Schiffermüller], 1775) – a Dera-patak völgyében él, elkóborló példányát egyszer figyeltem meg (2011.08.02).
- Nagy fehérsávoslepke – *Neptis rivularis* (Scopoli, 1763) – hernyója a kertekben ültetett gyöngyvesszőkön él, a lelke csak a kertek közelében figyelhető meg. Az utóbbi években ritkábban észlelhető, utolsó megfigyelés: 2020.06.23.
- Kis fehérsávoslepke – *Neptis sappho* (Pallas, 1771) – az utóbbi években egyre gyakrabban megfigyelhető (2014.04.25; 2019.08.19; 2020.05.10, 2020.08.16).
- Rozsdaszíű gyöngyházlepke – *Brenthis hecate* ([Denis & Schiffermüller], 1775) – gyakori.
- Málna-gyöngyházlepke – *Brenthis daphne* ([Denis & Schiffermüller], 1775) – gyakori. Hernyói rendszeresen megfigyelhetők a bozótosokat szegélyező szederleveleken.
- Nagy gyöngyházlepke – *Argynnis paphia* (Linnaeus, 1758) – gyakori.
- Zöldes gyöngyházlepke – *Argynnis pandora* ([Denis & Schiffermüller], 1775) – egyes években, pl. 2009-ben gyakori volt.
- Tüzes tarkalepke – *Melitaea didyma* (Esper, 1778) – nem gyakori; hernyóját néhány-szor útifüvön (*Plantago media*) találtam (2007.05.20; 2009.05.22).
- Kis tarkalepke – *Melitaea trivia* ([Denis & Schiffermüller], 1775) – minden nemzedék (május és július) gyakori. Hernyója gyakran megfigyelhető a csilláros ökorfarkkóró (*Verbascum lychnitis*) levelein.
- Recés tarkalepke – *Melitaea aurelia* (Nickerl, 1985) – rendszeresen észlelhető (2014.06.02; 218.05.28; 2019.06.03; 2020.06.14), de nem gyakori.
- C-betűs lepke – *Polygonia c-album* (Linnaeus, 1758) – gyakori.
- Nagy rókalepke – *Nymphalis polychloros* (Linnaeus, 1758) – leggyakrabban az áttelelő példányait lehet megfigyelni.
- Nappali pávaszem – *Inachis io* (Linnaeus, 1758) – elsősorban áttelelő példányait lehet észlelni.
- Közönséges szemeslepke – *Arethusana arethusa* ([Denis & Schiffermüller], 1775) – gyakori.

Korábban megfigyelt fajok, melyek jelenleg, illetve már nem észlelhetők:

Lápi gyöngyházlepke – *Brenthis ino* (Rottemburg 1775) – a Majdán-fennsíkon 1984-ben fogták (Bálint & Katona, 2019). Az elmúlt húsz évben nem volt észlelhető, a fenn-sík jelenlegi száraz jellege nem kedvez a faj fennmaradásának.

Magyar boglárka – *Jolana iolas* (Ochsenheimer, 1816) – az ötvenes években még fogták Pomáz és Szentendre környékén (Bálint et al., 2006). Tápnövénye, a *Colutea arborescens* az elhagyott gyümölcsökben megtalálható, de a faj oly mértékben visszahúzódott korábbi élőhelyeiről, hogy előfordulása a Majdánon nagy valószínűséggel kizártató.

A környéken megfigyelhető fajok, melyeket a Majdán-fennsíkon nem észleltem:

Tükörös busalepke – *Heteropterus morpheus* (Pallas, 1971) – ismételten észleltem több egyedét a Pilis-tetőn (2020.07.09; 2020.07.22).

Keleti mustárlépke – *Leptidea morsei major* (Lorkovic, 1927) – egyszeri észlelés (Dera-szurdok: 2013.04.22).

Nagyfoltú hangyaboglárka – *Maculinea [Phengaris] arion* (Linnaeus, 1758) – rendszeresen megfigyelhető a Pilis-tetőn, dokumentálva: 2018.06.25; 2019.07.14 és 2019.07.21 között, ill. 2020.07.22 és 2020.08.09 között.

Szilfa-csücsköslepke – *Satyrium w-album* (Knoch, 1782) – nem gyakori, de többször megfigyelhető a Pilis-tetőre vezető út mentén, amint a gyalogbodza virágain szívogat (2017.07.02; 2018.06.25)

Nagy színjátszólepke – *Apatura iris* (Linnaeus, 1758) – rendszeresen megfigyelhető a Pilis-tetőre vezető úton (2019.06.30; 2020.07.09).

Gyászlepke – *Nymphalis antiopa* (Linnaeus, 1758) – egyetlen megfigyelés (Rámszakadék: 2006.07.16)

Kis rókalepke – *Aglais urticae* (Linnaeus, 1758) – egyetlen megfigyelés (Pilis-tető: 2016.08.27).

#### A Majdán-fennsíkon észlelt nappali lepkefajok jegyzéke – a gyakoriság feltüntetésével (\* gyakori)

List of butterflies of Majdán plateau – with their abundance (\* frequent)

##### HESPERIDAE

*Carcharodus flocciferus* (Zeller, 1847) – egyszeri észlelés (2012.07.04)

*Carterocephalus palaemon* (Pallas, 1771) – korábban rendszeresen megfigyelhető volt (2006.05.06; 2007.05.06; 2008.05.18), az utóbbi években eltűnt

*Erynnis tages* (Linnaeus, 1758)\*

*Hesperia comma* (Linnaeus, 1758)\*

*Ochlodes sylvanus* (Esper, 1777)\*

*Pyrgus armoricanus* (Oberthür, 1910) – egyszeri észlelés (2016.09.03)

*Pyrgus carthami* (Hübner, 1813)\*

*Pyrgus malvae* (Linnaeus, 1758)\*

*Spiralia orbifer* (Hübner, 1823)\*

*Thymelicus lineola* (Ochsenheimer, 1808)\*

*Thymelicus sylvestris* (Poda, 1761)\*

##### PAPILIONIDAE

*Iphiclus podalirius* (Linnaeus, 1758) – nem gyakori

*Papilio machaon* Linnaeus, 1758 – nem gyakori

*Parnassius mnemosyne* (Linnaeus, 1758)\*

*Zerynthia polyxena* ([Denis & Schiffermüller], 1775) – egyes években gyakori

##### PIERIDAE

*Anthocharis cardamines* (Linnaeus, 1758)\*

*Aporia crataegi* (Linnaeus, 1758) – egyszeri észlelés (2019.06.12)

*Colias alfacariensis* (Ribbe, 1905)\*

*Colias crocea* (Geoffroy, 1785)\*

*Colias erate* (Esper, 1805)\*

*Colias hyale* (Linnaeus, 1758)\*

*Gonepteryx rhamni* (Linnaeus, 1758)\*

*Leptidea sinapis* (Linnaeus, 1758)\*

*Pieris brassicae* (Linnaeus, 1758)\*

*Pieris napi* (Linnaeus, 1758)\*

*Pieris rapae* (Linnaeus, 1758)\*

*Pontia edusa* (Fabricius, 1777) – kétszeri észlelés (2018.05.26 és 2018.05.28)

##### RIODINIDAE

*Hamearis lucina* (Linnaeus, 1758) – nem gyakori

## LYCAENIDAE

- Aricia agestis* ([Denis & Schiffermüller], 1775) – nem gyakori  
*Callophrys rubi* (Linnaeus, 1758)\*  
*Celastrina argiolus* (Linnaeus, 1758)\*  
*Cupido argiades* (Pallas, 1771)\*  
*Cupido decoloratus* (Staudinger, 1886)\*  
*Cupido minimus* (Fuessly, 1775)\*  
*Cyaniris semiargus* (Rottemburg, 1775)\*  
*Favonius quercus* (Linnaeus, 1758) – nem gyakori  
*Glaucoopsyche alexis* (Poda, 1761)\*  
*Lycaena alciphron* (Rottemburg, 1775) – egyszeri észlelés (2018.05.26).  
*Lycaena dispar* (Haworth, 1802)\*  
*Lycaena phlaeas* (Linnaeus, 1761)\*  
*Lycaena thersamon* (Esper, 1784) – kétszeri észlelés (2013.07.14; 2019.05.01)  
*Lycaena tityrus* (Poda, 1761)\*  
*Phengaris alcon* ([Denis & Schiffermüller], 1775) – egyszeri észlelés (2017.06.19)  
*Plebejus argus* (Linnaeus, 1758)\*  
*Plebejus argyrognomon* (Bergsträsser, 1779)\*  
*Plebejus idas* (Linnaeus, 1761) – nem gyakori  
*Polyommatus amandus* (Schneider, 1792) – egyes években gyakori  
*Polyommatus bellargus* (Rottemburg, 1775)\*  
*Polyommatus coridon* (Poda, 1761)\*  
*Polyommatus daphnis* ([Denis & Schiffermüller], 1775)\*  
*Polyommatus dorylas* ([Denis & Schiffermüller], 1775) – nem gyakori  
*Plyommatus icarus* (Rottemburg, 1775) \*  
*Pseudophilotes vicrama schiffermuelleri* (Hemming 1929)\*  
*Satyrium acaciae* (Fabricius, 1787)\*  
*Satyrium ilicis* (Esper, 1779) – néhány észlelés  
*Satyrium pruni* (Linnaeus, 1758) – néhány észlelés  
*Satyrium spini* ([Denis & Schiffermüller], 1775) – néhány észlelés (2004.06.27;  
  2004.07.18; 2011.06.18; 2016.06.14)  
*Scolitantides orion* (Pallas, 1771) – egyes években gyakori  
*Thecla betulae* (Linnaeus, 1758) – nem gyakori

## NYMPHALIDAE

- Apatura ilia* ([Denis & Schiffermüller], 1775) – egyszeri észlelés (2011.08.02)  
*Aphantopus hyperantus* (Linnaeus, 1758) – nem gyakori  
*Araschnia levana* (Linnaeus, 1758) – nem gyakori  
*Arethusana arethusa* ([Denis & Schiffermüller], 1775)\*  
*Argynnis adippe* (Linnaeus, 1758) – nem gyakori  
*Argynnis aglaja* (Linnaeus, 1758) – nem gyakori  
*Argynnis pandora* ([Denis & Schiffermüller], 1775) – egyes években gyakori  
*Argynnis paphia* (Linnaeus, 1758)\*  
*Boloria dia* (Linnaeus, 1767)\*  
*Brenthis daphne* (Bergsträsser, 1780)\*  
*Brenthis hecate* ([Denis & Schiffermüller], 1775)\*  
*Brintesia circe* (Fabricius, 1775)\*  
*Coenonympha arcania* (Linnaeus, 1761)\*  
*Coenonympha glycerion* (Borkhausen, 1788)\*  
*Coenonympha pamphilus* (Linnaeus, 1758)\*  
*Hipparchia fagi* (Scopoli, 1763)\*

- Issoria lathonia* (Linnaeus, 1758)\*  
*Lasiommata maera* (Linnaeus, 1758)\*  
*Lasiommata megera* (Linnaeus, 1767)\*  
*Libythea celtis* (Laicharting, 1782)\*  
*Maniola jurtina* (Linnaeus, 1758)\*  
*Melanargia galathea* (Linnaeus, 1758)\*  
*Melitaea athalia* (Rottemburg, 1775)\*  
*Melitaea aurelia* (Nickerl, 1850) – nem gyakori  
*Melitaea cinxia* (Linnaeus, 1758)\*  
*Melitaea didyma* (Esper, 1778) – nem gyakori  
*Melitaea phoebe* ([Denis & Schiffermüller], 1775)\*  
*Melitaea trivia* ([Denis & Schiffermüller], 1775)\*  
*Minois dryas* (Scopoli, 1763)\*  
*Neptis rivularis* (Scopoli, 1763) – nem gyakori  
*Neptis sappho* (Pallas, 1771) – az utóbbi években rendszeresen megfigyelhető  
*Nymphalis io* (Linnaeus, 1758) – nem gyakori  
*Nymphalis polychloros* (Linnaeus, 1758) – nem gyakori  
*Pararge aegeria* (Linnaeus, 1758)\* – elsősorban az odavezető erdei utak mentén  
*Polygonia c-album* (Linnaeus, 1758)\*  
*Vanessa atalanta* (Linnaeus, 1758)\*  
*Vanessa cardui* (Linnaeus, 1758) – egyes években gyakori

### Összefoglalás

A pomázi Majdán-fennsík lakatlan száraz mészkőgyep, melyet bozótos, patak, erdő és házak vesznek körül. Rendszeres bejárással 2000 és 2020 között összesen 96 nappali-lepke fajt észleltem és fényképpel dokumentáltam, ebből 38 faj védett.

**1. táblázat.** A megfigyelt, és a magyarországi Rhopalocera fajok száma családonként  
**Table 1.** Number of observed and Hungarian Rhopalocera species per family

Család / Familia	Fajszám / Species number	Fajszám Magyarorszáon Number of species in Hungary
Hesperiidae	11	18
Papilionidae	4	4
Pieridae	12	19
Riodinidae	1	1
Lycaenidae	31	48
Nymphalidae	37	67
Összesen / Total	96	157



**6–9. ábra.** (6) *Pseudophilotes vicrama schiffermuelleri*; (7) *Polyommatus amandus*; (8) *Cupido decoloratus*; (9) *Arethusana arethusa*

**Figures 6–9.** (6) Eastern Baton Blue; (7) Amanda's Blue; (8) Eastern Short-tailed Blue; (9) False Grayling

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## Two new taxa of the genus *Dichagyris* Lederer, 1867 from the Caucasus (Lepidoptera, Noctuidae)

Péter Gyulai

**Citation.** Gyulai P. 2021: Two new taxa of the genus *Dichagyris* Lederer, 1867 from the Caucasus (Lepidoptera, Noctuidae). – *Lepidopterologica Hungarica* 17(2): 109–118.

**Abstract.** Description of *Dichagyris korshunovi dagestana* ssp. n. and *Dichagyris inequalis* sp. n. from Dagestan, Russia are given with 16 colour photos of imagines and 14 genitalia figures.

**Keywords.** Asia, taxonomy, Noctuidae, new descriptions.

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### Introduction

*Dichagyris* is a diverse genus with a Holarctic distribution. In the Palaearctic, most of the species are inhabitants of Turkey, Iran and the Central Asiatic high mountains. The eight described species of *Dichagyris melanura* (Kollar, 1846) species-group (*D. melanura* is the type species of *Dichagyris*), are characterized by white ground colour on the forewings with more or less fine grey or brown suffusion and broad black marginal area. This species group was subdivided to two subgroups by Varga (1996), by the bulbed or non-bulbed apical cornutus of the subbasal diverticulum in the male genitalia. Here a new taxa from both subgroups is described.

Here, the diagnosis and description of one new species and one new subspecies from the Caucasus (Russia, Dagestan) are given. Also figured are the female genitalia of all the new and closely related taxa, although the differences between them are really slight.

Abbreviations for personal and institutional Collections used here: HNHM = Hungarian Natural History Museum (Budapest, Hungary); HT = holotype; PT = paratype; PGM = collection of Péter Gyulai (Miskolc, Hungary); GYP = genitalia slide Péter Gyulai.

### Description of new taxa

#### *Dichagyris korshunovi dagestana* ssp. n. (Figs 5–8, 19, 26)

**Holotype:** Male (Fig. 5), sp. n., Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina, slide no. 5501 (coll. PGM, later to be deposited in the HNHM).

**Paratypes:** 1 male, 3 females, with the same data (coll. PGM).  
slide: GYP 5502f

**Diagnosis.** The new subspecies (Figs 5–8) is externally very similar to the nominate subspecies, (Figs 1–4) but the middle area in the forewing less greyish suffused

and the Noctuidae maculation hardly defined in the males; but in the females, the markings are much stronger than in the nominotypical subspecies.

In the male genitalia, the new subspecies (Fig. 19) can be distinguished from that of the nominotypical one (Figs 17, 18) by the less convex dilated configuration of the dorsal costa in the valvae, slightly longer cucullus apically, shorter vinculum and the lack of sclerotization in the inner bend of vesica.

In the female genitalia, the new subspecies (Figs 26.) has weaker ductus bursae and longer corpus bursa.

**Description** (Figs 5 – 8). Wingspan 29-30 mm. The vesture of body and ground colour of the forewings white, more or less densely irrorated with fine greyish scales, the distal area widely black. Orbicular and reniform stigmata small, narrowly more or less black edged; claviform stigma absent. Antemedian and postmedian crosslines black, strong, well defined; cilia black. Females darker than males, wing pattern stronger. Hindwings whitish with brown suffusion; marginal area widely darker in the males, the hindwing more unicolorous, darker in the females; cilia black then whitish.

**Male genitalia** (Fig. 19). Uncus long, narrow and slightly curved; juxta broadly shield-like, ventrally with a medial protrusion; vinculum v-shaped; valvae elongate, dorsal costa medially evenly dilated, cucullus section dorso-apically slightly pointed; harpe strong, slightly dorsally curved; ampulla long, evenly narrow, apically rounded. Aedeagus tubular; vesica tubular-spacious, with a large subbasal diverticulum dorsally, apically with a small cornutus on a bulbous base; twisted-coiled medially.

**Female genitalia** (Fig. 26). Papillae anales setose, short; apophyses posteriores much longer but more slender; antrum weakly sclerotized with more strongly sclerotized, bilateral, symmetrical narrow lobes; ductus bursae tubular, wrinkled; appendix bursae large, globular; corpus bursae long, saccate.

**Biology and distribution.** The new subspecies was found at medium elevation in Great Caucasus.

**Etymology.** The new subspecies is named after the province of the type locality.

#### *Dichagyris inequalis* sp. n.

(Figs 9–12, 20, 21, 27, 28)

**Holotype.** Male (Fig. 9), Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 28. VII. 2020, leg. V. Zurilina, slide no. GYP 5480 (coll. PGM, later to be deposited in the HNHM).

**Paratypes.** 3 males, 3 females, with the same data (coll. PGM); 1 male, same data, but 23. VII. 2020 (coll. PGM); 6 males, 3 females, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 24. VII. 2020, leg. V. Zurilina (coll. PGM); 3 males, 3 females, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 27. VII. 2020, leg. V. Zurilina (coll. PGM). slide nos. GYP 5335m, 5474f, 5351f, 5482f, 5488m

**Diagnosis.** The most closely related and similar species are *Dichagyris grisescens* Staudinger, 1879 (Figs 15, 16) and *D. melanurooides* Kozhantshikov, 1930 (Figs 13, 14), from which the new species (Figs 9–12) can be easily separated by the unequal, zigzag inner edge of the black marginal area and the black and white variegated forewing cilia; additionally from *D. melanurooides* the ground colour of forewings is paler and the orbicular and reniform stigmata are obscure and not more or less narrowly

black outlined. In the male genitalia, the new species (Figs 20, 21), differs from *D. grisescens* (Fig. 24), in the narrower valvae with much smaller rounded extension dorso-medially and evenly arcuate ventral costa; terminally more tapered cucullus section, significantly shorter dorso-medial process of the juxta and larger subbasal diverticulum. In the absence of the carinal thorn of the aedeagus, the new species is more like *D. grisescens*. Compared to *D. melanuroides* (Figs 22, 23), the new species has a longer uncus, longer but narrower valvae, less dilated dorso-medially, less elongate cucullus section apically, and longer, narrower aedeagus. In the female genitalia, the new species (Figs 27, 28), differs from *D. grisescens* (Fig. 30), in the stronger pincer-like, bilaterally symmetrical lobes of the antrum, the somewhat narrower ductus bursae and the much larger appendix bursae. The main distinguishing features from *D. melanuroides* (Fig. 29), are in the shape and the longer, stronger sclerotization of the pincer-like, bilaterally symmetrical lobes of the antrum and the narrower ductus bursae.

**Description** (Figs 9 – 12). Wingspan 28-29 mm. The vesture of body and ground colour of the forewings white, finely irrorated with greyish scales, the distal area widely black with zigzag, unequal inner margin. Orbicular and reniform stigmata obscure, white without greyish scales; claviform stigma absent. Antemedian and postmedian crosslines black, narrow, but well defined; cilia black and white variegated. Hindwings whitish with brown suffusion and widely darker outer area in the males, which is more unicolorous, darker in the females; cilia whitish.

**Male genitalia** (Figs 20, 21). Uncus long, distally evenly narrow and slightly curved, apically pointed; juxta broadly shield-like, dorso-medially with a strong protrusion; vinculum long, v-shaped; valvae elongate, dorsal costa medially evenly dilated, the ventral one evenly tapered distally; cucullus section dorso-apically pointed, with a short bristled corona; harpe strong, distally slightly dorsally curved; ampulla long, evenly narrow, apically rounded. Aedeagus with a long, strongly sclerotized ventral carinal wedge; vesica tubular-spacious, with a large subbasal diverticulum dorsally, apically with a small cornutus.

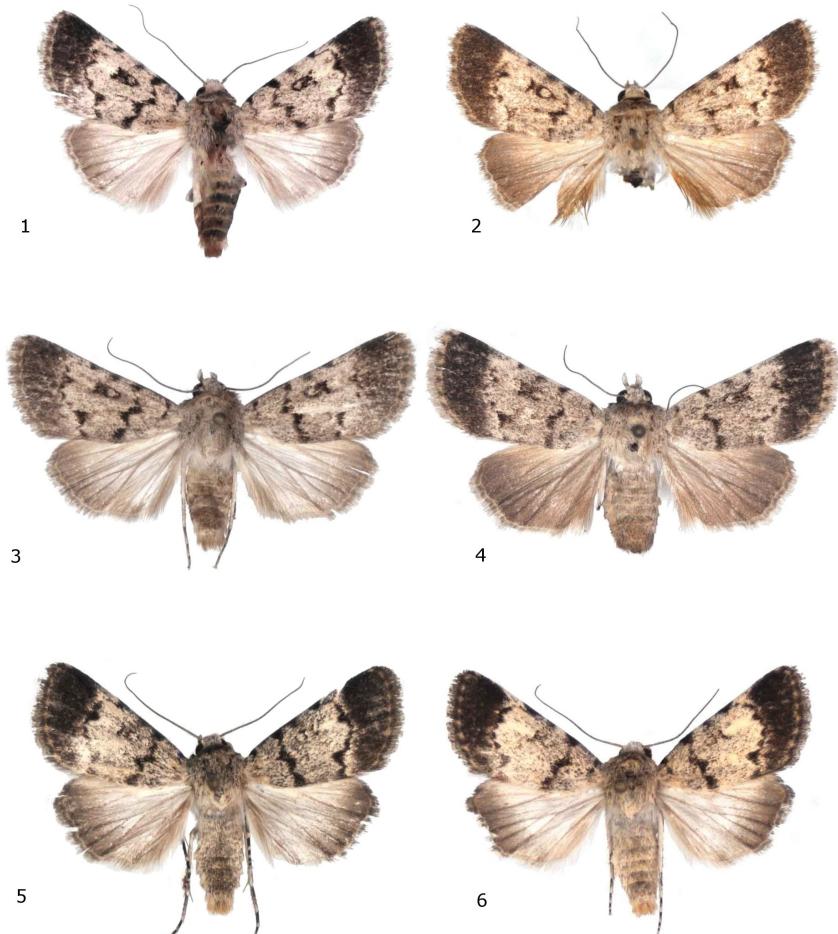
**Female genitalia** (Figs 27, 28). The main characters are the setose, short papillae anales, short apophyses anteriores and much longer but more slender apophyses posteriores; finely sclerotized antrum with more sclerotized, pincer-like, bilaterally symmetrical narrow lobes; more or less evenly broad, tubular ductus bursae; large, globular appendix bursae and saccate corpus bursae.

Comment. *Agrotis grisescens* var. *fasciata* (Vorbrodt, 1930) is incorrectly associated with *Dichagyris grisescens* Staudinger, 1879 somewhere in Internet. In fact, it is a form of *Epipsilia grisescens* (Fabricius, 1794).

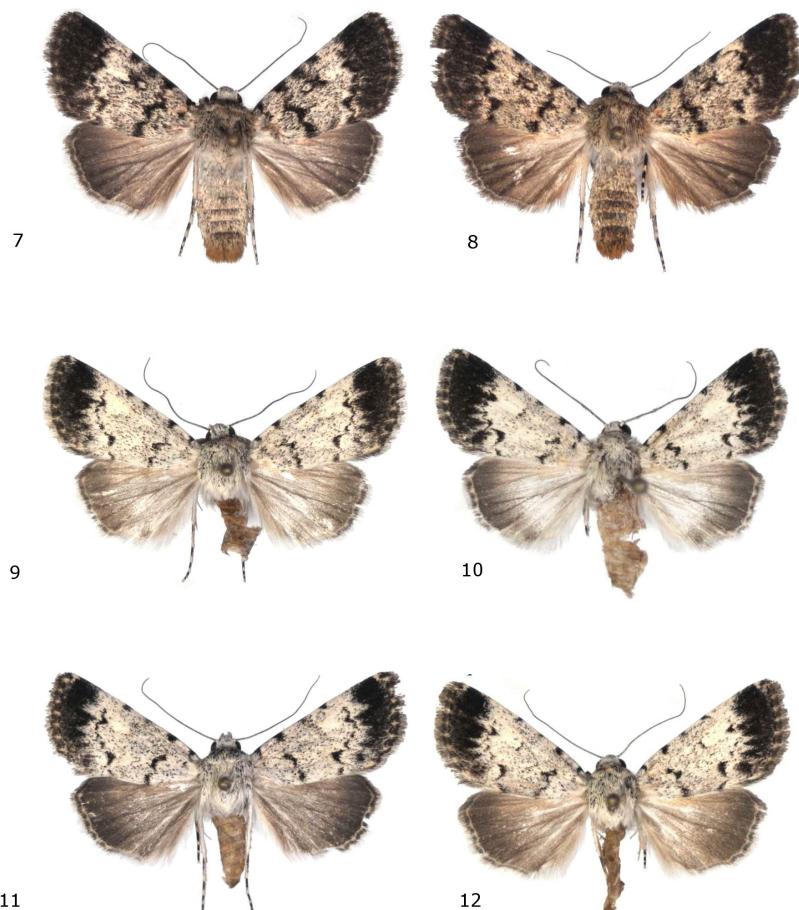
**Biology and distribution.** The new species was found in the lower elevation of the eastern part of Great Caucasus.

**Etymology.** The new species is named from the unequal inner margin of the wide, black outer area of the forewings

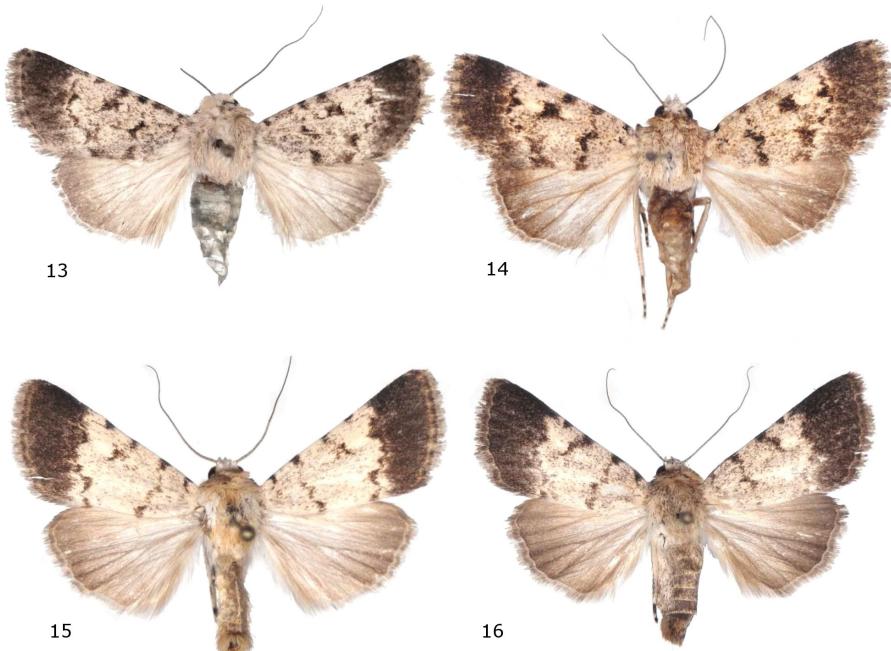
**Acknowledgements.** The author is grateful to Prof. Zoltán Varga (Zoological Institute of Debrecen University, Hungary) for consultation and useful advice; to Adrienne Gyulai-Garai (Miskolc, Hungary) for much help in computer work; to Barry Goater (Hampshire, UK) for linguistic adjustments; to Imre Fazekas (Pannon Institute, Pécs, Hungary) for the publication of the manuscript and for the reviewers.



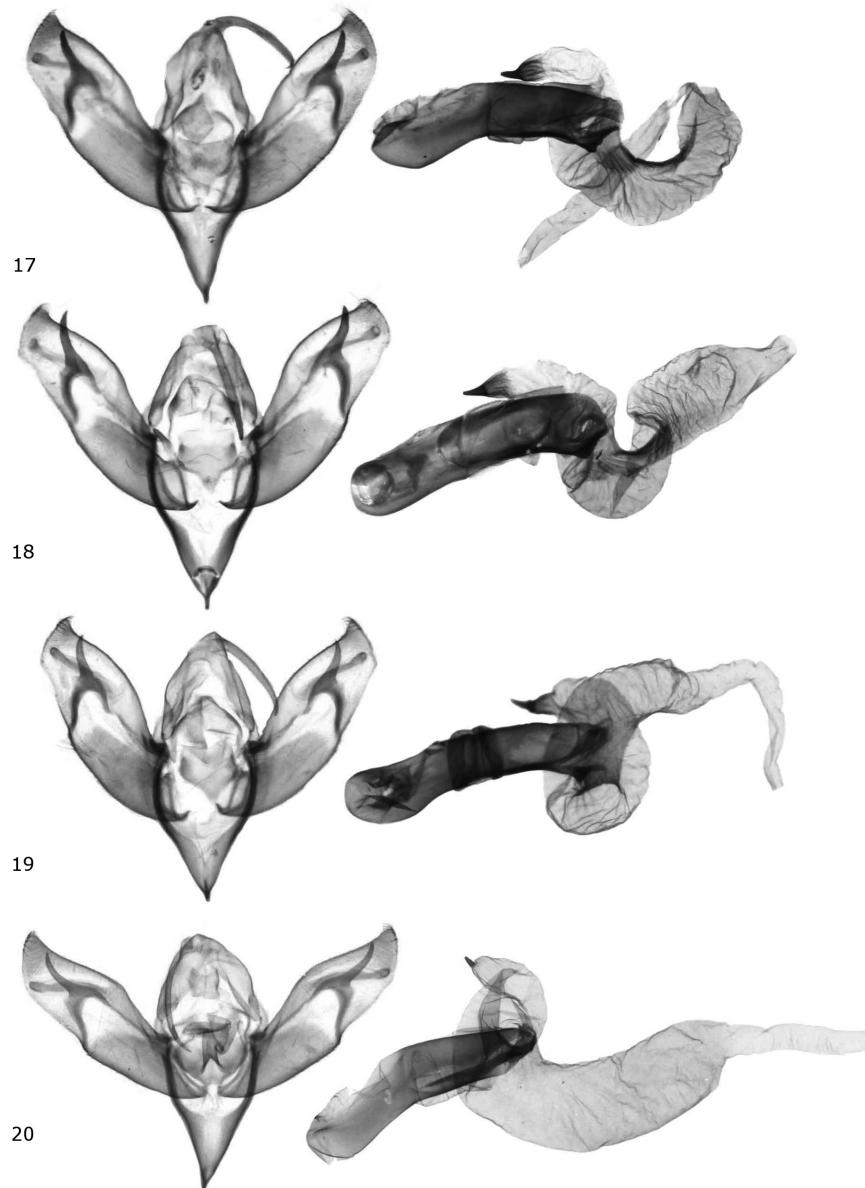
**Figures 1–6.** *Dichagyris* spp. and ssp. adults. 1. *D. korshunovi* Varga, 1996, male, PT, Turkmenistan, Kopet Dagh, Dushak, 37°54'N, 57°56'E, 1500 m, 7-8. VIII. 1992, L 59, leg. M. Hreblay, Gy. László & G. Ronkay, GYP 5303 (PGM); 2. *D. korshunovi* Varga, 1996, female, PT, Turkmenistan, Kopet Dagh, 6 km S of Ipay-Kala, 38°17'N, 57°07'E, 1600 m, 16-23. VIII. 1992, L 74, leg. M. Hreblay, Gy. László & G. Ronkay, GYP 5504 (PGM); 3. *D. korshunovi* Varga, 1996, male, Iran, prov. Khorasan, Kuh-e-Binaloud, 1770 m, NE of Neyshapur, 7-8. VII. 2010, leg. P. Gyulai & A. Garai, GYP 5506 (PGM); 4. *D. korshunovi* Varga, 1996, male, Iran, prov. Khorasan, Kuh-e-Binaloud, 1770 m, NE of Neyshapur, 7-8. VII. 2010, leg. P. Gyulai & A. Garai (PGM); 5. *D. korshunovi dagestana* ssp. n., HT, male, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina, GYP 5501 (PGM); 6. *D. korshunovi dagestana* ssp. n., PT, male, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina (PGM).



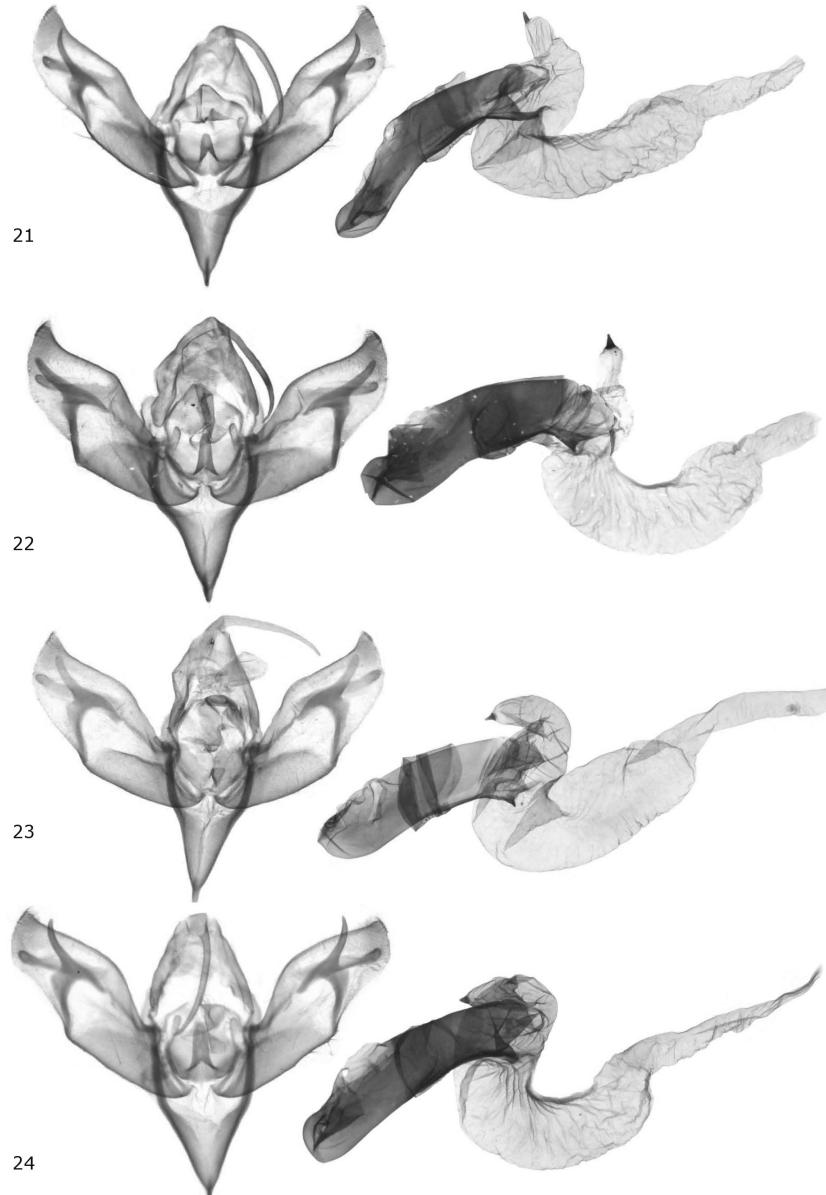
**Figures 7–12.** *Dichagyris* spp. and ssp. adults. 7. *D. korshunovi dagestana* ssp. n., PT, female, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina (PGM); 8. *D. korshunovi dagestana* ssp. n., PT, female, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina GYP 5502 (PGM); 9. *D. inequalis* sp. n., HT, male, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 28. VII. 2020, leg. V. Zurilina, GYP 5480 (PGM); 10. *D. inequalis* sp. n., PT, male, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 24. VII. 2020, leg. V. Zurilina GYP 5335 (PGM); 11. *D. inequalis* sp. n., PT, female, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 27. VII. 2020, leg. V. Zurilina, GYP 5474 (PGM); 12. *D. inequalis* sp. n., PT, female, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 24. VII. 2020, leg. V. Zurilina, GYP 5482 (PGM).



**Figures 13–16.** *Dichagyris* spp. adults. 13. *D. melanurooides* Kozhantshikov, 1930, male, Iran, prov. Esfahan, 15 km S of Sahreza, 1500 m, 3. VII. 2000, leg. B. Benedek, GYP 5325, (PGM); 14. *D. melanurooides* Kozhantshikov, 1930, Usbekistan, Kughitang, 120 km NNW Thermes, Tshashmobison, 1500 m, 4. VII. 1994, leg. V. A. Lukhtanov, GYP 5497 (PGM); 15. *D. grisescens* Staudinger, 1879, male, Usbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25.VII.1990, leg. P. Gyulai (PGM); 16. *D. grisescens* Staudinger, 1879, female, Usbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25.VII.1990, leg. P. Gyulai (PGM).



**Figures 17–20.** *Dichagyris* spp. and ssp. male genitalia. 17. *D. korshunovi* Varga, 1996, PT, Turkmenistan, Kopet Dagh, Dushak, 37°54'N, 57°56'E, 1500 m, 7–8. VIII. 1992, L 59, leg. M. Hreblay, Gy. László & G. Ronkay, GYP 5303 (PGM); 18. *D. korshunovi* Varga, 1996, Iran, prov. Khorasan, Kuh-e-Binaloud, 1770 m, NE of Neysha-pur, 7–8. VII. 2010, leg. P. Gyulai & A. Garai, GYP 5506 (PGM); 19. *D. korshunovi dagestana* ssp. n., HT, male, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina, GYP 5501 (PGM); 20. *D. inequalis* sp. n., HT, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 28. VII. 2020, leg. V. Zurilina, GYP 5480 (PGM).



**Figures 21–24.** *Dichagyris* spp. male genitalia. 21. *D. inequalis* sp. n., PT, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 27. VII. 2020, leg. V. Zurredilina, GYP 5488 (PGM); 22. *D. melanuroides* Kozhantshikov, 1930, Uzbekistan, Kughitang, 120 km NNW Thermes, Tshashmobison, 1500 m, 4. VII. 1994, leg. V. A. Lukhtanov, GYP 5498 (PGM); 23. *D. melanuroides* Kozhantshikov, 1930, Iran, prov. Esfahan, 15 km S of Sahreza, 1500 m, 3. VII. 2000, leg. B. Benedek, GYP 5325 (PGM); 24. *D. grisescens* Staudinger, 1879, Uzbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25.VII.1990, leg. P. Gyulai (PGM).



**Figures 25–30.** *Dichagyris* spp. and ssp. female genitalia. 25. *D. korshunovi* Varga, 1996, female, PT, Turkmenistan, Kopet Dagh, 6 km S of Ipay-Kala, 38°17'N, 57°07'E, 1600 m, 16-23. VIII. 1992, L 74, leg. M. Hreblay, Gy. László & G. Ronkay, GYP 5504 (PGM); 26 *D. korshunovi dagestana* ssp. n., PT, Russia, Dagestan, Gunibsky dist., 3 km NW of Gunib, N42°23', E46°56', 25. VII. 2020, leg. V. Zurilina, GYP 5502 (PGM); 27. *D. inequalis* sp. n., PT, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 27. VII. 2020, leg. V. Zurilina, GYP 5474 (PGM); 28. *D. inequalis* sp. n., PT, Russia, Dagestan, Karabudakhkentsky dist. Gubden, N42°33', E47°25', 24. VII. 2020, leg. V. Zurilina, GYP 5482 (PGM); 29. *D. melanuroides* Kozhantshikov, 1930, Uzbekistan, Kughitang, 120 km NNW Thermes, Tshashmobison, 1500 m, 4. VII. 1994, leg. V. A. Lukhtanov, GYP 5497 (PGM); 30. *D. griseascens* Staudinger, 1879, Uzbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25.VII.1990, leg. P. Gyulai (PGM).

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## Geographical distribution and bionomics of the Zygaenids of Hungary with illustrations (Lepidoptera: Zygaenidae)

Imre Fazekas

**Citation.** Fazekas I. 2021: Geographical distribution and bionomics of the Zygaenids of Hungary with illustrations (Lepidoptera: Zygaenidae). – Lepidopterologica Hungarica 17(2): 119–159.

**Abstract.** The study is a comprehensive synthesis of information on 26 known Hungarian species of Zygaenids. This work is used as a guide for the distribution maps of the Zygaenidae species. It is the second summary work on the geographical distribution of Hungarian species. The preparatory work for this study was started 40 years ago with planned collecting activities, revisions of museum, institutional and private collections, and writing of faunistic monographs on Zygaenids from several geographic regions. Colour photographs of the species are included.

**Keywords.** Zygaenidae, bionomy, distribution maps, Hungary.

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### Introduction

More than 1000 species of Zygaenidae are known world-wide, of which about 120 are recorded in the Western Palearctic. This number may be significantly modified by genetic studies. The Zygaenidae family is represented in Hungary by 26 species in 4 genera. Zygaenidae are diurnal moths with a very variable habitus, biology and ecology.

According to Nahirnić (2019), *Zygaena diaphana* Staudinger, 1887 is bona species. According to this author, both species inhabit different types of habitats on the Balkan Peninsula. Moreover, Nahirnić also found genitalic differences not only between these two species but also between other taxa of the *Zygaena minos*-complex. Unfortunately, at the moment, such studies are not available for the Carpathian Basin. This is important because in the old Hungarian literature (Gozmány 1963) the *diaphana* species was identified from Hungary. Later studies have not confirmed this (Fazekas 2002, 2009). Based on Nahirnić's concept, the entire species complex should be reviewed in Hungary. It is possible that the geographical distribution of *Z. diaphana* extends into the Carpathian Basin.

The first detailed book on Zygaenidae in Hungary was published in 2009 (Fazekas 2009), in which the history, zoogeography, and conservation aspects of Zygaenidae research was presented. The diagnosis, bionomics, Hungarian and Palaearctic geographic distribution of all species were described, with illustration of habitus and genitalia. Over the last 12 years, the distribution data of species have changed significantly, and several new bionomic observations have modified our knowledge of the species.

With the help of the book, many Hungarian collectors started small or large-scale research, especially in lesser-known geographical areas, where very little information was available. The correct identification of the species collected, observed, and illustrated has been verified, so that they are authentic occurrences.

The identification of Procridinae species remains a problem for collectors. Therefore, data on Procridinae are only included for which voucher specimens have been provided. Their identity was confirmed by genital examination.

This paper summarises these studies and complements the book published in 2009. The expanded new maps published here show the current distribution patterns of the species.

### Material and methods

The distribution maps are based on the division of the natural geographic landscape of Hungary (Marosi & Somogyi 1990, Dövényi 2010), into ecologically distinct large, medium and small landscapes. The names and geographical locations of these areas are shown in Figure 5, 6.

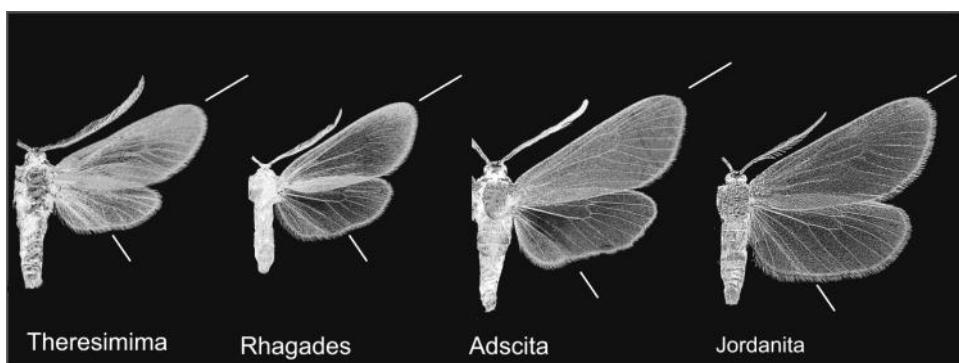
The author collected the data in an Excel database, which is continuously being expanded. The site data were mapped on to UTM GRID 10x10 km grid. For ease of reference, only the 50x50 km grid is shown. This mapping method has been used by the author for 30-40 years. The new expanded and revised maps are easily comparable with the maps of the previously published Hungarian book on *Zygaenidae* (Fazekas 2009).

Information on larval food plants is partly from personal observation, partly derived from the literature.

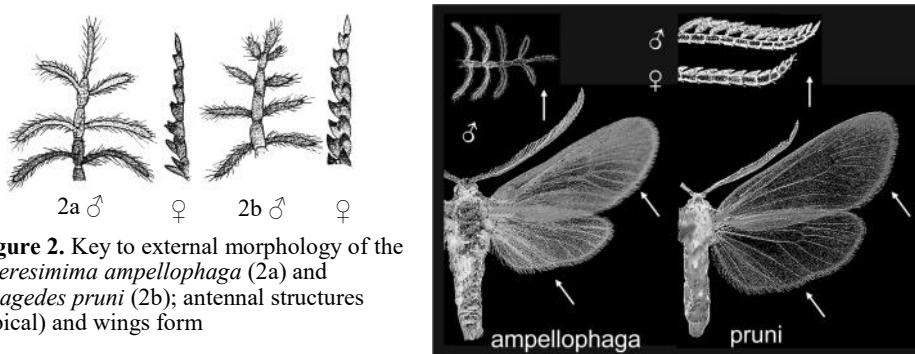
Genitalia dissections were done in accordance with Robinson (1976). Some of the genitalia were mounted in Euparal on slides; others are preserved in micro-vials filled with glycerol. Genital analysis of worn, damaged specimens of Procridinae was performed using the simple and rapid method of Wanke and Rajaei (2018).

The material examined is in the following collections: Bakonyi Természettudományi Múzeum (Zirc); Janus Pannonius Múzeum (Pécs); Jász Múzeum (Jászberény); Magyar Természettudományi Múzeum (Budapest); Mátra Múzeum (Gyöngös); Pannon Intézet (Pécs); Ripp-Rónai Múzeum (Kaposvár); Savaria Múzeum (Szombathely).

### Key to external morphology Distribution and bionomics of species

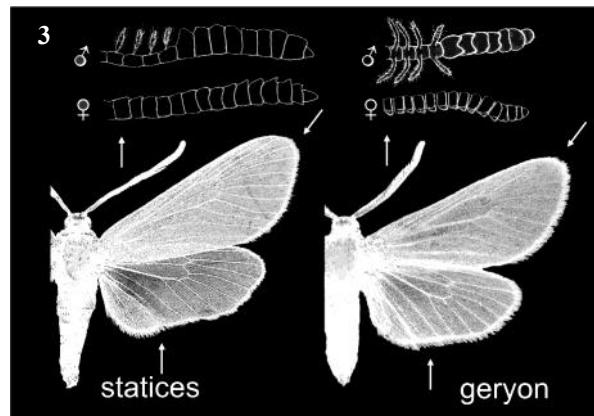
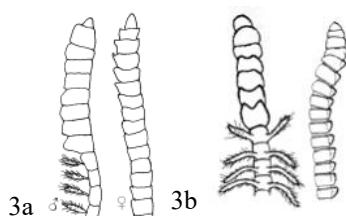


**Figure 1.** Key to external morphology of the Procridini genera (wings form)

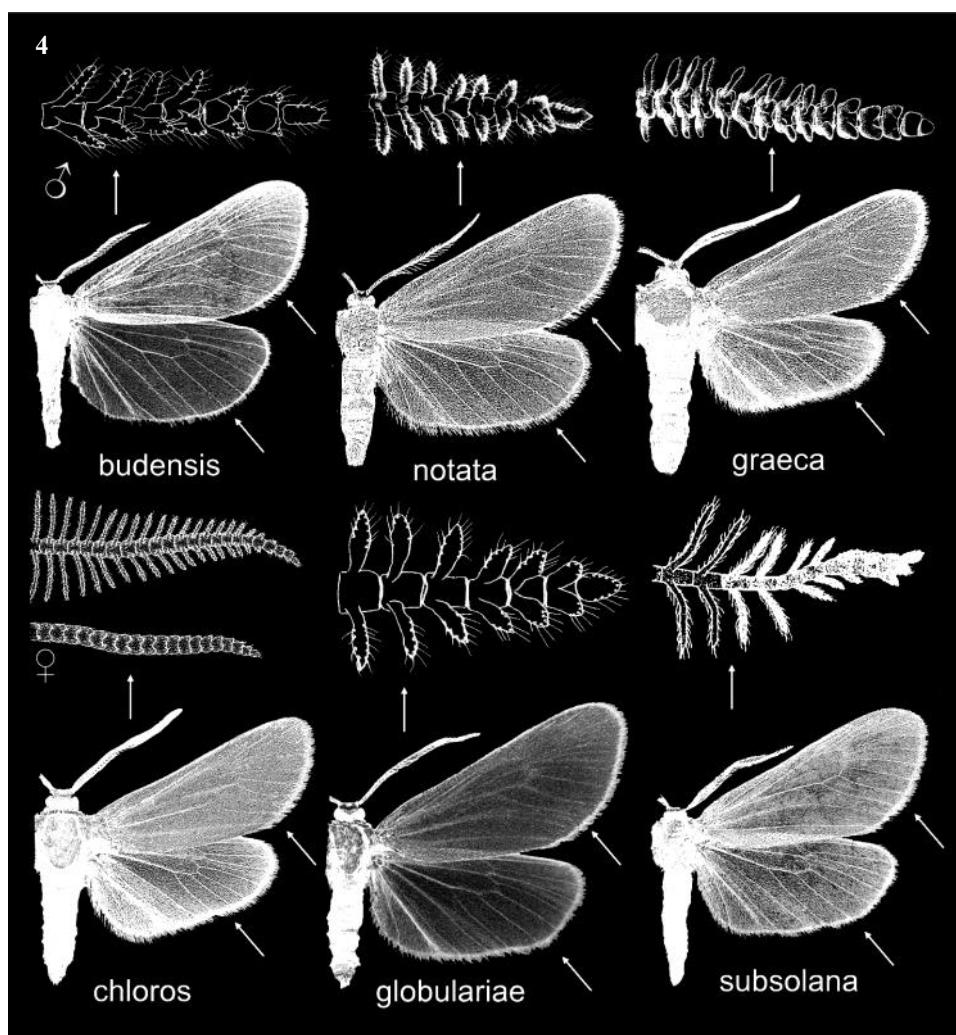


**Figure 2.** Key to external morphology of the *Theresimima ampelophaga* (2a) and *Rhagedes pruni* (2b); antennal structures (apical) and wings form

**Figure 3.** Key to external morphology of the *Adscita statices* (3a) and *A. geryon* (3b) antennal structures (apical) and wings form



**Figure 4.** Key to external morphology of *Jordanita* genera antennal structures (apical) and wings form



### **Summary and list of names, with Hungarian names**

The author has tried to correct the data existing in the old as well as in the recent literature for Hungary and to update the faunistic records in accordance with the recent achievements of taxonomy. For this reason, all available collections in Hungary have been checked and many taxa are critically examined to establish with certainty which is indeed present in Hungary.

A protected species: **PS**; Highly protected: **HP**; Value in Hungarian forints: Ft.

**PS:** *Adscita geryon, Jordanita graeca, Zygaena fausta*

**HP:** *Zygaena laeta*

After the Latin names I give the Hungarian names of the species.

Systematic part and nomenclature (Fazekas 2009, pp. 16–17).

Note: The species are numbered. In the text, species are numbered consecutively so that they are easy to find.

### **ZYGAENIDAE – Csüngőlepke-félék**

Subfamilia PROCRIDINAE Boisduval, [1828] – fémlepkék (zöld csüngőlepkék)

Genus ***Theresimima*** Strand, 1917

1. *Th. ampelophaga* (Bayle-Barelle, 1808) – kormospille

Genus ***Rhagades*** Wallengren, 1863

Subgenus ***Rhagades*** Wallengren, 1863

2. *R. (Rh.) pruni* ([Denis & Schiffermüller], 1775) – kökény fémlepke

Genus ***Adscita*** Retzius, 1783

Subgenus ***Adscita*** Retzius, 1783

3. *A. (A.) geryon* (Hübner, 1813) – Gerión fémlepke – PS (5 000 Ft)

4. *A. (A.) statices* (Linnaeus, 1758) – sóska fémlepke

Genus ***Jordanita*** Verity, 1946

Subgenus ***Roccia*** Alberti, 1854

5. *J. (R.) budensis* (Speyer & Speyer, 1858) – budai fémlepke

Subgenus ***Tremewaniana*** Efetov & Tarmann, 1999

6. *J. (T.) notata* (Zeller, 1847) – aranyzöld fémlepke

6a. *J. (T.) sp. cf. notata* (Zeller, 1847) – The taxonomic status is questionable.

Subgenus ***Jordanita*** Verity, 1946

7. *J. (J.) graeca* (Jordan, 1907) – görög fémlepke – PS (5 000 Ft)

8. *J. (J.) chloros* (Hübner, [1813]) – ércfényű fémlepke

10. *J. (J.) fazekasi* Efetov, 1998 – Fazekas fémlepke

Subgenus ***Solaniterna*** Efetov, 2004

11. *J. (S.) subsolana* (Staudinger, 1862) – balkáni fémlepke

Subfamilia ZYGAENINAE Latreille, 1809

Genus ***Zygaena*** Fabricius, 1775 – vörös csüngőlepkék

Subgenus ***Mesembrynus*** Hübner, [1819]

12. *Z. (M.) punctum* Ochsenheimer, 1808 – pettyes csüngőlepkék

13. *Z. (M.) cynarae* (Esper, 1789) – pusztai csüngőlepkék

14. Z. (*M.*) *laeta* (Hübner, 1790) – vörös csüngőlepke – HP (100 000 Ft)
  15. Z. (*M.*) *brizae* (Esper, 1800) – magyar csüngőlepke
  16. Z. (*M.*) *minos* ([Denis & Schiffermüller], 1775) – levantei csüngőlepke  
? Z. (*M.*) [*diaphana* Staudinger, 1887] – So far unproven, its occurrence is possible.
  17. Z. (*M.*) *purpurealis* (Brünnich, 1763) – bíborszínű csüngőlepke
- Subgenus ***Agrumenia*** Hübner, [1819]
18. Z. (*A.*) *fausta* (Linnaeus, 1767) – koronafürst csüngőlepke – PS (10 000 Ft)
  19. Z. (*A.*) *carniolica* (Scopoli, 1763) – fehérgyűrűs csüngőlepke
- Subgenus ***Zygaena*** Fabricius, 1775
20. Z. (*Z.*) *loti* ([Denis & Schiffermüller], 1775) – réti csüngőlepke
  21. Z. (*Z.*) *osterodensis* Reiss, 1921 – ördögszem csüngőlepke
  22. Z. (*Z.*) *viciae* ([Denis & Schiffermüller], 1775) – somkóró csüngőlepke
  23. Z. (*Z.*) *ephialtes* (Linnaeus, 1767) – változékony csüngőlepke
  24. Z. (*Z.*) *angelicae* (Ochsenheimer, 1808) – vérpettyes csüngőlepke
  25. Z. (*Z.*) *filipendulae* (Linnaeus, 1767) – hatfoltos csüngőlepke
  26. Z. (*Z.*) *lonicerae* (Scheven, 1777) – here csüngőlepke

Map of the natural- and zoogeographical division of Hungary

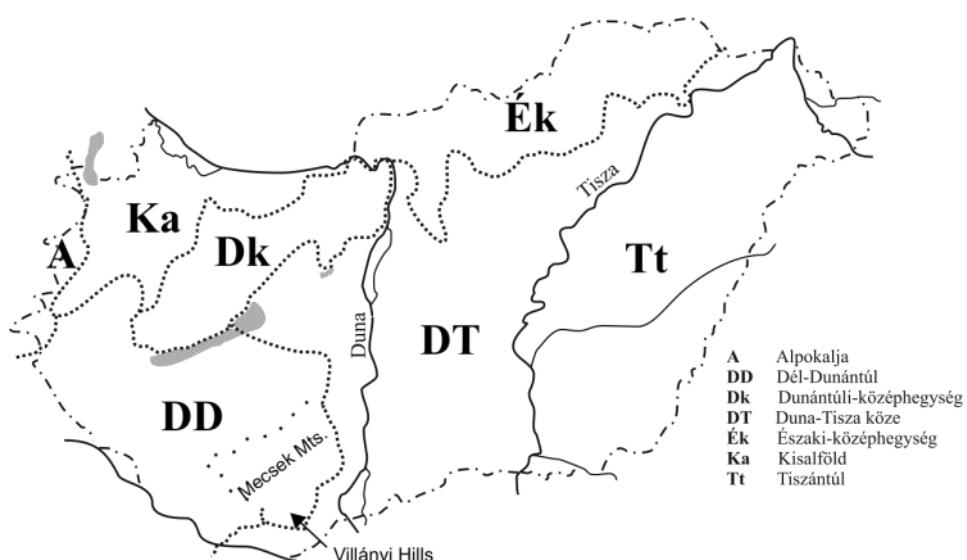
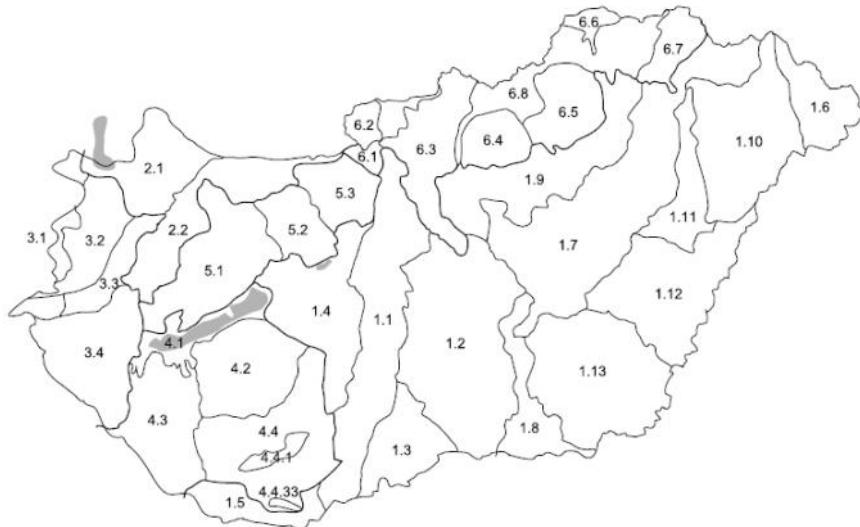


Figure 5.

Symbols in the UTM maps (1–26)

- Recent breeding populations
- Known populations before 1960
- + Disappearance or possible extinction
- ? The occurrence is questionable or unproven. There are records in the literature, but specimens have disappeared.



**Figure 6.** Natural geography map of Hungary, by macroregions (1-6) and mesoregions (e.g. 1.1, 1.2, etc.). Hungarian names, designations. Ecological competences after Fazekas (2017)

### 1 Alföld

- 1.1 Duna menti síkság
- 1.2 Duna-Tisza közi síkság
- 1.3 Bácskai-síkvidék
- 1.4 Mezőföld
- 1.5 Dráva menti síkság
- 1.6 Felső-Tisza-vidék
- 1.7 Közép-Tisza-vidék
- 1.8 Alsó-Tisza-vidék
- 1.9 Észak-Alföldi-hordalékkúpság
- 1.10 Nyírség
- 1.11 Hajdúság
- 1.12 Berettyo-Körös-vidék
- 1.13 Körös-Maros köze

### 2 Kisalföld

- 2.1 Györi-medence
- 2.2 Marcal-medence
- 2.3 Komárom-Esztergom-síkság

### 3 Nyugat-magyarországi-peremvidék

- 3.1 Alpokalja
- 3.2 Sopron-Vasi-síkság
- 3.3 Kemeneshát
- 3.4 Zalai-dombság

### 4 Dunántúli-dombság

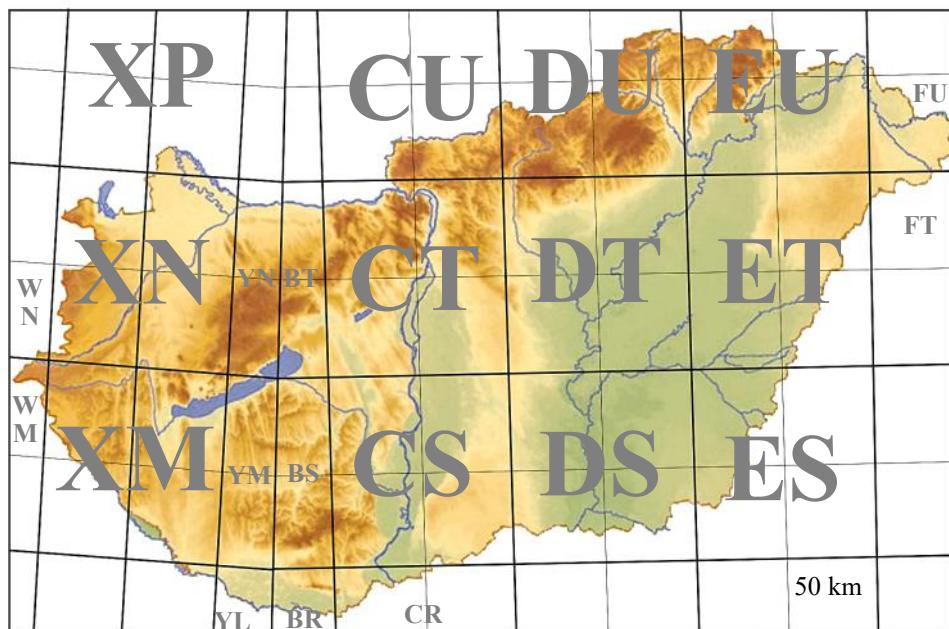
- 4.1 Balaton-medence
- 4.2 Külső-Somogy
- 4.3 Belső-Somogy
- 4.4 Mecsek és Tolna-Baranyai-dombság
- 4.41 Mecsek
- 4.433 Villányi-hegység

### 5 Dunántúli-középhegység

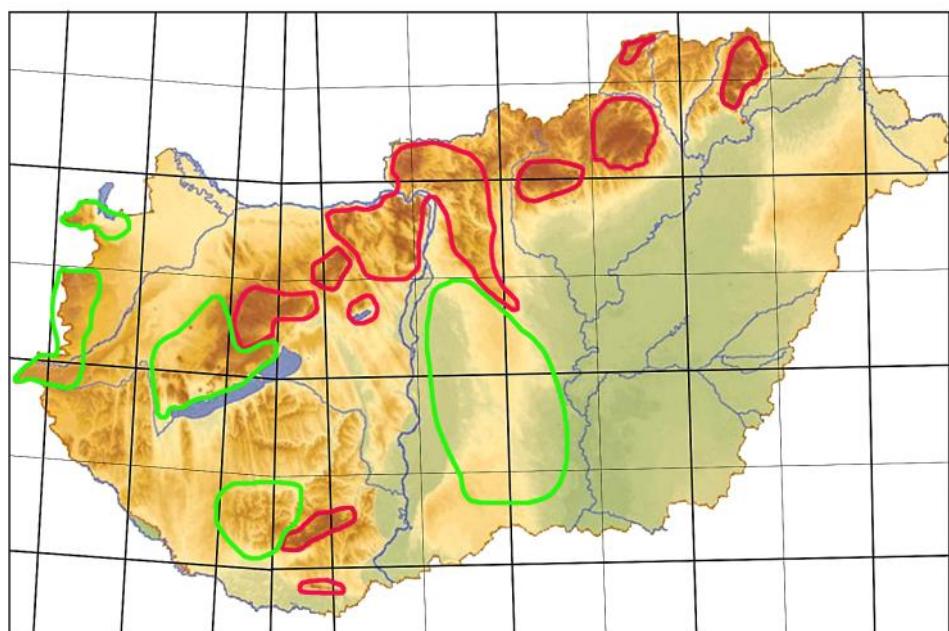
- 5.1 Bakony-vidék
- 5.2 Vértes-Velencei-hegyvidék
- 5.3 Dunazug-hegyvidék

### 6 Észak-magyarországi-középhegység

- 6.1 Visegrádi-hegység
- 6.2 Börzsöny
- 6.3 Cserháti-vidék
- 6.4 Mátra-vidék
- 6.5 Bükk-vidék
- 6.6 Aggtelek-Rudabányai-hegyvidék
- 6.7 Tokaj-Zempléni-hegyvidék
- 6.8 Észak-magyarországi-medencék



**Figure 7.** UTM grid map of Hungary: 100x100 and 50x50 km divisions



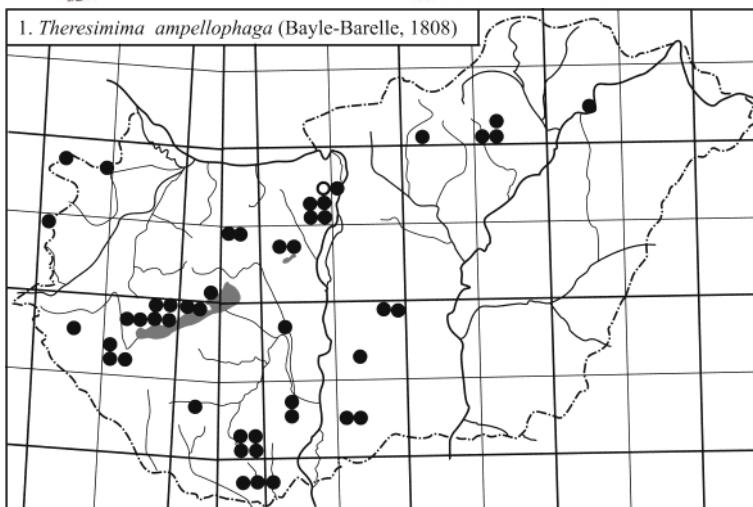
**Figure 8.** Well and less researched geographic areas of Hungarian Zygaenidae species; well researched (red line), researched but knowledge is incomplete (green line). Information on unmarked areas is largely scarce.

**1. *Theresimima ampelophaga* (Bayle-Barelle, 1808)**

In Hungary, this species was a serious pest in grape plantations in the 19<sup>th</sup> Century. It has been observed in all famous Hungarian wine regions. It is most widespread west of the Danube: Villány Hills, Mecsek Mountains, and near Lake Balaton. There are very few records from vineyards in the lowlands. The larvae of *T. ampelophaga* cause damage in the spring by hollowing out the buds. In May, the young larvae feed on the underside of leaves; later, they chew irregular holes in the leaves. The loss of photosynthesizing area is frequently significant on the whole plant (Voigt et al. 2000).

Bionomy: flight period from late May to late July and second generation in August and September. Voigt et al. (2000) carried out pheromone trapping studies in two vineyards (Budakeszi, Kecskemét). According to the catches, the flight started after June 20, and specimens were caught in largest numbers between June 26 and July 3. The flight went on at decreasing intensity until the middle of July. More detailed studies are needed to establish the exact flight time. It is necessary to clarify whether the August generation observed in Hungary is permanent or occurs only in certain geographical areas and only in certain years.

2.



Note: In the text, the numbering of the figures is based on the number of species (1-26).

***Rhagades (Rhagades) pruni* ([Denis & Schiffermüller], 1775)**

Occurs primarily in Transdanubia and in the North Hungarian Mountains, sporadic and rare on the plain (e.g., Kiskunság, Nyírség). The size of the populations is not known because of the deficiency of records.

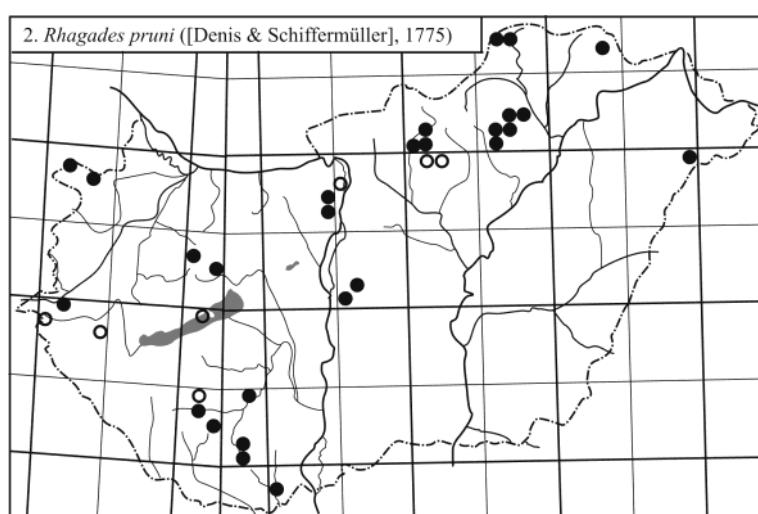
Bionomy: flight period from mid-June to mid-August. Polyphagous species, the larvae feed mainly on *Prunus spinosa*, but also on *Crataegus monogyna*, *Calluna vulgaris*, *Helianthemum nummularium*, *Rhamnus catharticus*, *Rosa canina*, *Quercus petraea* and *Qu. robur*. The larvae were observed in 2019 on *Quercus virginiana* in the Mecsek Mountains in southern Hungary. Habitat: grasslands with spontaneously colonising trees and shrubs, coniferous woodlands, continental deciduous rock thickets, thermophilous woodland fringes, open dry deciduous woodlands, fresh deciduous woodlands, slope steppes, closed rock grasslands, *Calluna* heaths.



2a



2b. Habitat in Mecsek Mountains (Mecsekjárosi)



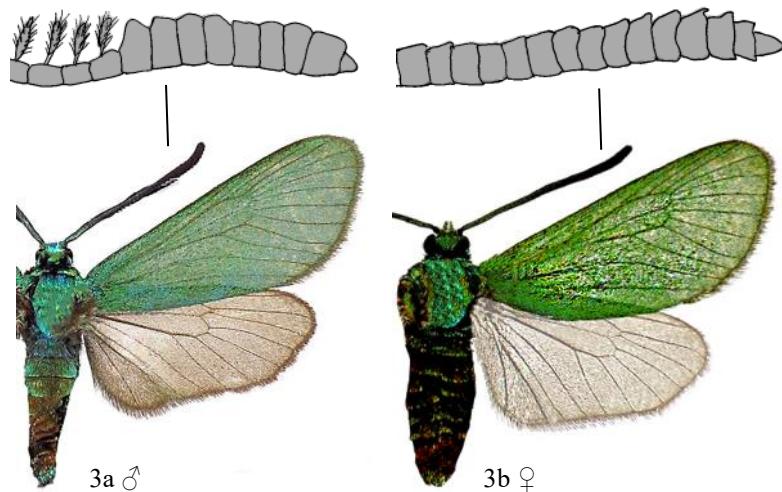
**3. *Adscita (Adscita) statices* (Linnaeus, 1758)**

Widespread and locally common on hills and in medium-high mountains, mainly west of the Danube (Transdanubia/Dunántúl in Hungarian) and in the Northern Central Mountains. It is very local and rare in the lowlands. There are strong populations on the plain near the Drava River, near the Croatian border.

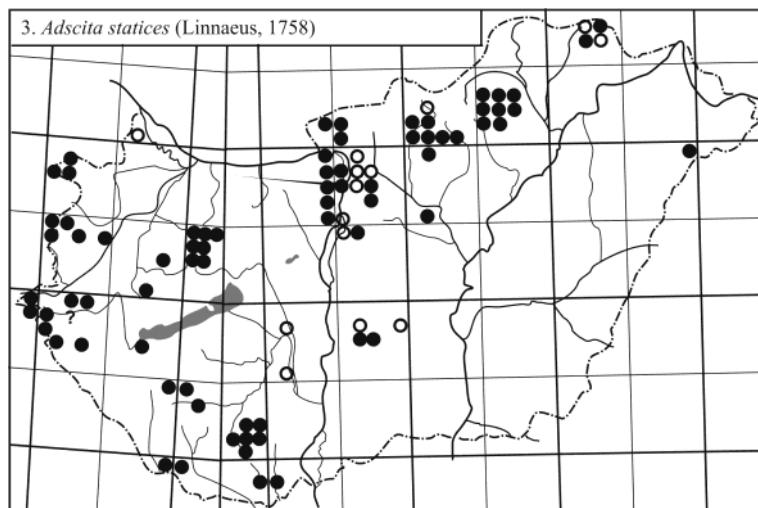
Bionomy: univoltine, flight period from mid-May to mid-August. Larva feeds on *Rumex acetosa*, *R. acetosella*, *R. conglomeratus*, *R. obtusifolius*, *R. scutatus*, *R. stenophyllus*. According to Gozmány (1963) the larvae live on *Globularia* spp.

Habitat: rich fens, eu- and mesotrophic meadows and tall herb communities, colline and montane hay meadows, acid grasslands and heaths, secondary and degraded marshes, and grasslands.

Remarks: the area of preferred habitats is rapidly decreasing. Most threatened by agriculture and construction.



3. *Adscita statices* (Linnaeus, 1758)



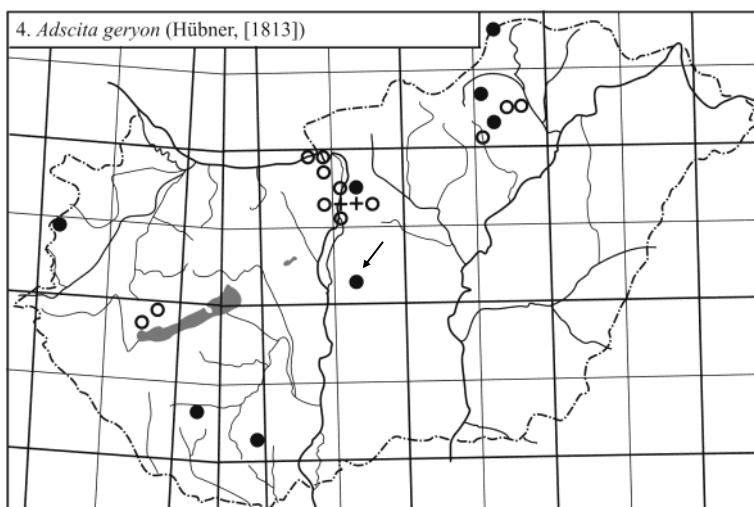
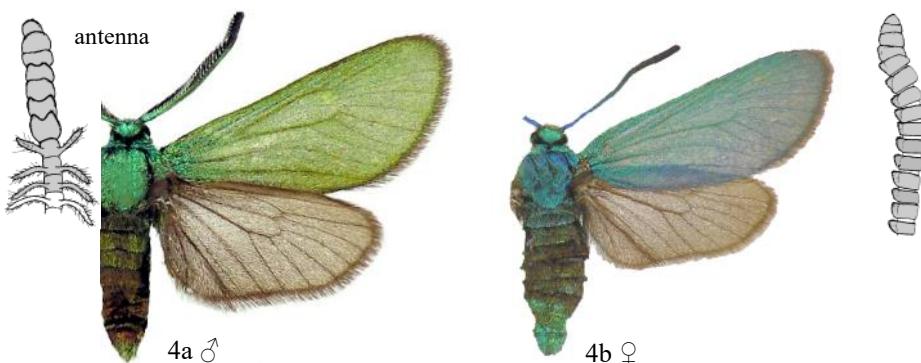
**4. *Adscita (Adscita) geryon* (Hübner, [1813])**

This species is protected in Hungary; its incorporeal value is 5 000 HUF. Very local and rare, and populations are very much reduced in its known localities: Mecsek Mountains., Somogy county, Budapest, and its neighbourhood. The most stable populations are in northern Hungary, in the Bükk Mountains, a national park. Gene flow is uncertain, the species is probably in regression. Continuously present in the Kiskunság National Park since 2000 (see arrow on the map): “Peszéradacsí-rétek” (Máté A. pers. comm.)

Bionomy: univoltine, in July. Larva feeds on *Geranium robertianum*, *G. lucidum*, *G. sanguineum*, *Erodium cicutarium*, *E. ciconium*, *Helianthemum canum* and *H. nummularium*.

Habitat: calcareous open rock grasslands, closed rock grasslands, rock steppes, slope steppes (e.g., in Transdanubian- and North Hungarian Mountains) and *Cynosurion* grasslands (in West Hungarian Borderland).

Remarks: the survival of populations is mainly a problem around large cities (e.g., Budapest, Pécs, etc.). In the mountains, there are many tourists and heavy trampling of vegetation. In grazing areas, the number of animals is high, the number of food plants is decreasing, and there are few sources of nectar for the imago. The construction of housing estates has accelerated, and preferred habitats are disappearing very rapidly.



**5. *Jordanita (Roccia) budensis* (Speyer & Speyer, 1858)**

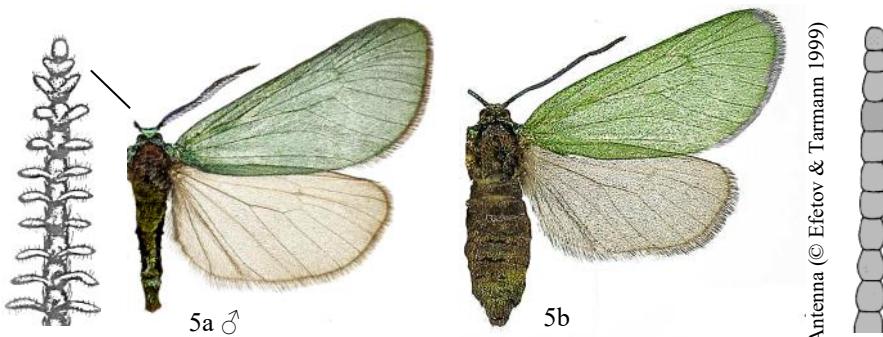
The species was described from Hungary as "Ofen" (= Buda, later Budapest). The exact locus typicus is not known. Unfortunately, most of the habitats that have been found have been destroyed or are highly endangered.

Very disjunct distribution with isolated populations in North Hungarian Mountains and Transdanubian Mountains. Strikingly local and rare in the Great Hungarian Plain (e. g., Kiskunság). Was not seen for more than fifty years in the Mecsek Mountains (South Hungary). The species is threatened with extinction in the neighbourhood of the larger cities (e. g. Budapest). Unknown along the eastern and western borders.

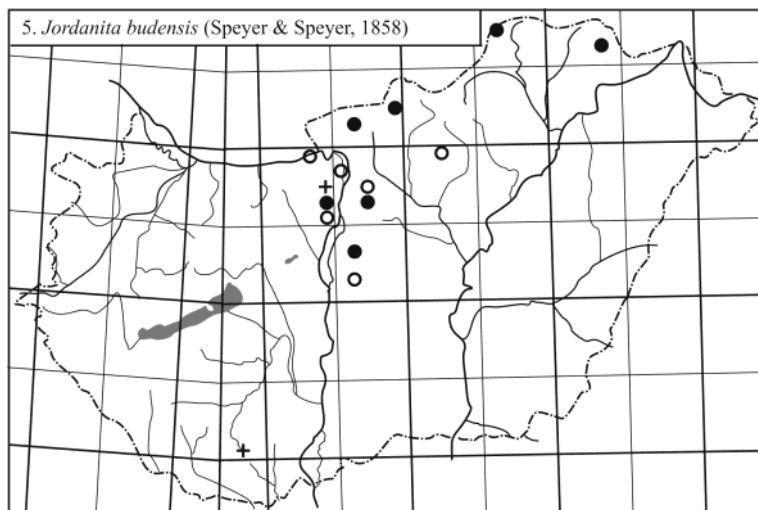
Bionomy: univoltine, flight period from mid-May to mid-July. Larva feeds on *Achillea setacea*, *Carduus nutans*, *C. acanthoides*, *Centaurea solstitialis*, *C. triumfetti*, *C. diffusa*, *C. salonitana*, *C. scabiosa*, *Chrysanthemum vulgare* and *Matricaria recutita*.

Habitat: open sandy steppes, calcareous open rock grasslands, closed rock grasslands, rocky steppes, slope steppes.

Remarks: from a scientific and conservation point of view, it is quite surprising why the species is ignored by the official Hungarian conservation authorities. To date it is not listed as a protected species. This would be expected for any species described from Hungary. Conservation of the type of locality should be a priority and permanent monitoring surveys should be carried out in National Parks. There is also no explanation why it is not included in the Hungarian "Red Book". These omissions should be remedied as soon as possible.



5. *Jordanita budensis* (Speyer & Speyer, 1858)



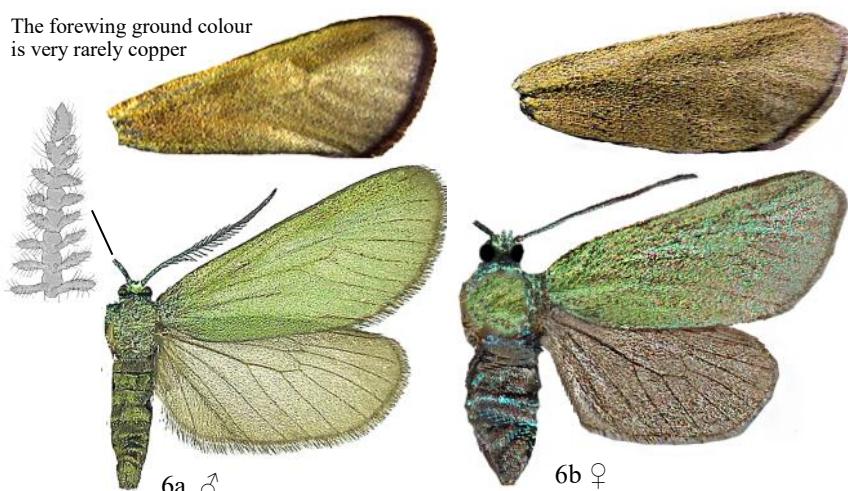
**6. *Jordanita (Tremewania) notata* (Zeller, 1847)**

Very local and rare in Hungary, and absent from extensive geographical areas. The size of the populations is unknown. The species is threatened with extinction in the neighbourhood of the larger cities (e.g., Budapest, Pécs). The distance between the isolated populations is large, and the possibility of genetic regeneration is not ensured. There is a lack of so-called "steppingstones".

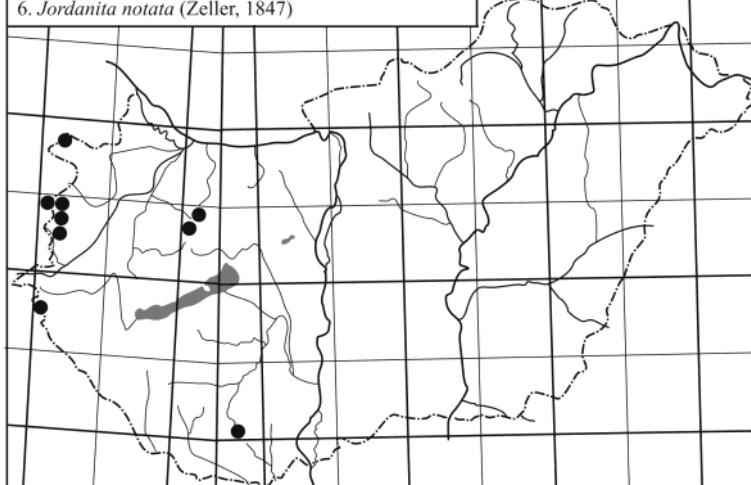
Bionomy: flight period from late May to early July. There is a late autumn specimen from Hungary: 1 ♂, Magyarszombatfa, 8–9. X. 1979, leg. light trap. According to Naumann et al. (1999) and Freina & Witt (2001), univoltine in most localities; May–July. However, in Spain on wing from end of March to middle of September with interruption in August (2 generations?). According to the new Hungarian data, it is possible that *J. (T.) notata* is bivoltine in the Pannon region. Larva feeds on *Centaurea scabiosa*, *C. jacea* and *C. salotina*.

Habitat: colline and montane hay meadows, acid grasslands and heaths, closed rock grasslands, rock steppes, white oak scrub woodlands.

The forewing ground colour  
is very rarely copper



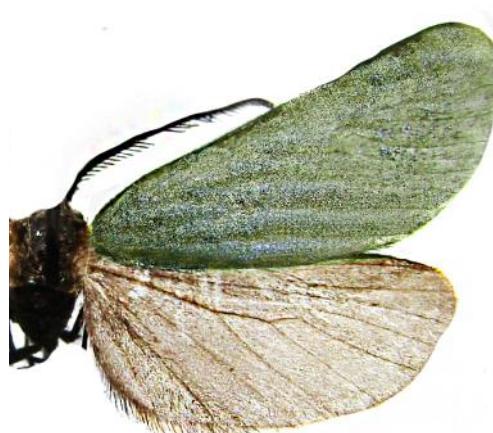
6. *Jordanita notata* (Zeller, 1847)



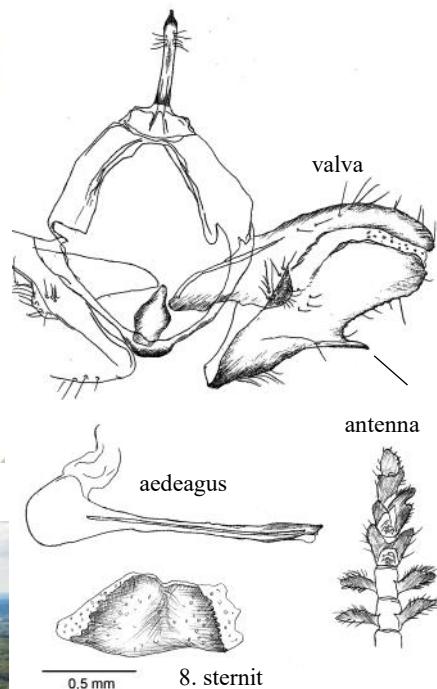
(6c) *Jordanita sp. cf. notata* (Zeller, 1847)

A single specimen was collected in an area of grassland in Western Hungary, with *Centaurea jacea*, *C. scabiosa* and *Carduus nutans*, *C. crispus*. The dominant plants in the biotope are species of *Festuca* and *Agrostis*.

Remarks: a photograph of the specimen and genitalia drawings were sent to K. A. Efetov (UA-Simferopol) and G. M. Tarmann (A-Innsbruck). According to their opinion, the specimen is perhaps an aberrant *J. (T.) notata*. This seems possible, but there are fundamental differences from that species. K. A. Efetov also supposed that short 8th sternite, structure of the juxta and pointed process of the sacculus indicate that the specimen could be a hybrid of *J. notata* and *J. globulariae*, both species feeding on *Centaurea*. There is no specimen like this described in the scientific literature. Examination of more material is necessary before this taxonomic problem can be solved (Fazekas & Efetov 2009a).



6c. Adult of *J. sp. cf. notata* (Magyarszombatfa)



6d. Male genitalia and antenna of *J. sp. cf. notata*



6e Magyarszombatfa  
46.79679, 16.34882



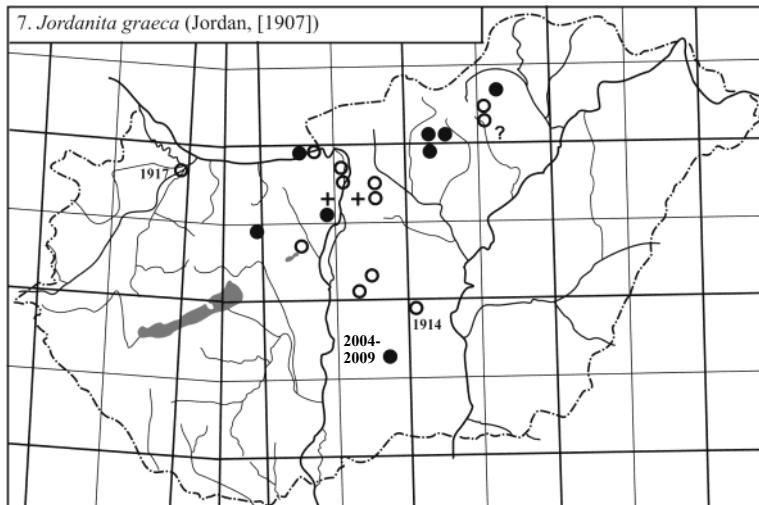
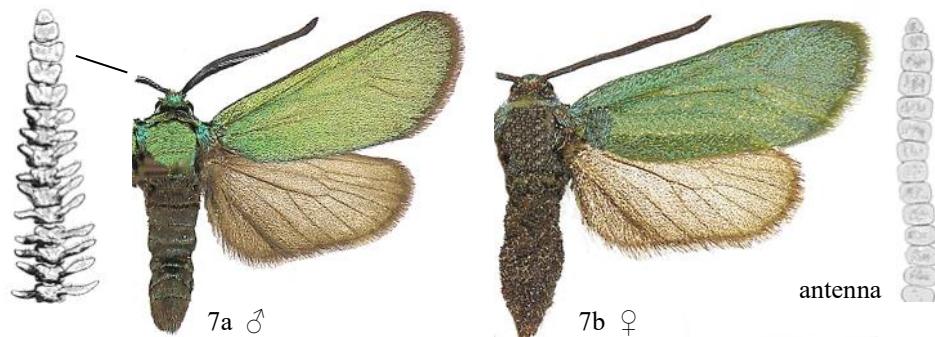
**7. *Jordanita (Jordanita) graeca* (Jordan, [1907])**

This species is protected in Hungary; its incorporeal value is 5 000 HUF. Local and very rare on the hills and in the mountains of medium height. Has not been seen for more than fifty years in the Budapest neighbourhood. Unknown in the south. The Hungarian populations are a long distance from those in the Balkans. Gene flow is uncertain; the species may be in regression and endangered in Hungary. It should be protected in nature reserves and National Parks (Mátra Mountains, Bükk Mountains). There is a lack of proper research and a shortage of experts. Only a few lepidopterists can identify the species.

Bionomy: univoltine; flight period from mid-May to end June. Larva feeds on *Carinus hamulosus*, *Centaurea salonitana*, *Serratula radiata*, *Xeranthemum annum*.

Habitat: dry open grasslands, closed loess and sand steppes, slope steppes, rocky steppes.

Remarks: A very valuable postglacial relict species of the Pannonian biogeographical region. It should be sought throughout the whole region. There is a lack of knowledge about the reasons for the isolation of populations in Northern Hungary.

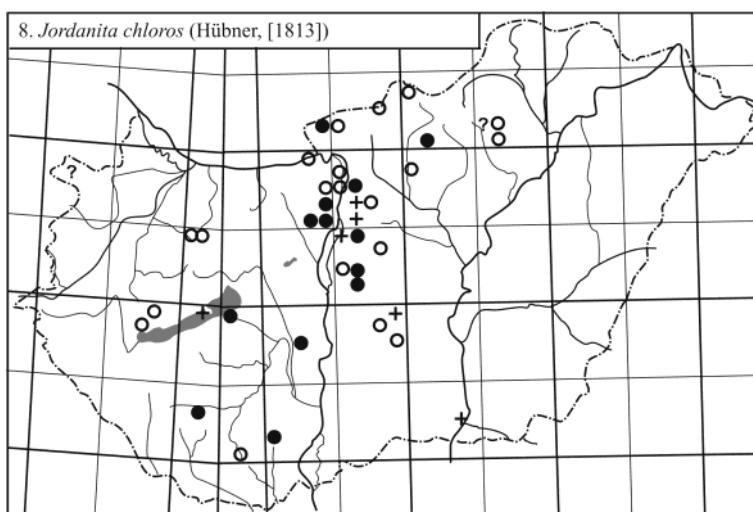
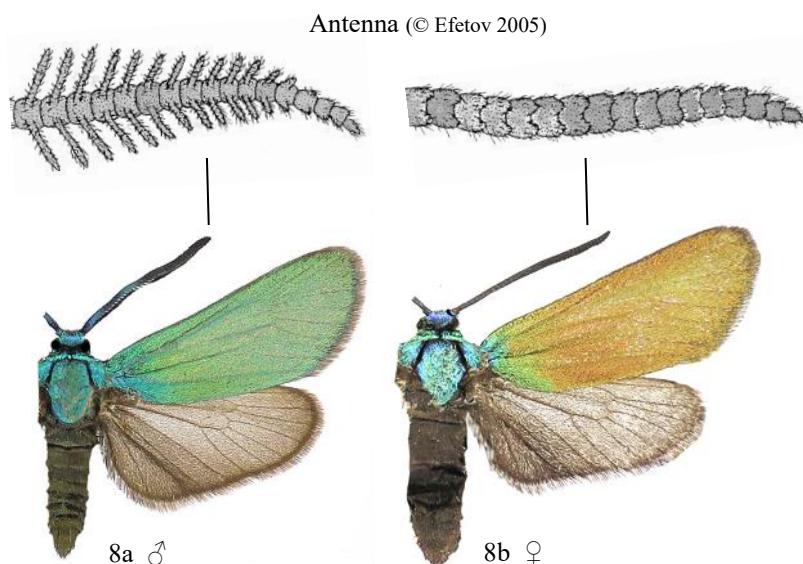


**7c** The map is full of old data. Some sites are known to date back more than 100 years. All collected specimens are in the collections. Unfortunately, the habitats have been destroyed. Live population Bócsa-Bugac (2004-2009): UTM Grid CS86 (Observed and investigated: András Máté)

**8. Jordanita (Jordanita) chloros** (Hübner, [1813]) The species was still widespread in Hungary in the first half of the 20th Century. It has disappeared from many of its old sites and there are no new observations (see Fazekas 2009). Nowadays it is a very local and rare species in Hungary. During the last Century it has disappeared from many places: around Budapest, Central-Hungary. In the Kiskunság National Park it is still common in some years. Unknown from eastern regions (e.g., Tiszántúl). There are very few specimens in the Hungarian collections.

Bionomy: flight period in June, July, and August. Larva feeds on *Globularia punctata*, *Centaurea pannonica*, *C. jacea*, *C. triumfetti*, *C. scabiosa* and *C. micranthus*.

Habitat: meadows, pastures, thickets, bushy forests, rocky steppe meadows.



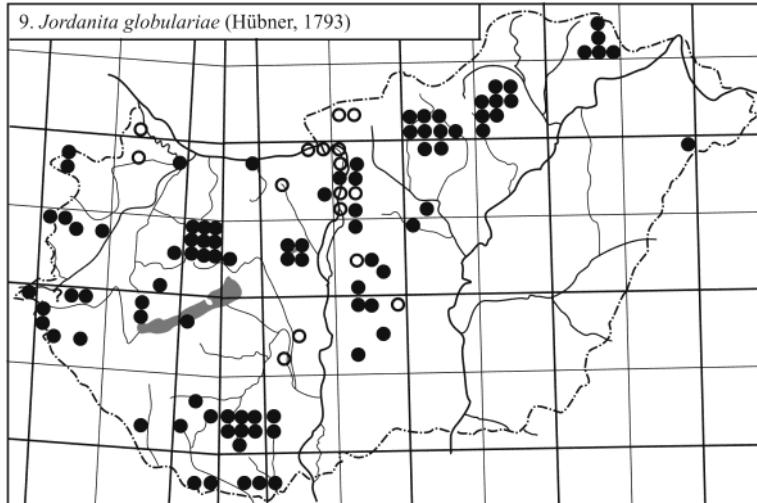
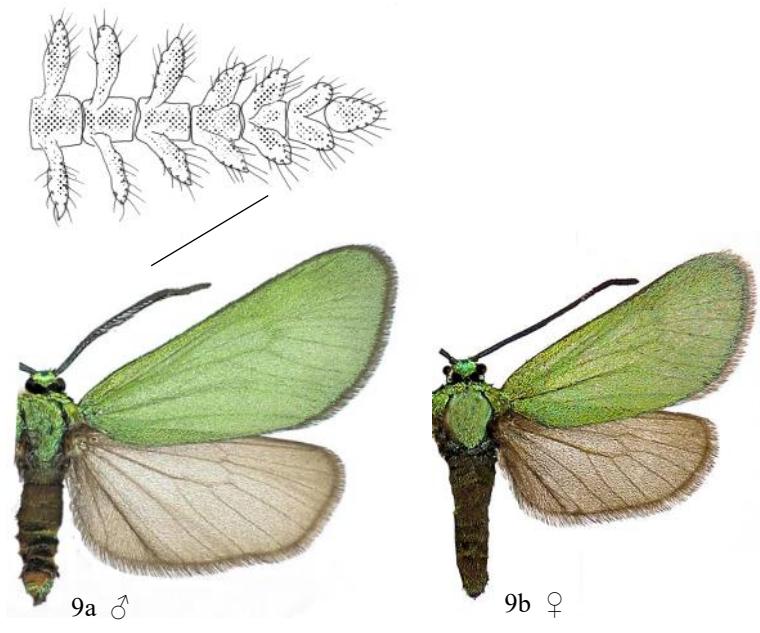
**9. *Jordanita (Jordanita) globulariae* (Hübner, 1793)**

Widespread and frequent on the hills and in the mountains of medium height, local on the plains. Stable populations are found in protected areas and National Parks: Mecsek-Bakony-, Mátra-, Bükk and Zemplén Mountains.

Bionomy: univoltine; flight period from mid-May to mid-August. Larva feeds on *Globularia punctata*, *Plantago lanceolata*, *Centaurea jacea*, *C. scabiosa*. According to Gozmány (1963) the larvae also live on *Cirsium* spp.

Habitat: meadows, pastures, thickets, bushy forests, rocky steppe meadows.

Remarks: valva and aedeagus very variable (see Fazekas 2009; Fig. 29: c.); aedeagus with 5 cornuti (W Hungary, Vörös, gen. prep. Fazekas, No. 1156).



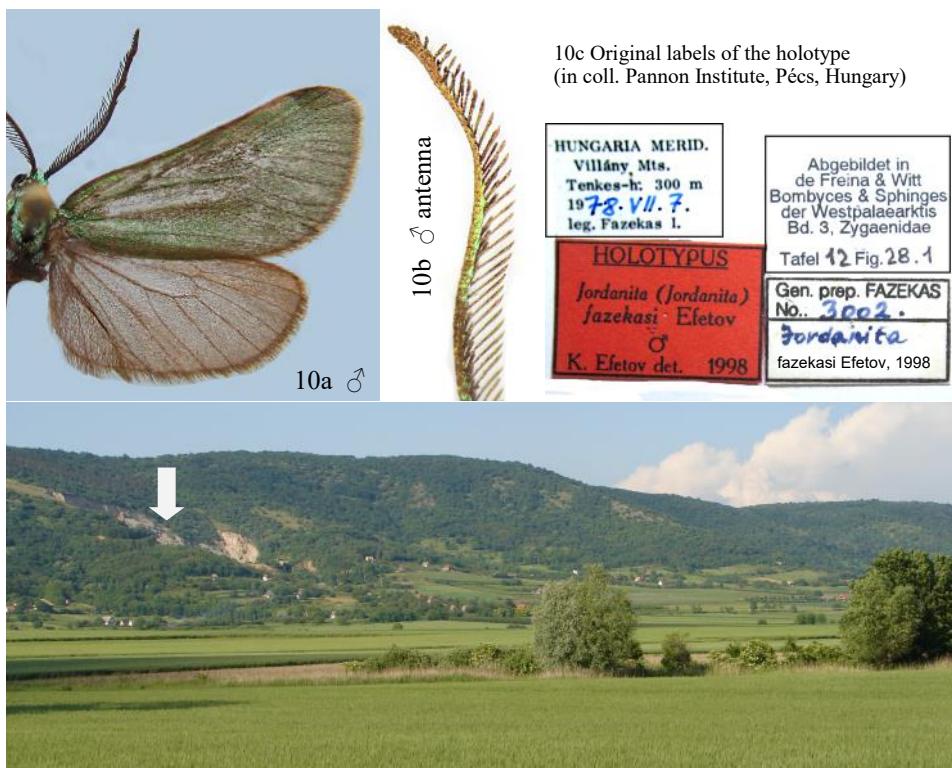
**10. *Jordanita (Jordanita) fazekasi* Efetov, 1998**

Local and very rare in south Hungary: Mecsek Mountains and Villányi Hills (locus typicus). A highly endangered species, its original habitats have been degraded or destroyed in recent decades. Most threatened by intensive quarrying, construction and trampling by tourists. There are many invasive plants everywhere, the original plant communities have been destroyed and replaced by *Pinus nigra*, *Robinia pseudoacacia* and *Ailanthus altissima*.

Differential diagnosis (according to Efetov 1998): *Jordanita (J.) fazekasi* is close to *J. (J.) vartianae* and *J. (J.) globulariae* but is characterized by the greater number of segments in the antenna (42–51); moreover, it has clear and constant differences in the genitalia. In *J. vartianae* (Fig. 8), which is endemic to Spain, the ventral side of the process arising from the sacculus is concave near the apex and the cornutus is curved at the base and similar in shape to that of a rose thorn. In *J. fazekasi*, the cornutus is straight, cone shaped. In *J. globulariae*, the aedeagus lacks a cornutus. Moreover, in *J. vartianae* and *J. globulariae* the pulvinus is not so large as in *J. fazekasi*. The sympatric occurrence of *J. fazekasi* and *J. globulariae* in Hungary (Fazekas 1980: 59, fig. 18e) confirms the opinion that *J. fazekasi* is a distinct species.

Biology: flight period early July. The larval foodplants are probably species of Asteraceae, as in other species of *Jordanita*.

Habitat: white oak scrub woodlands (*Inulo spiraeifolio-Quercetum pubescens*) and calcareous open rock grasslands (*Sedo sopianae-Festucetum dalmaticae*).



**10d** Type locality (white arrow) of *Jordanita fazekasi* in Villány Hills.; Harkány, Tenkes-hegy, 300 m. Over the last 30-40 years, the habitat has been destroyed. It has been replaced by a huge limestone quarry. The habitat is now a Natura 2000 site; the quarry has been closed.

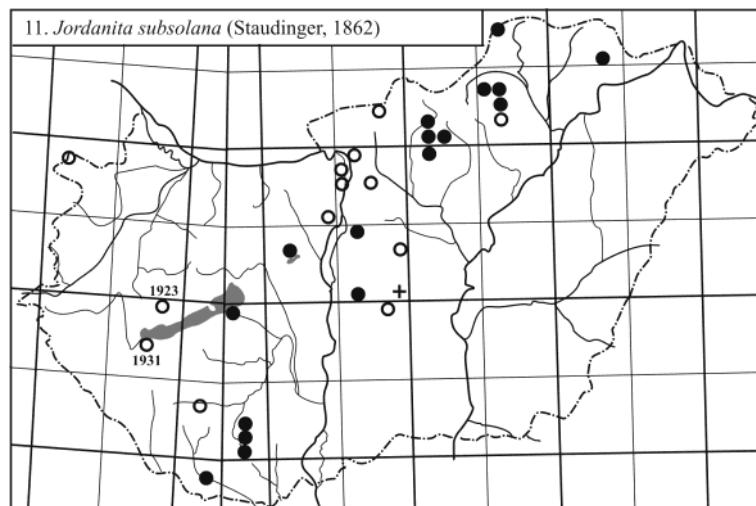
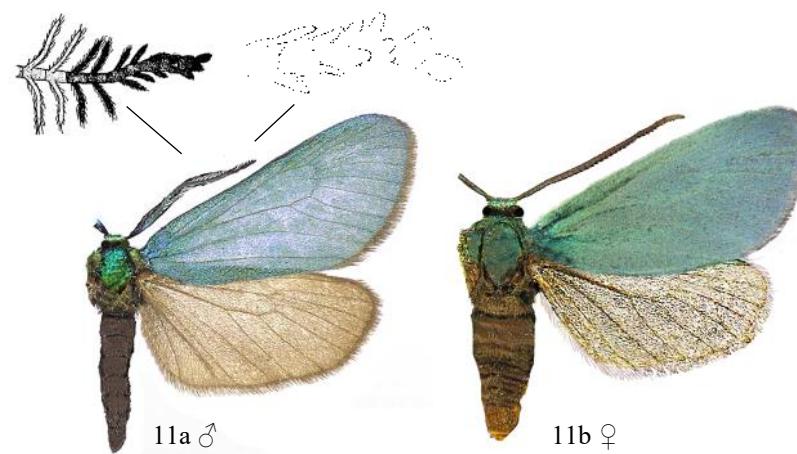
11. ***Jordanita (Solaniterna) subsolana*** (Staudinger, 1862)

Regressive species which has disappeared from many localities. Local and very rare in Hungary. The most significant Hungarian population flourishes in the Northern mountain range of Hungary: Mátra Mountains, Bükk Mountains and Aggtelek Karst. In southern Hungary (e.g., in the Mecsek Mountains) the number of individuals is very low. The species disappears for years and is clearly in regression. In general, surprisingly few populations are known west of the Danube. The reasons for this have not been investigated.

Bionomy: flight period in June and July. There are no data from May and August. Larva feeds on *Echinops sphaerocephalus*, *E. ruthenicus*, *Carlina vulgaris*, *Cirsium vulgare*, *C. eriphorum* and *C. pannonicum*.

Habitat: colline and montane hay meadows, acid grasslands and heaths, closed rock grasslands, rock steppes, white oak scrub woodlands.

Remarks: Unknown from eastern regions (e.g., Tiszántúl). There are studies in the eastern parts of the country, but researchers do not favour this group.

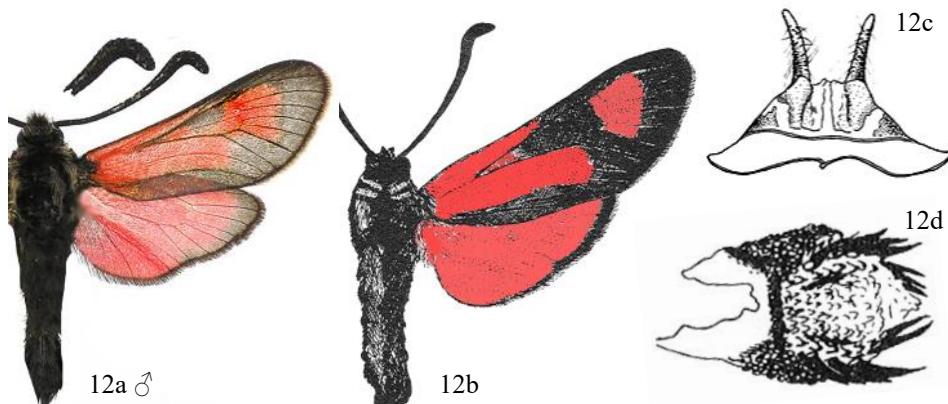


12. *Zygaena (Mesembrynus) punctum* Ochsenheimer, 1808

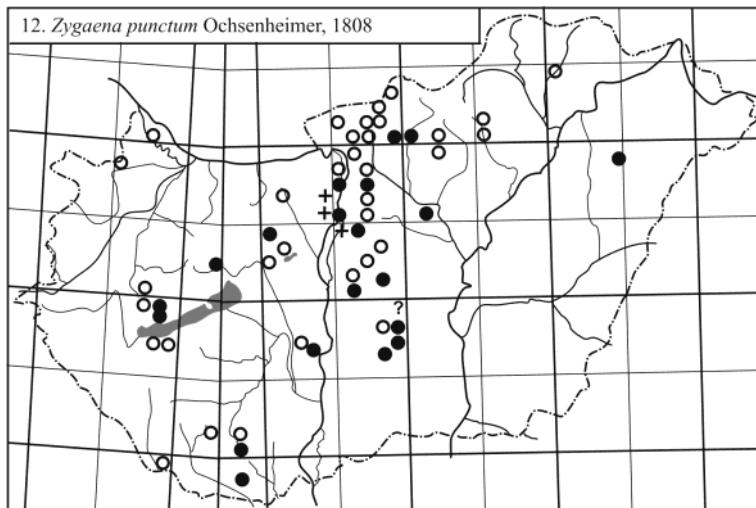
*Zygaena punctum* is known to be expanding its range in the Ponto-Mediterranean region, to the Pannonian basin as well as to Italy. It has been in recession in Hungary for the last 50 years and remains local in southwest Hungary, near the Croatian border. The author has recently found the species for the first time in Mecsek Mts. An image of *Z. punctum* was recorded on 30th June 2008 in the Mecsek Mountains (Pécsvárad). It was found in one locality only, but it was not abundant.

Bionomy: univoltine from end of May to end of July. The larvae feed on *Eryngium campestre*. According to Varga (1969) the larvae feed on *Centaurea* species. Known larval parasite: *Exoristala rvarum* and *Phryxe vulgaris* (Diptera: Tachinidae).

Habitat: A typical inhabitant of Pannonian steppe regions, occurring on dry, calcareous ground. Very local and rare.



12b. *Z. punctum* f. *isaszegensis* Reiss, 1929; "Cotypus" Isaszeg; 12c. male genitalia (uncus); 12d. lamina dorsalis (Fazekas 1982). The scales are different.



**13. *Zygaena (Mesembrynus) cynarae* (Esper, 1789)**

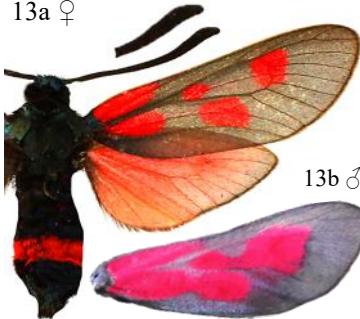
The sites for this species are mainly the sandy plains in the central part of the country, between the Danube and Tisza rivers. Unfortunately, breeding populations have not been observed in these sites for the last 50–60 years. The species has disappeared or become extinct in many places, such as the immediate vicinity of Budapest and the Mecsek Mountains in southern Hungary. It is important to note that it has also disappeared or become extinct from large areas of central Europe.

Bionomy: univoltine, from late May to early August. Primary foodplants of larvae: *Peucedanum cervaria*, *P. oreoselinum* and *Pimpinella major*. Secondary and occasional foodplants: *Peucedanum officinale*, *Pastinaca sativa* subsp. *pratensis*, *Libanotis pyrenaica*, *Daucus carota*. According to Varga (1969) the specimens from North Hungary (Zempléni Mountains; acid open rock grasslands) were bred on *Pimpinella major*. The food plants are different on the plains and in the mountain ranges. The primary food plant on the plain (e. g. closed loess and sand steppes) is *Peucedanum oreoselinum*, in the mountain ranges (e. g., rock- and slope steppes) *Peucedanum cervaria*.

Habitat: open sand steppes, calcareous open rock grasslands, acid open rocky grasslands, rocky steppes, slope steppes, closed loess, and sand steppes. Habitats are threatened by invasive weeds, overgrowth of shrubs and lack of mowing.

Remarks: According to Fazekas (1986; Abb. 1-8. and 9-25.): “About 250 specimens of this species from Hungary and neighbouring regions have been studied. The wing patterns of specimens belonging to the nominate subspecies and Hungarian specimens are illustrated to demonstrate the variation range. Parts of the male genitalia (uncus and lamina dorsalis) of specimens representing five different subspecies are figured. No differences in external appearance or in the genitalia could be found between specimens of the nominate subspecies and those from Hungarian populations. It is therefore concluded that the taxon *pustae* Burgeff, 1926, is a synonym of nominotypical *Zygaena cynarae* Esper, 1789, and that Hungarian *cynarae* are referable to the nominate subspecies.”

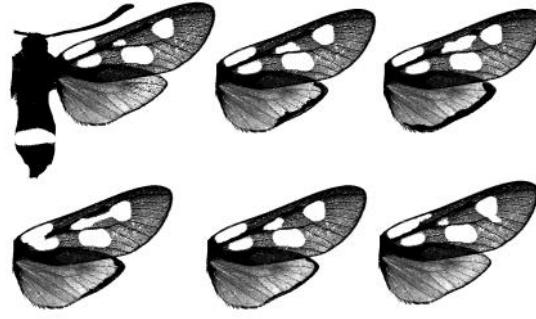
13a ♀



13b ♂



13b ♂ A rare form (after genital examination)



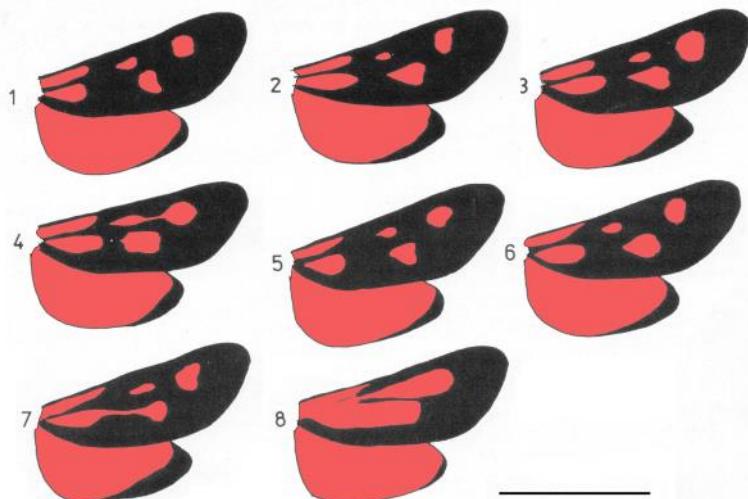
13c Variability of the wing patch pattern

13d

682 m



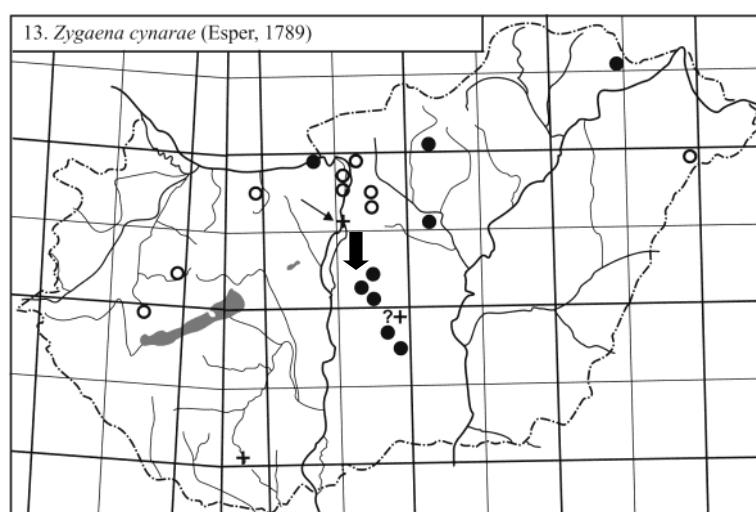
13d The species has disappeared or become extinct in many places, such the Mecsek Mountains in southern Hungary (Pécs)



13e *Zygaena cynarae*: the variability of wing patterns (according to Fazekas 1986, Abb. 1–8, p. 279); 1–4. *Z. cynarae cynarae* (topotypes, Lwow | = Lemberg), 5–6. *Z. cynarae* var. *pusztae* Burgeff, 1926; 7–8. *Z. cynarae* (Pomáz); scale bar= 10 mm.



13f Habitat of *Z. cynarae*: Kiskunság National Park (Peszéradacsí-rétek), UTM CT 61 (see black arrow)



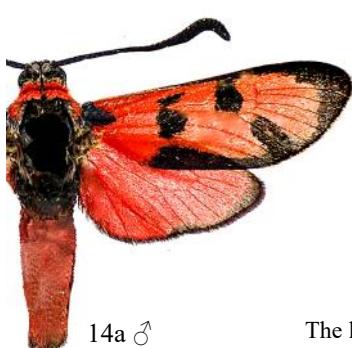
**14. *Zygaena (Mesembrynus) laeta* (Hübner, 1790)**

This species is protected in Hungary; its incorporeal value is 100 000 HUF. Very local and rare. It has disappeared from many places: Mecsek Mountains, Somogy County, Lake Fertő region, Budapest, and its neighbourhood.

Bionomy: univoltine from July to August. The larvae feed on *Eryngium campestre*. The specimens from Kiskunság National Park (Kis-Nyír) were bred on *Pimpinella saxifraga*.

Habitat: A typical inhabitant of Pannonian steppe regions, occurring on dry, calcareous ground, open sand steppes, or on dry sheepfolds (e.g., Mezőföld region).

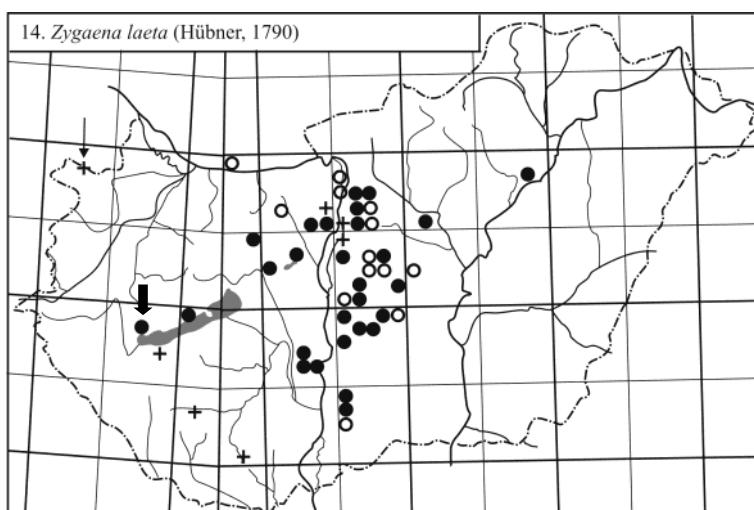
Remarks: A typical expansive Ponto-Mediterranean species in Hungary. Known only in some isolated populations between which gene flow is uncertain, although their survival is possible. The species seems to be in regression. Until the middle of the 20th Century it was a typical species of the sandy landscapes of central Hungary. Unfortunately, these habitats were planted with *Pinus sylvestris* and *Robinia pseudoacacia* and many old, natural habitats have been destroyed. This is now a rare and local species in its whole range. The majority of literature records report single specimens or lack data on the number of observed specimens. Most of the records before 1960 have not been confirmed.



14a ♂



14b Habitus pattern:  
Keszthely, 04.07.2016  
(© Ullén F.)  
The locality is indicated by the  
black arrow.



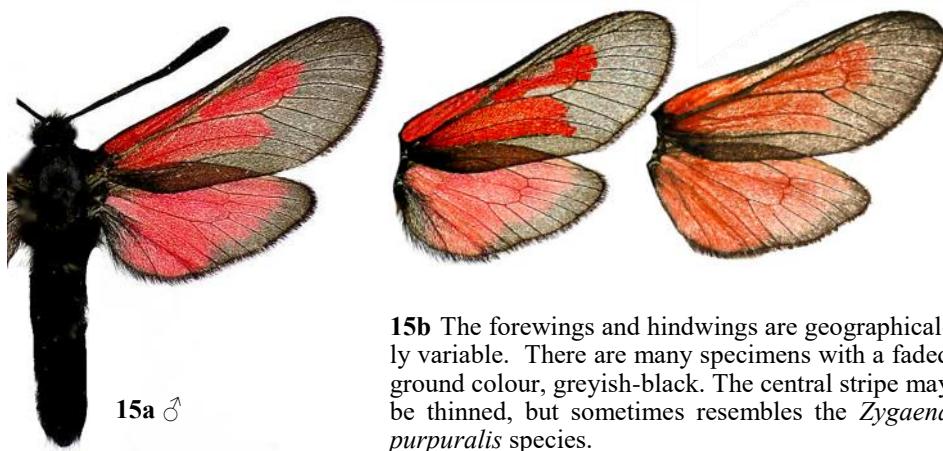
**15. *Zygaena (Mesembrynus) brizae* (Esper, 1800)**

The most significant Hungarian population of this species flourishes in the Northern mountain ranges of Hungary (e. g. Bükk Mountains, Aggtelek karst). In the past decades, the size of populations has reduced considerably, and therefore the survival of local populations can be ensured only protected areas.

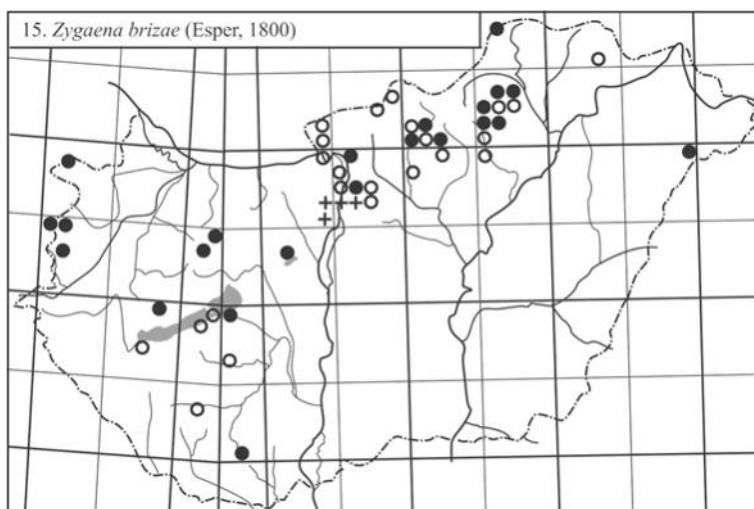
Bionomy: univoltine from late May to July. Larval foodplants: *Cirsium eriophorum*, *C. arvense*, *C. pannonicum*, *Onopodium acanthium*. According to Varga (1969) primary foodplant in the North Hungary (e. g., Aggtelek National Park) is *Serratula tinctoria*.

Habitat: sunny meadows, most rarely on marsh meadows, on pastures and on rocky mountainsides.

Remarks: distribution and conservation status in Hungary: species known only in nature reserves. The type of locality of the nominotypical subspecies is in Hungary.



**15b** The forewings and hindwings are geographically variable. There are many specimens with a faded ground colour, greyish-black. The central stripe may be thinned, but sometimes resembles the *Zygaena purpuralis* species.



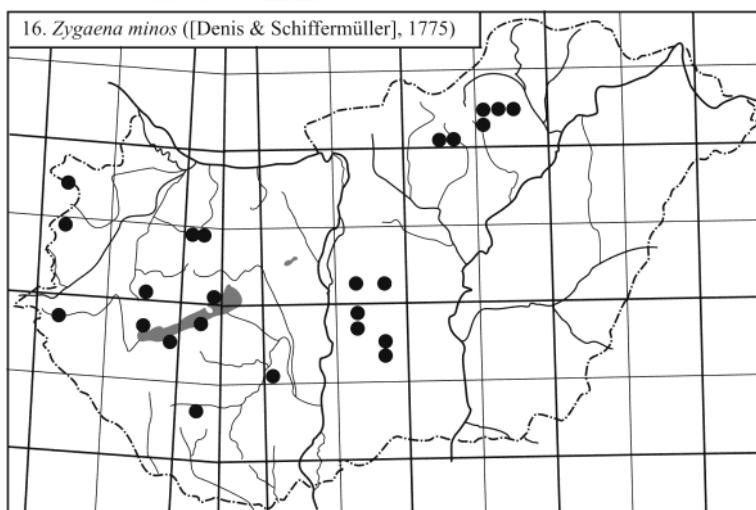
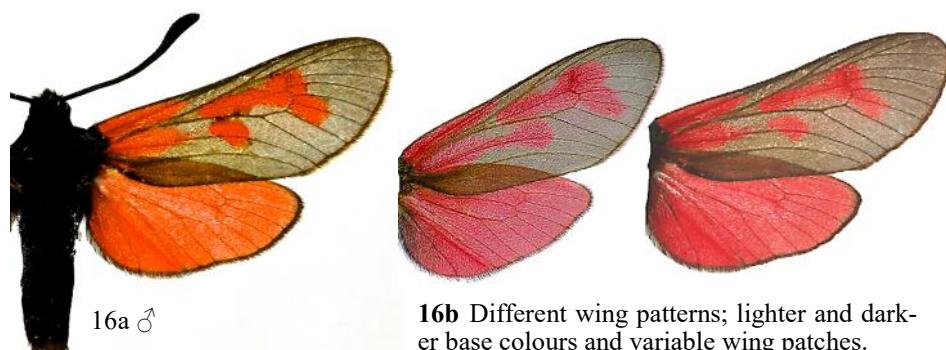
**16. *Zygaena (Mesembrynus) minos* ([Denis & Schiffermüller], 1775)**

Due to earlier taxonomic problems, the exact geographical distribution of *Z. minos/purpuralis* species-pair is only partially known. The moth is indistinguishable from *Z. purpuralis* in the field, only by genital dissection. The larvae, however, are easily distinguished. The author gives a detailed analysis of the differential features of the species-pair and has begun a complete revision of the Hungarian Collection (Fazekas 2002: 148 p.). Based on the specimens examined in detail, the geographic distribution in Hungary is as follows: most of the sites are west of the Danube River (Transdanubia). Most of the populations are highly isolated, with low numbers of individuals. In northern Hungary, it is documented in the Mátra and Bükk mountain ranges. Most of the Hungarian populations are in protected areas. Populations in the lowland areas (Danube-Tisza köze) should be reviewed.

Bionomy: univoltine from early June to mid-August. Larval foodplants: *Eryngium campestre*, *Falcaria vulgaris*, *Pimpinella saxifraga*.

Habitat: this widespread species is ecologically non-flexible; mainly on hills and in mountains of medium height; on dry meadows, on pastures and on waysides. Altitude from 90 m to 900 m.

Remarks: Distribution and conservation status in Hungary: determination of distribution frequency is uncertain due to incomplete research. Known only in local populations.



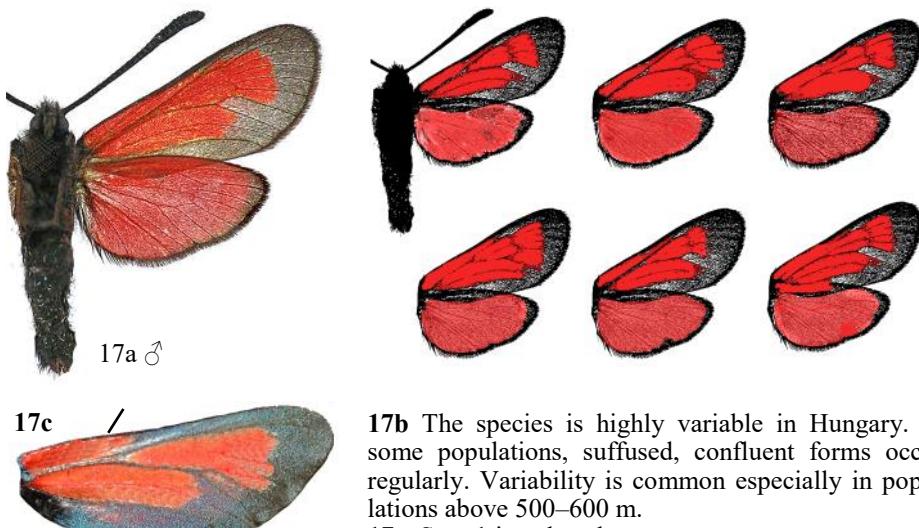
**17. *Zygaena (Mesembrynus) purpuralis* (Brünnich, 1763)**

Known mainly in the mountains, on the low hills, and locally on the plains. Distribution and conservation status in Hungary: locally distributed species which can occur in large numbers in favourable places.

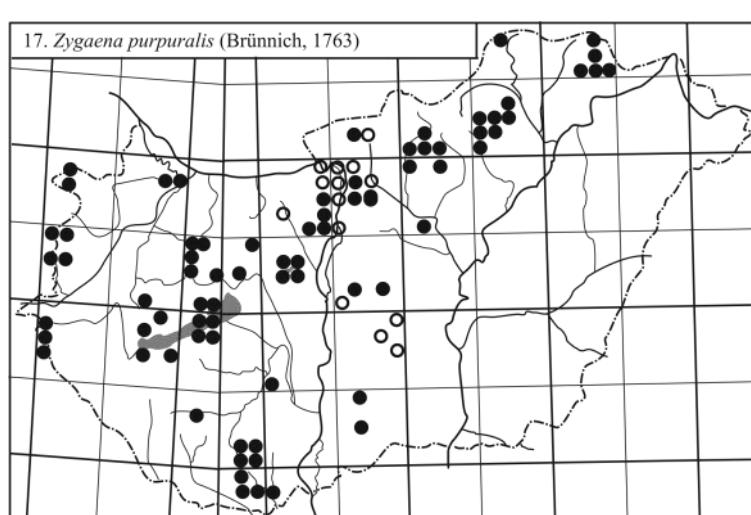
Biology: univoltine, from late May to early August. Larva oligophagous: *Thymus pannonicus*, *T. praecox*, *T. serpyllum*.

Habitat: this widespread species is ecologically very flexible; rock and slope steppes, white oak scrub woodlands, sweet chestnut woodlands, on closed loess and sand steppes.

Remarks: There are no known specimens from near the Croatian and Romanian borders, but collectors and researchers have not yet investigated these areas.



**17b** The species is highly variable in Hungary. In some populations, suffused, confluent forms occur regularly. Variability is common especially in populations above 500–600 m.  
**17c** Spot 1 is reduced.



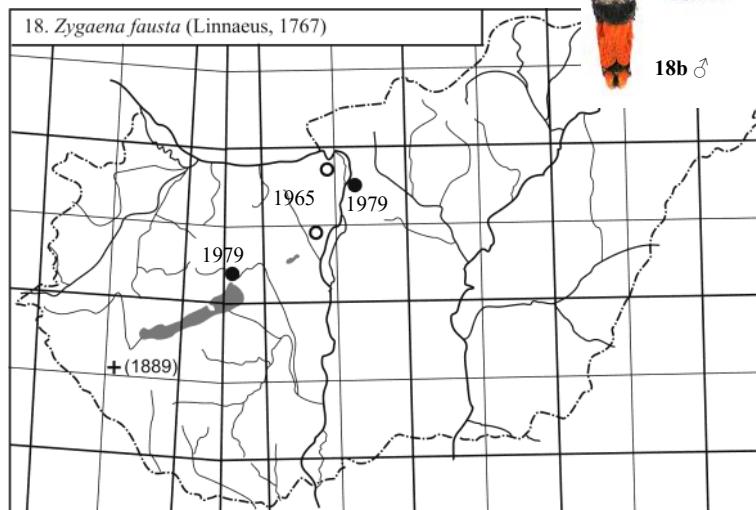
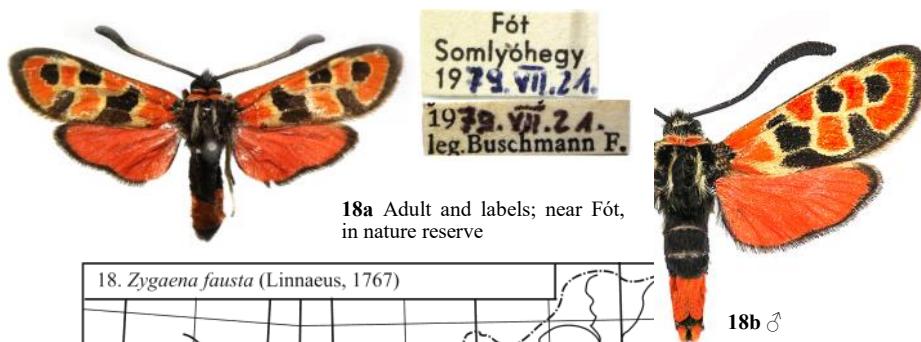
**18. *Zygaena (Agrumenia) fausta* (Linnaeus, 1767)**

One of the rarest and most mysterious species of Zygaenidae in Hungary. European authors have ignored the Hungarian populations of *Z. fausta* until now. Breeding populations were discovered in four places between 1965 and 1979, although we have no recent data. The identification and collectors of the species are authentic, and voucher specimens are preserved in the Hungarian Museum of Natural Science (Fazekas 1989, 1995, 2009). Fazekas (1995) gives voucher specimens known from the Hungary as follows: “♂, West-Ungarn, Nagykanizsa 1889, leg. anon, GU Fazekas, Nr. 983; Százhalombatta bei Budapest, ♀ 08.08.1965 leg. Seregelyes T., GU Fazekas, Nr. 984; Százhalombatta, ♀, 08.08.1965, leg. Agócsy P., GU Fazekas, Nr. 1015; Budaer-Gebirge, Dobogókő, ♂, VI.29., leg. anon, GU Fazekas, Nr. 1014; Bakony-Gebirge, Öskű, 2 ♂, 19.07.1979 leg. et GU Fazekas.” Another specimen from a new site was found: Fót, Somlyó-hegy, 21.07.1979, leg. F. Buschmann, in coll. Jász Museum (Jászberény). The specimen is authentic. The author has written about the species in detail in a paper, including the habitus of the specimen (Buschmann 2012).

Bionomy: univoltine, from late June to mid-August. Larva monophagous. Possible food crops in Hungary: *Coronilla vaginalis* and *C. coronata*. The geographical distribution of these plant species in Hungary is consistent with known *Z. fausta* localities. Unfortunately, no larvae have been observed so far.

Habitat: A typical xerothermophil species, on closed rock grasslands and rock steppes.

Remarks: Distribution and conservation status in Hungary: populations have disappeared or presumably become extinct since 1965 and 1979. Gene flow is uncertain; the species can be in regression.



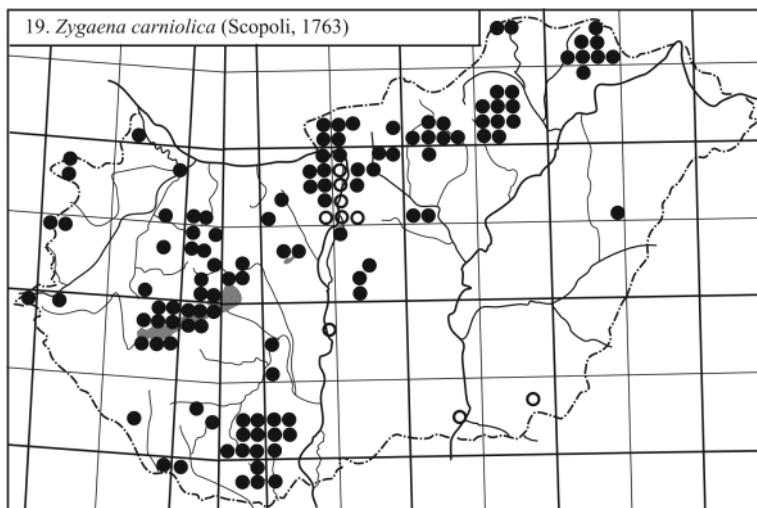
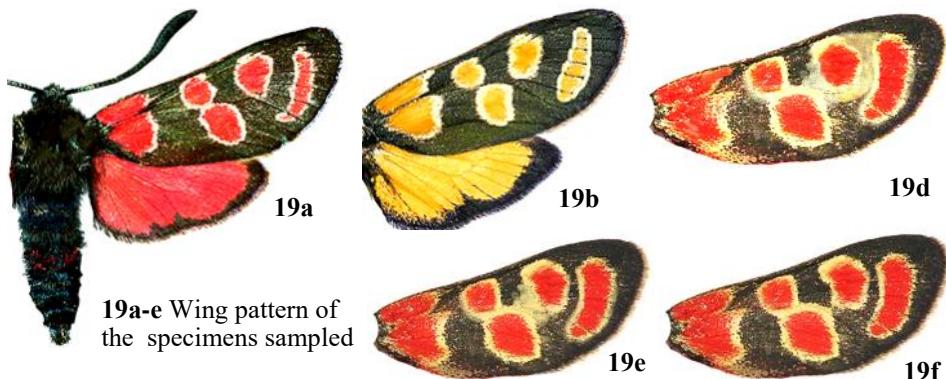
**19. *Zygaena (Agrumenia) carniolica* (Scopoli, 1763)**

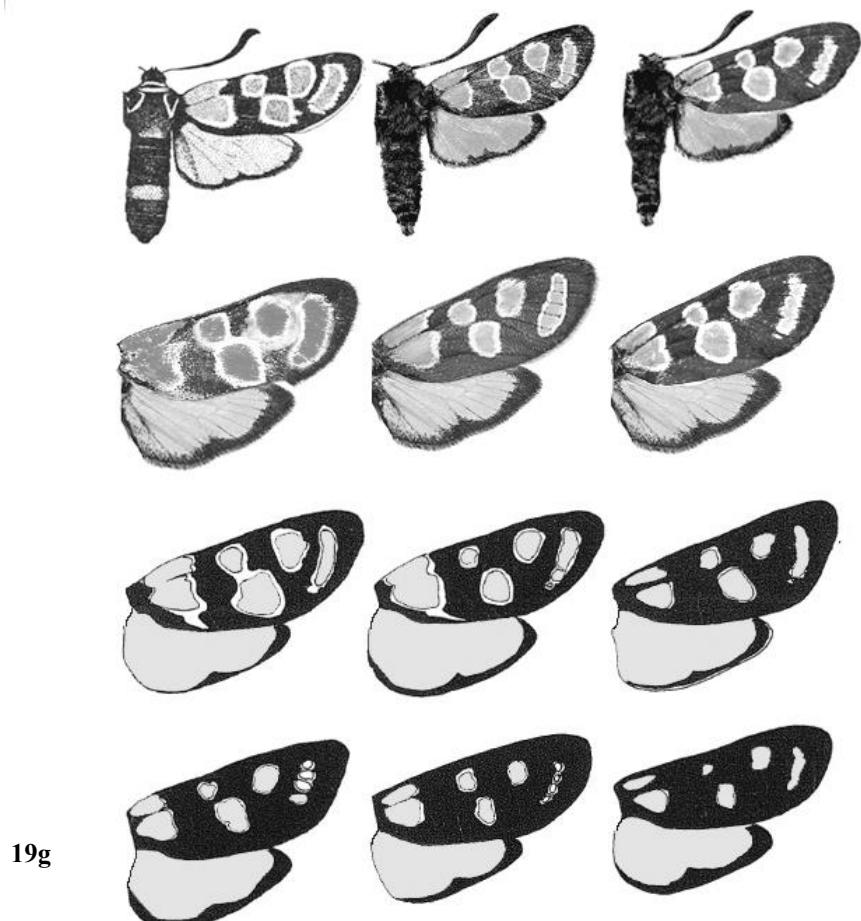
Known on Hungary mainly on the hills and in mountains of medium height (Transdanubia, Northern Hungary), with limited distribution in Eastern Hungary. Distribution and conservation status in Hungary: a widespread and mostly frequent euryoecious species.

Bionomy: univoltine, from late May to mid-July. Larva oligophagous: *Anthyllis vulneraria*, *Dorycnium herbaceum*, *Onobrychis viciifolia*, *O. arenaria*, *Lotus pedunculatus*, *L. corniculatus*.

Habitat: this widespread species is ecologically very flexible; colline and montane hay meadows, acid grasslands and heaths, halophytic habitats, dry open grasslands, closed rock grasslands, slope steppe, closed loess and sand steppes, white oak scrub woodlands, loess steppe oak woodlands, open sand steppe oak woodlands, arable land limited, often low-intensity agriculture.

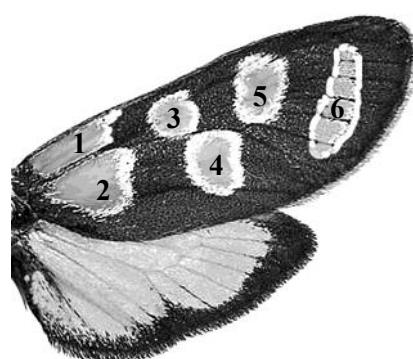
Remarks: in the last 20–30 years, the number of sightings in south-western Hungary (e.g., Baranya county) has been steadily decreasing. In sites where it was common in the past, now only a few specimens can be seen. This is particularly noticeable in the Mecsek Mountains, especially where chemical mosquito eradication has been carried out. Not only have Zygaenid species disappeared, but all butterflies (Rhopalocera) too.





**19g** Spot types with distinct white to yellowish spot border of *Zygaena carniolica* specimens in Hungary

**19h** Morphometric. Landmarks on the wings are numbered. Generalized *Zygaena carniolica* wing pattern from above. Spot type: 1+2, 3, 4, 5, 6.  
The 6th spot is highly variable, sometimes breaking up into small patches. The white ring of spots 3, 4 and 5 may disappear.



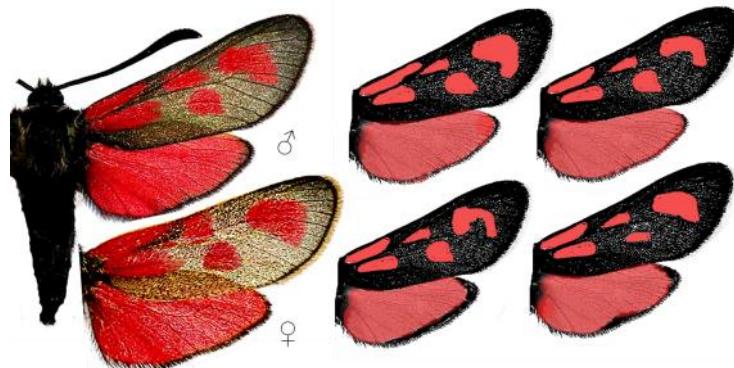
**20. *Zygaena (Zygaena) loti* ([Denis & Schiffermüller], 1775)**

Widespread in Hungary mainly on the hills and in mountains of medium height (Transdanubia, Northern Hungary), with limited distribution in Eastern Hungary. Most-frequent euryoecious species.

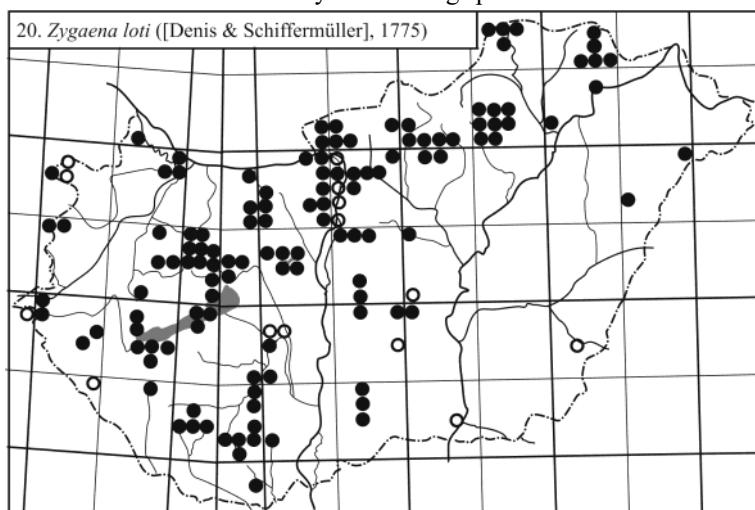
Bionomy: univoltine, from late May to mid-August. Larva oligophagous: *Coronilla varia*, *Dorycnium herbaceum*, *Hippocrepis glauca*, *Lotus corniculatus*, *Trifolium alpestre*, *Onobrychis arenaria*. Behaviour: Normally occurs great profusion, feeding in particular at flowers of species of *Knautia*, *Scabiosa*, *Centaurea*, *Dianthus*, *Orygano* and *Echium*.

Habitat: colline and montane hay meadows, acid grasslands and heaths, dry open grasslands, dry and semi-dry closed grasslands, white oak scrub woodlands, open sand steppe, oak woodlands, poplar-juniper steppe woodlands, thermophilous woodland fringes, wooded pastures, sweet chestnut woodlands.

Remarks: The distribution map shows that it is very localised in the highly continental Hungarian lowlands. There are several reasons for this: 1) natural vegetation has disappeared, 2) almost all areas have been occupied by intensive agriculture, 3) only in National Park areas are there suitable habitats, 4) there has been very little planned collection in the lowland areas.



**20a Variability of forewings patches**



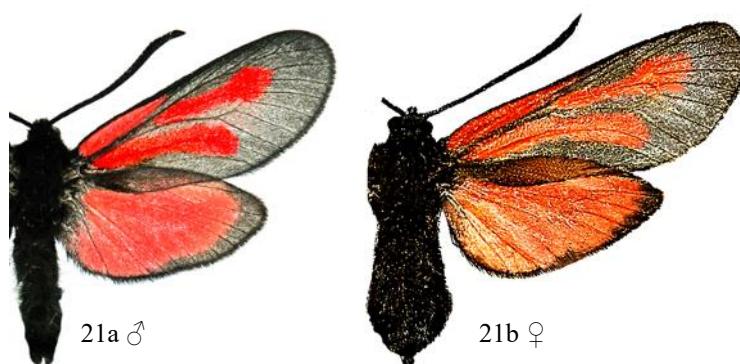
**21. *Zygaena (Zygaena) osterodensis* H. Reiss, 1921**

Rare and local in West Hungarian Borderland, in Transdanubian Mountains and in North Hungarian Mountains at altitudes between 200 m and 1000 m (Mátra Mts., Bükk Mts.). Absent or unrecorded from huge areas of the country. In the Great Plain, it has only been collected in the Jászság region (Buschmann 2012). It has disappeared from old habitats around Budapest. In the south-west, south of Lake Balaton, towards the Croatian border, only one site is known.

Bionomy: univoltine, from early of June to mid-August. In Hungary, the moths usually rest on and feed at the flowers of species of *Knautia*, *Lathyrus*, *Scabiosa*, *Vicia* and *Valeriana*. Larval foodplants: *Lathyrus sativus*, *L. pratensis*, *L. niger*, *L. vernus*, *Vicia tenuifolia*.

Habitat: *Z. osterodensis* is a meso- and semi hygrophilous species, mainly on hills and in mountains of medium height; *Arrhenatherum* hay meadows, *Festuca rubra* hay meadows and related communities, colline and montane wet degraded grasslands, woodland fringes. It also likes the forest lands. An unprecedented population was found in the Bakony Mountains, in Kab-Mount, in 2020. The habitat is a typical closed thermophilous *Quercus pubescens* forest. The moths were flying very early, already in the first week of May. The forested area is surrounded by calcareous rocky steppes and slope steppe on stony soils vegetation dominant.

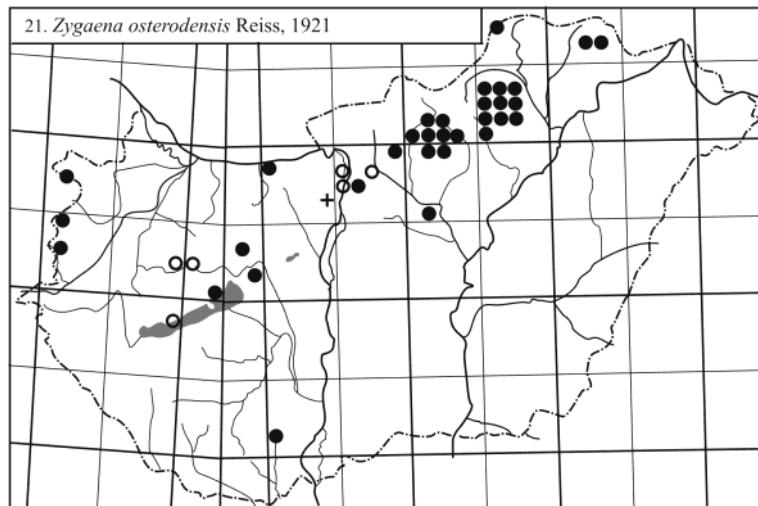
Remarks: Distribution and conservation status in Hungary: species known only in nature reserves; gene flow is uncertain.



**21c** Typical habitat of *Z. osterodensis*; Bükk Mts., Nagymező, 730 m (© Gál M.)



**21d** Individual variation of *Z. osterodensis* is generally not significant, but many forms are present in the higher areas of the central mountains. It is mainly the 3+5 spot that separates, the 2+5 spot thins or splits into two.



**21e** The distribution map shows that *Zygaena osterodensis* is absent from lowland areas with a strongly continental climate. It mainly prefers the more humid hilly- and mountainous areas.

**22. *Zygaena (Zygaena) viciae* ([Denis & Schiffermüller], 1775)**

Widespread but local and may occur in larger numbers in wet habitats. Very local and little-known species in east Hungary (e.g., Maros–Körösköze, Nagykunság), and to the south, along the river Drava, directly on the Croatian border (Drávafok).

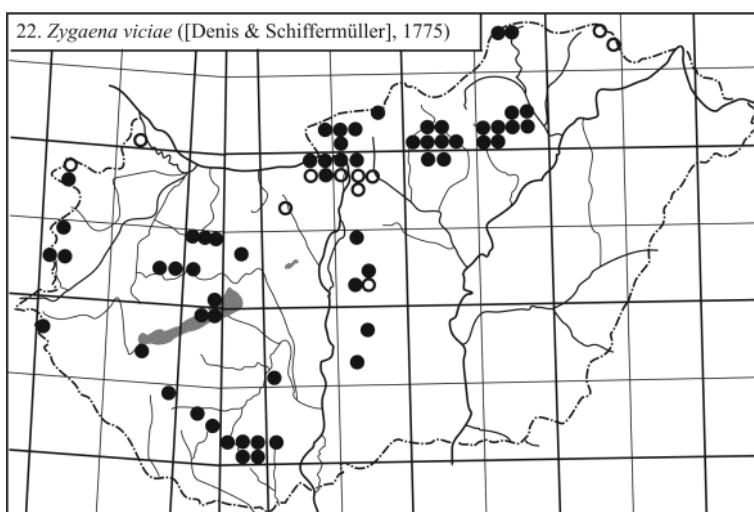
Bionomy: flight period from late May to late July. Larva oligophagous: *Medicago sativa*, *Trifolium campestre*, *T. repens*, *T. alpestre*, *T. medium*, *Dorycnium herbaceum*, *Lotus corniculatus*, *Onobrychis viciifolia*, *Vicia cassubica*, *V. cracca*, *V. tenuifolia*, *Lathyrus pratensis*.

Habitat: colline and montane hay meadows, acid grasslands and heaths; local on rock steppes, slope steppes and closed loess and sand steppes.

Remarks: distribution and conservation status in Hungary: locally distributed species which can occur in greater numbers in favoured localities. The old data for the Budapest area should be reviewed. The revised specimens are kept in the Hungarian Natural History Museum. It is important to note that it was the dominant species in the southern part of the country (in Mecsek Mountains) in the 1970's and 1980's. In the last 1-2 decades, the abundance has decreased dramatically.



**22b** Rare 6-spotted forms in 5-spotted populations



**23. *Zygaena (Zygaena) ephialtes* (Linnaeus, 1767)**

Many specimens in museum and private collections were collected 50-60 years ago. The distribution map drawn from these locality data is very misleading, as the recent data show a strong regression. Most of the sites are known west of the Danube River. There is often a large distance between local habitats. Abundance is very low. In the North Hungarian mountains (e.g., Mátra Mts., Bükk Mts.) stronger populations occur in landscape protection areas, National Parks, and Natura 2000 sites. There are hardly any observations from the lowland region.

Biology: flight period from July to mid-August. According to Gozmány (1963) from mid-May to early August. It is possible that sometimes two generations occur. Larva oligophagous: *Coronilla varia*, *C. emerus*, *Hippocrateis comosa*, *Onobrychis viciifolia*, *Vicia cracca*. According to Gozmány (1963) the larva feeds on *Thymus*.

Habitat: colline and montane hay meadows, acid grasslands and heaths. Distribution and conservation status in Hungary: locally distributed but known only in nature reserves.

Remarks: In the last decade, several isolated populations have been found east of the Tisza River. These isolates are highly threatened, mainly due to intensive agricultural cultivation.



23a *Z. ephialtes* f. *coronillae*



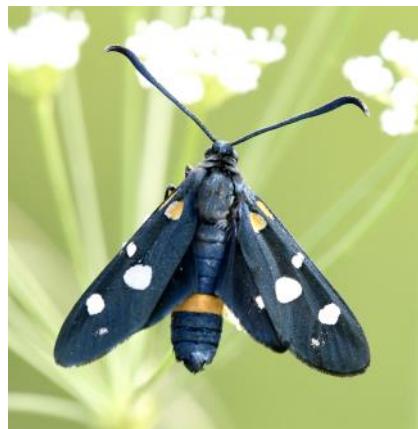
23b *Z. ephialtes* f. *aeacus*



23c *Z. ephialtes* f. *peucedani*



23d *Z. ephialtes* f. *ephialtes*



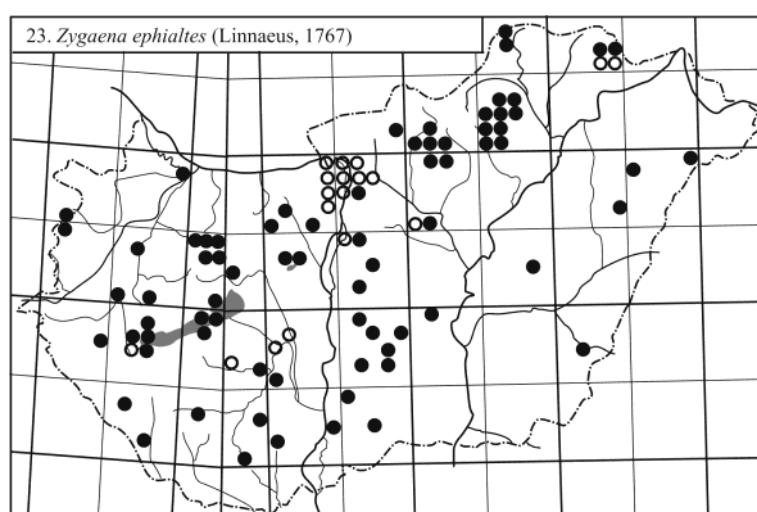
**23e** *Z. ephialtes* f. *coronillae*; widespread in Hungary (© Gergely P.)



**23f** *Z. ephialtes* f. *peucedani*: the underside of the wings



**23g** Rare varieties of *Z. ephialtes* forma unknown from southern Hungary (Mecsek Mts.)



**24. *Zygaena (Zygaena) angelicae* Ochsenheimer, 1808**

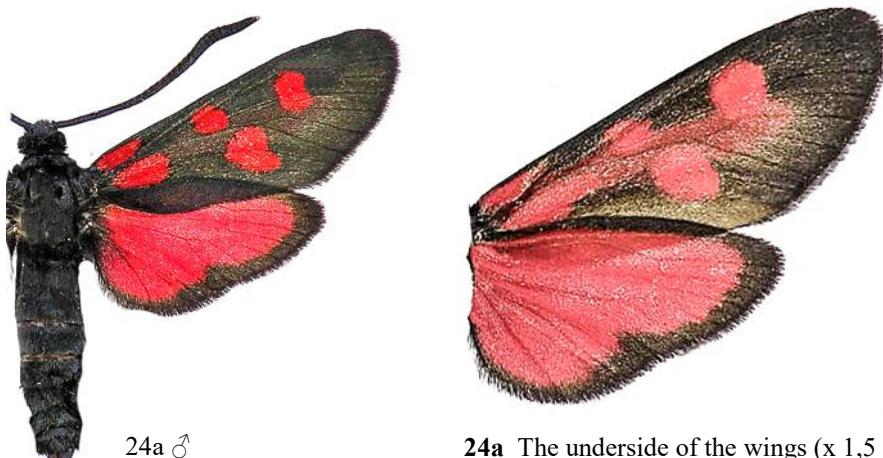
Hungarian populations live in the fluctuation zone of the species' distribution limit.

*Z. angelicae* is very local and rare in Hungary. Many habitats have been destroyed in the agglomeration of settlements. The survival of the species is mostly ensured in the northern North Hungarian mountains and in the Austrian-Hungarian border area. The situation in the lowlands is critical, with a lack of observations and surveys.

Bionomy: flight period from late June to late July. Larva oligophagous: *Lotus corniculatus*, *Coronilla emerus*, *C. varia*, *C. coronata*, *Hippocratea comosa*.

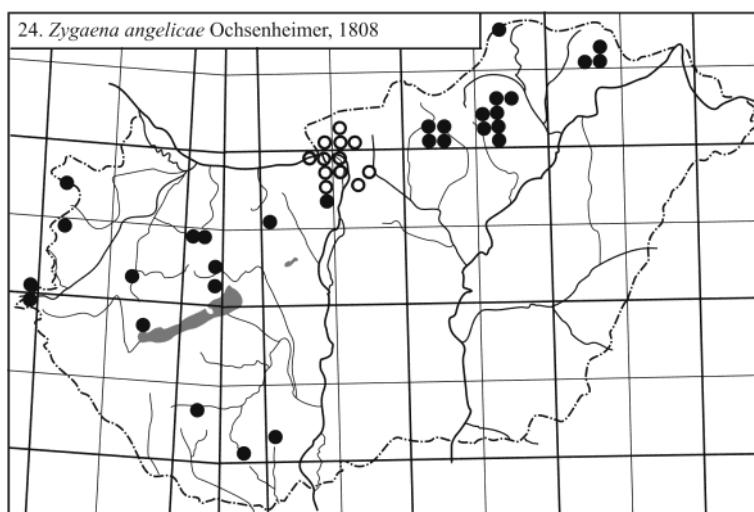
Habitat: colline and montane hay meadows, acid grasslands and heaths, closed rock grasslands, rock steppes, slope steppes.

Remarks: distribution and conservation status in Hungary: local and rare in mountains of moderate altitude, gene flow is uncertain. The species is likely to be in regression.



24a ♂

24a The underside of the wings (x 1,5 approx.))



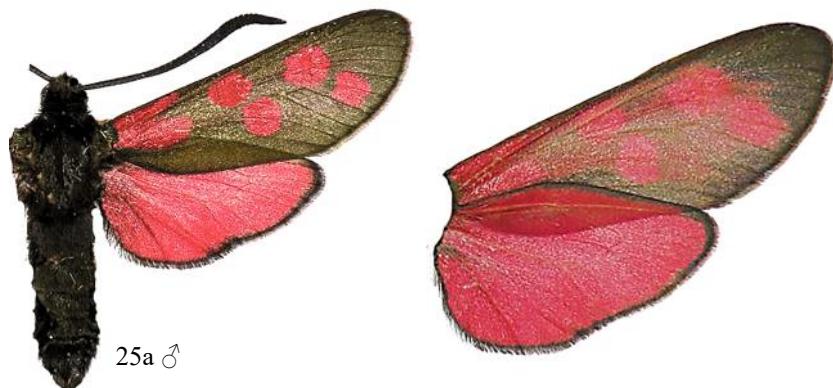
25. *Zygaena (Zygaena) filipendulae* (Linnaeus, 1758)

Widespread on the hills and in the mountains of medium altitude, very local on the plains.

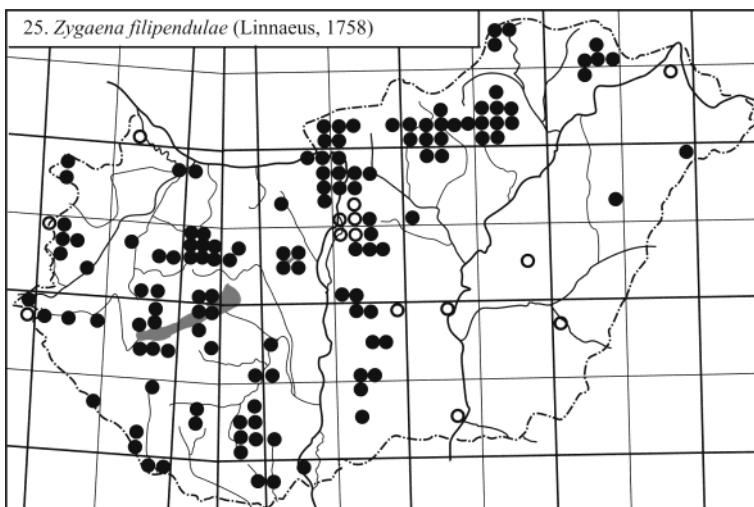
Bionomy: flight period from late May to mid-August. The species normally occurs in great profusion, feeding preferably at the flowers of species of *Carduus*, *Centaurea*, *Knautia*, *Scabiosa*, *Origanum* and *Eupatorium*. Larva oligophagous on *Dorycnium herbaceum*, *Lotus pedunculatus*, *L. corniculatus*, *Coronilla emerus*, *C. coronata*, *Onobrychis viciifolia*, and *Lathyrus sylvestris*. According to Gozmány (1963), the larva feeds on *Trifolium* spp. In the Hungarian lowlands, east of the Tisza river (Kiskunmajsa, Kisújszállás), a very interesting observation was made by Kelemen et al. (2011). In 2010, in the month of September, when mating individuals were found (06.09.2010 and 26.09.2010). The moths were feeding on *Centaurea pannonica* flowers. In Hungary, such late flight times have never been recorded before.

Habitat: colline and montane hay meadows, acid grasslands and heaths.

Remarks: distribution and conservation status in Hungary: found everywhere, and a common species in most localities.



25b The underside of the wings  
(x1,5 approx.)



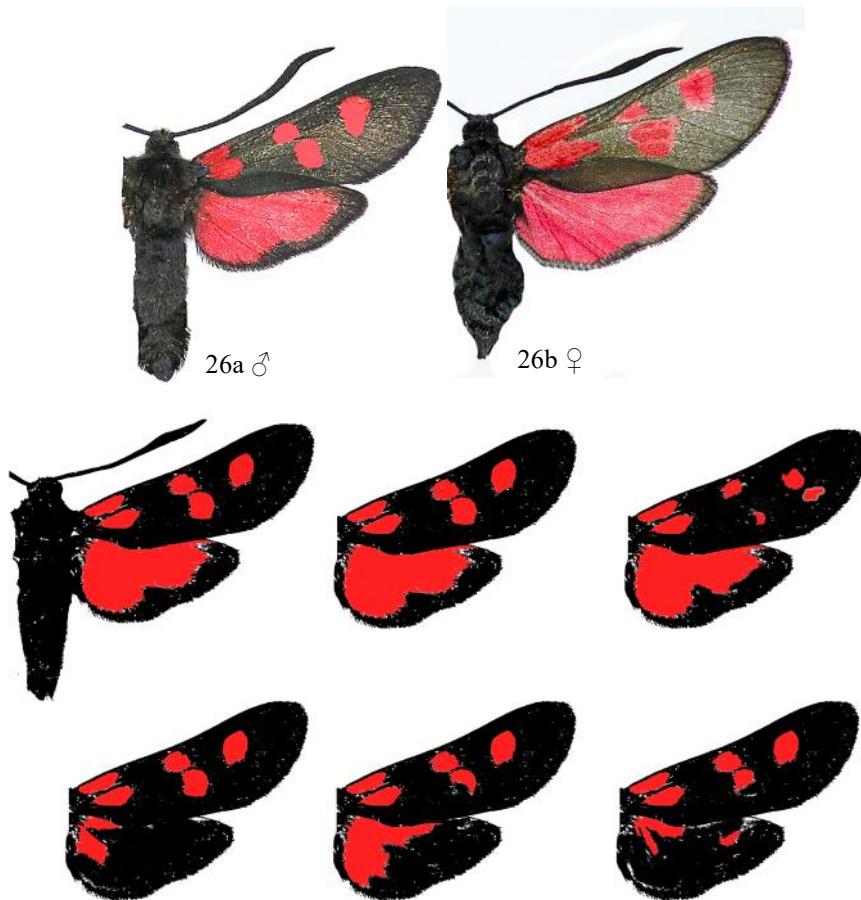
**26. *Zygaena (Zygaena) lonicerae* (Scheven, 1777)**

Widespread on the hills and in the mountains of medium altitude, very local on the Hungarian plains. Most have been collected west of the Danube River, as far as the Austrian border. It is hardly known at present along the Slovenian and Croatian borders.

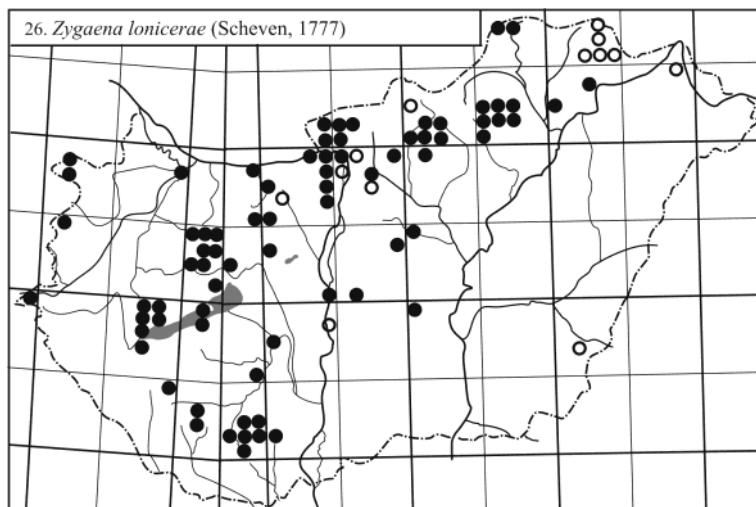
Bionomy: flight period from mid-May to mid-August. *Z. lonicerae* normally occurs great profusion, feeding preferably at the flowers of species of *Centaurea*, *Cirsium*, *Knautia* and *Scabiosa*. Larva oligophagous, on *Trifolium montanum*, *T. repens*, *T. alpestre*, *T. pannonicum*, *T. medium*, *Lotus pedunculatus*, *L. corniculatus*, *Astragalus onobrychis*, *Coronilla varia*, *Onobrychis viciifolia*, *Hippocrepis comosa*, *Vicia sylvatica*.

Habitat: mainly in hilly and mountainous meadows and pastures, sparse shrublands, forest edge zones, rocky hillsides, on roadsides. The moth present very locally in mown fields, pastures, or abandoned weedy areas near lowland rivers (e.g., Duna, Tisza, Körös).

Remarks: on the distribution map, it is very striking that in most of the country, in the lowlands, there are hardly any sites. However, the potential localities have not yet been systematically investigated. Especially near the Ukrainian and Romanian borders, habitats of the species should be sought.



**26c** Variability in wing pattern in Hungarian populations (original graphics by the author)



### Questionable or incorrectly identified species from Hungary

Records of several Hungarian species are based misidentification. Only one early specimen of *Zygaena trifolii* (Esper, 1783) is known. Recent research has not confirmed its presence and presumably, the specimen is wrongly labelled. Specimens of *Zygaena contaminei* Boisduval, 1834 from the Bükk National Park (North Hungarian Mts) and *Zygaena diaphana* Staudinger, 1887 have been misidentified (Ács & Szabóky 1993) and belong to other species. *Zygaena contaminei* is endemic to the Iberian Peninsula and does not occur in other parts of Europe.

According to Nahirnić (2019) *Z. diaphana* is a “bona species”. For a long time, the taxonomic status of the species was highly questionable. Its identification is exceedingly difficult as it occurs in the Balkans together with its sister species *Z. minos*. The exact geographic distribution of *Z. diaphana* is not yet known. Further in-depth research is needed to determine whether its area reaches Hungary.

The record of Hungarian *Adscita manni* (Lederer, 1853) is also based on a misidentification. According to Ács & Szabóky (1993) known a species in the Bükk Mts (North Hungary): “*Adscita appendiculata* (Esper, [1777])”. Such taxon unknown in Hungary and in Palaearctic region.



*Z. trifolii* (Spain)  
(© Fernández-Rubio F.)

*Z. contaminei* (Spain)  
(© Fernández-Rubio F.)

*A. manni* (Croatia, Istria)  
(© Fazekas I.)

A final note on the *Zygaena fausta* species: According to European Zyganidae specialists a native occurrence of this species in Hungary is doubtful. G. Tarmann (pers. comm.) believes that this species even could have been introduced to Hungary in historical times for some reason and has disappeared now. According to Tarmann know *Z. fausta* from other places in Europe where this species does not occur (e.g. a series of *Z. fausta* in the Rothschild collection in London from Austria, Leithagebirge). Biogeographically a western European distribution with a local and isolated sub-population in Hungary is most peculiar. May it be possible that someone has introduced this species into Hungary deliberately or that it came somehow by agricultural products in earlier times? Of course, we cannot prove anything nowadays.

According to Tarmann similar cases are known for *Adscita mannii* (Lederer, 1853) and *T. ampelophaga* in North Africa.

**Acknowledgements.** We owe thanks to all our colleagues, who in any way have contributed to the construction of the Hungarian Zygaenidae Mapping Database and the publication of this study. For their kind help in allowing me to study collections and providing me with the specimens and valuable information I would like to express my best thanks to the following persons: Péter Gergely (H-Csobánka), Imre Balogh [†] (H-Budapest), Ferenc Buschmann (H-Jászberény), Miklós Gál (H-Komló), Péter Gyulai (H-Miskolc), József Jablonkay [†] (H-Gyöngyös), Zsolt Kalotás (H-Tolna), András Máté (H-Kecskemét), Lajos Németh (H-Zalaszentmihály), Károly Petrich [†] (H-Budapest), Gerhard Tarmann (A-Innsbruck), Sándor Tóth (H-Zirc), Fredrik Ullén (S-Stockholm), Zoltán Varga (Debrecen), Wilfried Voigt (H-Paks), János Wettstein [†] (H-Budapest). Barry Goater (United Kingdom) is thanked for linguistic corrections. Special thanks go to my colleague Gerhard Tarmann for his professional advice and useful comments.

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## New taxa of the genus *Dichagyris* Lederer, 1867 (Lepidoptera, Noctuidae) from Asia

Péter Gyulai

**Abstract.** Description of six new species and nine new subspecies of *Dichagyris* Lederer, 1867, with 64 colour illustrations and 57 genitalia figures.

**Keywords.** Asia, taxonomy, Noctuidae, new descriptions.

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### Introduction

The latest publications on the Palaearctic taxa of the genus *Dichagyris* Lederer, 1867 are by Varga, Ronkay & Ronkay 2020; Gyulai & Saldaitis 2021/a; Gyulai 2021/a; Gyulai & Saldaitis 2021/b; Gyulai 2021/b. In these works, a large number of new taxa were described from the high mountains of Asia, and which indicate further the great diversity within this genus. Here, the diagnosis and description of more new taxa are given, partly based upon the expedition of V. Gurko to the Province of Waziristan, Pakistan, the noctuid fauna of which is largely unexplored. Five new species and six new subspecies of the subgenus *Dichagyris* Lederer, 1867 are described here, together with one new species and three new subspecies of the subgenus *Yigoga* Nye, 1975.

Separation of these taxa needs careful study, due to the very strong resemblance in the external features and configuration of the genitalia. Hitherto, the female genitalia of many species have not been studied or published, probably because of the small differences in the structure among them.

The taxonomic rank of the populations of the polymorphic and widespread *Dichagyris celebrata* (Alpheraky, 1897) in the eastern Karakoram Mts. (Chapurson valley) (Fig. 18) remains unsolved, since the type locality of *Dichagyris celebrata pashtu* Varga, 1996 (Fig. 17) is also in Pakistan, Karakoram Mts. There were found no significance differences in the male genitalia of the specimens of the two populations, despite differences in the external features.

The taxonomy of the widespread Asiatic *Dichagyris himalayensis* Turati, 1933 and *Dichagyris despecta* (Corti & Draudt, 1933) and their two described subspecies, needs further study. Here author treats the taxon *despecta* as the northern central-Asiatic subspecies of *D. himalayensis*.

The taxonomic position of *D. (Yigoga) iranicola* Koçak, 1980 (= *hyrcana* Corti & Draudt, 1933, praeocc.) also needs further investigation, because judging from the external and genitalia features, it is very likely to be a north-eastern subspecies of *D. (Y.) forcipula* (Denis & Schiffermüller, 1775). *D. (Y.) iranicola* occurs in NE Iran (Central and eastern Alborz) and Turkmenistan. Fibiger (1997) figured a single male from

Sarepta, Russia and mentioned this species from “western Siberia and the steppes of Central Asia”. However, its range is much more restricted, for sure.

A single, strange male *Yigoga* sp. was found in the Collection of the author from Kazakhstan, Parchai, (slide no. GYP 5298). However, due to the damaged valvae it remains undescribed at present.

The male and female genitalia of all the new and closely related taxa are figured below, even though the differences between them are mostly slight, as it is well known in this genus.

Abbreviations for personal and institutional collections used herein: HNHM= Hungarian Natural History Museum (Budapest, Hungary); HT = holotype; PT = paratype; PGM = collection of Péter Gyulai (Miskolc, Hungary); GYP = genitalia slide Péter Gyulai; genitalia slide of Z. Varga.

### Description of new taxa

#### *Dichagyris wazircola* sp. n. (Figs 1, 93)

**Holotype:** female (Fig. 1), Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28. VII.-12. VIII. 2005, 1500-2500 m., leg. V. Gurko, slide no. GYP 5293 (coll. PGM, later to be deposited in HNHM).

**Diagnosis.** *Dichagyris wazircola* sp.n. belongs to *D. vallesica* (Boisduval, 1837) species group, and is most closely related to *Dichagyris fuscashmiriana* Varga, G. Ronkay & L. Ronkay 2020 (Figs 2, 94), from which it differs in the much lighter, whitish-light - greyish suffused forewings with reduced, finer wing pattern (ground colour in *D. fuscashmiriana* unicolorous light brown, with prominent, very defined wing pattern); the less lanceet, but more arched postmedian line; darker, diffuse subterminal area with a few, slight blackish wedge-shaped spots on the inner side of the obscure subterminal line, which are conspicuous in *D. fuscashmiriana*, and much lighter cilia, particularly on the hindwings. Rarely, specimens with whitish hindwings occur among the *D. fuscashmiriana*, however no significance differences were found comparison of the brown hindwinged ones.

Underside of wings much lighter, whitish in the hindwings of new species, whereas light brown in the related species. The female genitalia of the new species (Fig. 93) are easily distinguished from those of all the similar, closely related taxa by the giant wing-like, bilaterally symmetrical sclerotized extensions near the antrum. The male is unknown.

**Description** (Fig. 1). Wingspan 39 mm, length of forewing 20 mm. The vesture of body and ground colour of the forewings whitish with light greyish-brownish suffusion, the darkest in the subterminal and terminal area. Orbicular and reniform stigmata as the ground colour; orbicular finely dark brown encircled, the reniform stigma bordered with an arched fine brown line in the inner side; the small area between the two stigmata filled with a brown patch; claviform stigma obscure, slightly brown bordered. Antemedian line zigzag, postmedian line fine, lacy, arched, with a fine brown diffuse patch in the inner side toward the claviform stigma, both lines brown; subterminal line obscure, with a row of few brown wedge-shaped spots in the inner side. Cilia white and brown variegated. Hindwings whitish-light brown, much darker suffused in the marginal area; discal spot absent, cilia as ground colour. Underside of wings whitish with faint light brown, diffuse, wide, evenly tapered border.

**Male genitalia.** Unknown.

**Female genitalia** (Fig. 93). Papillae anales setose, angular; apophyses posteriores about twice as long but finer than apophyses anteriores; antrum finely sclerotized, V-

shaped with giant, wing-like, bilaterally symmetrical extensions near it. Ductus bursae broadly tubular, anteriorly the broadest, medially constricted, somewhat longitudinally wrinkled and sclerotized posteriorly; appendix bursae large, elongate-saccate; corpus bursae longer, saccate.

**Biology and distribution.** The new species is known only in the type locality, isolated from all related taxa.

**Etymology.** *Dichagyris wazircola* is named after the type locality in the Ahmadzai Wazir tribe territory, South Waziristan Agency, Pakistan.

***Dichagyris tanaicola* sp. n. (Figs 3, 95)**

**Holotype:** female (Fig. 3), Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28. VII. - 12. VIII. 2005, 1500-2500 m., leg. V. Gurko, slide no. GYP 5569 (coll. PGM, later to be deposited in HNMH).

**Diagnosis.** Superficially most like *D. tyrannus* (A. Bang-Haas, 1912), but the structure of the female genitalia indicates that *Dichagyris striata beluchus* Brandt, 1941 (Figs 4, 96) is the most closely related taxon. *D. tanaicola* can be separated from that species by the much shorter forewing apex, pale ochre ground colour of forewings, which are whitish in *D. striata beluchus*, pale ochre marginal area, which is broadly dark greyish-brown in *D. striata beluchus*; pale ochre and brown variegated cilia in the forewings, which are unicolorous brown in *D. striata beluchus*, and darker hindwings. From *D. tyrannus* (Figs 5, 6 and 97, 98), the new species can be easily distinguished by the broader forewings with much shorter apex, the much lighter forewings with more conspicuous, lighter orbicular and reniform stigmata, the finer, less arcuate postmedian line, the pale ochre and brown variegated cilia which are light brown in *D. tyrannus*, lighter, contrasted hindwings which are unicolorous light brown in *D. tyrannus*, and particularly in the underside of wings, which in *D. tanaicola* sp. n are white with broad, faint, brown border whereas in *D. tyrannus*, the underside is light brown. In the female genitalia, the new species (Fig. 95) can be separated from *D. striata beluchus* (Fig. 96) by the medially slightly constricted, broader ductus bursae and broader calyculate antrum, which in *D. striata beluchus* are medially and distally significantly narrower, with strongly constricted ductus bursae and narrower calyculate antrum; from those of *D. tyrannus* (Figs 97, 98) by the longer papillae anales, narrower antrum with long, narrow, pincer-like, symmetrical extensions posteriorly, a significantly longer ductus bursae with narrower medial and distal sections and the significantly longer, almost evenly wide corpus bursae. The male is unknown.

**Description** (Fig 3). Wingspan 42 mm, length of forewing 21 mm. The vesture of body and the forewings unicolorous pale ochre, the wing pattern fine, fuscous. Orbicular and reniform stigmata as the ground colour; orbicular spot finely and partly dark brown encircled, the reniform stigma typical but obscure with an arched fine brown line in the inner side; connected toward the orbicular stigma by a small brown patch; claviform stigma small, obscure, slightly brown bordered. Basal line and antemedian line wavy; postmedian line fine, lacy, arched, with a fine black triangle in the inner side toward the reniform stigma and another on the claviform stigma; subterminal line brown, conspicuous, wavy and serrate in the middle, the broadest in the subapex, then evenly narrower, with a row of few brown wedge-shaped spots in the inner side. Cilia as the ground colour, with slight brown intervals. Hindwings whitish-light brown, widely darker suffused in the marginal area; discal spot absent, cilia whitish. Underside of wings white with brown, faint, diffuse wide border.

**Male genitalia.** Unknown.

**Female genitalia** (Fig. 95). Papillae anales setose, elongate angular; apophyses posteriores about twice as long but much finer than apophyses anteriores; antrum finely

sclerotized, U-shaped, with long, narrow, pincer-like, symmetrical extensions posteriorly. Ductus bursae tubular, anteriorly the broadest, medially slightly constricted, somewhat longitudinally wrinkled and widely but finely sclerotized anteriorly and posteriorly; appendix bursae large, elongate-saccate; corpus bursae much longer, saccate, almost evenly narrow.

**Biology and distribution.** The new species is known only in the type locality, with a geographical isolation from the related taxa.

**Etymology.** *Dichagyris tanaicola* is named after the type locality near Tanai village, in the Ahmadzai Wazir tribe territory, inhabits South *Waziristan* Agency.

***Dichagyris zagroica orientalis* ssp. n. (Figs 7, 8, 67)**

**Holotype:** male (Fig. 7), Pakistan, NWFP S. Waziristan agency, near Tanai vill., 2.-12.IX. 2005, 1500-2500 m, leg. V. Gurko, slide no. GYP 5352 (coll. PGM, later to be deposited in HNHM).

**Paratype:** male, with the same data (coll. PGM).

**Diagnosis.** The new subspecies (Figs 7, 8) differs from the nominotypical subspecies (Figs 9, 10) in the darker ground colour of forewings with reduced white suffusion, less obscure wing pattern, more defined reniform stigma and the less sinuous subterminal line. In the male genitalia, the new subspecies (Fig. 67) can be distinguished from that of the nominotypical one (Figs 65, 66) by the more elongated cucullus section in the valvae; somewhat longer aedeagus, there are no clear differences in the coiled-twisted vesica. A valid separation of the new subspecies is supported by the large geographical isolation from both the nominotypical central Iranian and the northern-western Iranian *Dichagyris zagroica azerica* Gyulai & Varga, 2006.

The female is unknown.

**Description** (Figs 7, 8). Wingspan 30-32 mm. The vesture of body and ground colour of the forewings brown, greyish brown, with slight whitish suffusion near the main veins terminally. Orbicular stigmata elliptical; reniform stigmata well defined, broadly wedge-shaped, finely white encircled. Antemedian line zigzag; postmedian line brown, obscure, only the first lacy section visible; subterminal line whitish, with a row of brown wedge-shaped spots in the inner side; cilia white and brown variegated. The hindwings whitish.

**Male genitalia** (Fig. 67). Uncus very long, almost evenly narrow. Juxta broadly shield-shaped, vinculum V-shaped; valvae elongate, dorsal costa medially dilated, distal section evenly tapered, cucullus asymmetrically tapered, apically rounded; harpe strong, apically slightly hooked, ampulla slight. Aedeagus tubular, long, straight with a long, narrow, strongly sclerotized carinal ribbon extended on to the basal section of vesica; vesica spacious, with a prominent subbasal diverticulum dorsally, armed apically with a tiny cornutus, twisted-coiled medially.

**Biology and distribution.** The new subspecies is known only from the type locality, with a large geographical isolation from both the nominotypical central Iranian and the northern-western Iranian subspecies.

**Etymology.** The news subspecies *orientalis* is named after the type locality.

***Dichagyris subcelebrata* sp. n. (Figs 11, 69)**

**Holotype:** male (Fig. 11), Kasakhstan, Prov. Almaty, Taukum desert, 10 km W of Usharal, 450 m, 44°12' N, 076°47'E, 12. VII. 2009, leg. B. Benedek, slide no. GYP 2341 (coll. PGM, later to be deposited in HNHM).

**Diagnosis.** The two taxa most closely related to *D. subcelebrata* sp. n. are *D. kongur* Varga, 1996 and *Dichagyris celebrata* (Alpheraky, 1897). *D. subcelebrata* differs from *D. kongur* (Fig. 12) in the pale ochre ground colour, which is greyish suffused in *D. kongur*, the short forewing apex and rounded outer costa; more sinuous crosslines,

particularly the postmedian line which has a prominent brown patch in the inner-lower side, the subterminal line and the almost unicolorous hindwing, which is much lighter in the inner area, but broadly darker suffused in the marginal area in *D. kongur*. *D. subcelebrata* sp. n. (Fig. 11) differs from *Dichagyris celebrata* (Alpheraky, 1897) (Figs 13–16) and *Dichagyris celebrata pashtu* Varga, 1996 (type locality: Pakistan, Karakoram Mts.) (Figs 17, 18) in the significantly smaller size (wingspan 34 mm, as opposed to 37–41 mm), the conspicuously shorter forewing apex and rounded outer costa; very sinuous subterminal line with only a few, diffuse light brown triangular streaks basad, and the almost unicolorous hindwing, which is much lighter in the inner area, but broadly darker suffused in the marginal area in both *D. celebrata* and *D. celebrata pashtu*. In the male genitalia (Fig. 69), the best distinguishing features from the closely related taxa (Figs 68 and 70–72) are the shorter and straight harpe, the short dorsal apical section of the cucullus and the very distinctive configuration of the basal-subbasal parts of the vesica, which is broadly twisted in the basal section dorsad (unlike those of the related taxa), the subbasal diverticulum is larger, more prominent, with a less robust apical cornutus.

**Description** (Fig. 11). Wingspan 34 mm. The vesture of body and ground colour of the forewings unicolorous ochreous with brown suffusion. Antemedian, postmedian and subterminal crosslines fine, brown, the latter two very sinuous; the subterminal line with a few, diffuse light brown triangular streaks in the inner side. The orbicular spot slightly elongate, the arched reniform stigma small, typical; both of them the same coloured as the ground colour and finely more or less brown edged. Hindwings unicolorous light brown with slightly darker suffused on the main veins; wing pattern absent.

**Male genitalia** (Fig. 69). Uncus long, narrow, curved; juxta broadly shield-shaped with wide medial depression, vinculum V-shaped; valvae elongate, dorsal costa medially slightly dilated, ventral costa almost straight, cucullus section asymmetrically tapered, apically not elongate; harpe strong, straight, apically slightly hooked, ampulla slight. Aedeagus tubular, straight, with two strongly sclerotized carinal streaks, from which the narrower, longer ventral one extends on to the basal section of vesica; vesica basally-subbasally spacious, distally tubular, slightly curved ventrad; broadly twisted in the basal section dorsad; the subbasal diverticulum is large, prominent, with a fine apical cornutus.

**Female genitalia.** Unknown.

**Biology and distribution.** The population of *D. subcelebrata* is extremely isolated in a small desert in low altitude.

**Etymology.** *D. subcelebrata* is named from its relationship to *D. celebrata*.

#### *Dichagyris pallidographa* sp. n. (Figs 20,100)

**Holotype:** female (Fig. 20), Pakistan, S. Karakoram Mts., Hushe River, 3500–3800 m, 10–12. VIII. 2004, leg. V. Gurko, slide no. GYP 5492 (coll. PGM, later to be deposited in HNHM).

**Diagnosis.** The most closely related species is *D. leucographa* Varga, 1990 (Figs 19), from which *Dichagyris pallidographa* (Fig. 20) is easily separated by the smaller size (wingspan 35 mm, versus 39–41 mm), glossy, pale brownish-ochre thorax and forewings, which are pale ochre with densely scattered brown scales in *D. leucographa*; orbicular- and reniform stigmata more clearly defined, on a paler, finer forewing pattern, and in particular by the less arcuate and serrate postmedian line which is conjoined to the reniform stigma with a small brown spot. In the female genitalia, *D. pallidographa* (Fig. 100) can be distinguished from those of *D. leucographa* (Fig. 99) by the broader ductus bursae, with a prominent asymmetrical lateral extension, as well as the broader sclerotized plate of the antrum and the much shorter corpus bursae. These

differences in external and genitalia characters are more conspicuous in comparison with *Dichagyris apochora* Varga & Gyulai, 2001 (Fig. 101). The male is unknown.

**Remark.** There are known small, similar coloured forms in Asia of the polymorphic, widely distributed *Dichagyris himalayensis* Turati, 1933, but comparison of the female genitalia shows that the new species is not closely related to *D. himalayensis* (see Fig. 102).

**Description** (Fig. 20). Wingspan 35 mm, length of forewing 16 mm. Antennae filiform, light brown. The vesture of body and ground colour of the forewings pale brownish-ochre, shining on the wings, which are densely scattered with fine pale brown scales. Orbicular and reniform stigmata conspicuous, light ochre, without the fine brown scales; claviform stigma absent. Crosslines brown; antemedial and postmedial lines fine, zigzag, the latter slightly arcuate, conjoined to the reniform stigma with a small brown spot; median fascia diffuse, well defined between the orbicular and reniform stigmata; submarginal area broadly darker than the ground colour, with a triangular subapical patch. Hindwings whitish with pale brown suffusion, particularly in the slightly darker marginal area; cilia as the ground colour of the wings. Underside of the wings somewhat lighter, whitish-pale brownish; a faint, slightly darker postmedial line in the forewing and the marginal area in all the four wings.

**Male genitalia.** Unknown.

**Female genitalia** (Fig. 100). The main characters are the setose, elongate triangular papillae anales, short apophyses anteriores and ca. 2.5 times longer but finer apophyses posteriores. Antrum broadly U-shaped broad ductus bursae, with a prominent asymmetrical lateral extension; appendix bursae large, saccate and saccate corpus bursae much longer.

**Biology and distribution.** This new species was found in the high region of the southern Karakoram.

**Etymology.** *Dichagyris pallidographa* is named from the pale brownish-ochre forewing.

#### *Dichagyris himalayensis karataui* ssp. n. (Figs 22–24, 103)

**Holotype:** female (Fig. 22), S. Kasakhstan, Tshymkent, Karatau Mts., Kentau, 650 m, 28. VI.–11. VII. 1994, leg. I. Pljutsh, slide no. GYP 5302 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 1♂, 4♀, with the same data (coll. PGM)  
slide: GYP 5322f.

**Diagnosis.** *D. himalayensis karataui* ssp. n. (Figs 22–24) differs from nominotypical *D. himalayensis* Turati, 1933 and the Central Asiatic subspecies *D. himalayensis despecta* (Corti & Draudt, 1933) (Figs 21, 26) and from the more distinctive and isolated Himalayan *D. himalayensis calamoxantha* Boursin, 1964, by the narrower forewings with elongate apex; darker, almost unicolorous ground colour of forewings and hindwings and the less lacy, more arcuate postmedian line in the forewings. Externally, it is more like *Dichagyris korsak* Varga, Gyulai & Miatleuski, 2002 (Figs 25, 104), which also occurs in Kazakhstan, but is readily separated by the elongate apex of the forewings, the better defined, lighter Noctuidae maculation and the finer, more lacy and arcuate postmedian line on the forewings. In the female genitalia, the new subspecies (Fig. 103) can be distinguished from *D. himalayensis despecta* (Fig. 102) by the broader ductus bursae and the larger, longer appendix bursae. It can be distinguished from the externally very similar *D. korsak* (Fig. 104), by the significantly shorter ductus bursae, the much smaller and not coiled appendix bursae and the much shorter corpus bursae.

**Comment.** The abdomen of the only known male was missing, so the male genitalia are unknown. Externally it looks like the same as the females.

**Description** (Figs 22–24). Wingspan 33–37 mm. The vesture of body and ground colour of the forewings pale greyish-brown with weak pale ochre suffusion, particularly in the median area, and the marginal area is darkest. The wing pattern obscure; ante- and postmedian crosslines fine, brown, the latter very prominent in the fore section; orbicular spot and the narrow, arched reniform stigma pale ochre. Hindwings light brown suffused, darker in the marginal area; wing pattern absent.

**Male genitalia.** Unknown.

**Female genitalia** (Fig. 103). Papillae anales setose, terminally angular; apophyses posteriores longer but finer than apophyses anteriores; antrum finely sclerotized with cup-shaped plate; ductus bursae tubular, short, somewhat wrinkled and sclerotized medially; appendix bursae large, elongate-saccate; corpus bursae much longer, saccate.

**Biology and distribution.** *D. himalayensis karataui* ssp. nov. is extremely isolated in the island-like Karatau Mts.

**Etymology.** The new subspecies *karataui* is named after the type locality. (Figs 27, 73)

#### *Dichagyris adrienneae* sp. n. (Figs 27, 73)

**Holotype:** male (Fig. 27), Uzbekistan, W Thian Shan Mts. Chimgan, 800–2000 m, E69°58' E, 41°32' N, 18–25.VII.1990, leg. P. Gyulai, slide no. GYP 471m (coll. PGM, later to be deposited in HNHM).

**Diagnosis.** *Dichagyris adrienneae* is most like *Dichagyris apochora* Varga & Gyulai, 2001 (Figs 28, 29), in size and wing pattern, but the structure of the male genitalia indicates a close relationship to the *Dichagyris psammochroa* species group, all of which are externally very different from the new species. From the males of *D. apochora*, the new species differs in the darker, brownish-ochreous ground colour of forewings and darker, almost unicolorous pale brownish-ochreous ground colour of hindwings. In the forewing pattern, the most conspicuous differences are the presence of the strong, continuous, conspicuous brown median crossline and the more lacy postmedian line; additionally, all of the elements of wing pattern much better defined in *D. adrienneae*.

In the male genitalia, the most conspicuous difference is in the shape of cucullus section; in *D. adrienneae*, it is significantly longer and symmetrical, evenly tapered and apically rounded than in *D. apochora*, in which it is shorter, asymmetrical and apically pointed; the vinculum is shorter. The vesica is more coiled, with larger, drop-like subbasal diverticulum and a long, strong ribbon-like sclerotization in the inner bend of the distal section, which is absent in *D. apochora*.

**Description** (Fig. 27). Forewing length 17 mm, wingspan 33 mm. Eyes globular, black; antennae light brown, filiform, finely but densely ciliated. Palpi tiny, covered with pale ochreous scales. Vesture of head, thorax, abdomen and legs dark pale ochreous, only the tarsi of the hind legs black with yellowish rings. Forewings triangular, apex pointed, subapically with a diffuse triangular patch; ground colour of the forewings brownish ochreous; elements of wing pattern brown, being the darkest in the fore costal area in the initials of the crosslines. Orbicular stigma a small brown circle; reniform stigma obscure, the triangular tip, conjoined with the median line; claviform stigma not visible. Basal-, antemedian- and median transverse lines wavy; postmedian line evenly arched, serrate-lacy, median line almost parallel with it in the lower section; subterminal lines pale, finely lacy; remains of cilia brown. Hindwings more or less evenly light brownish-ochreous, slightly light brown suffused in the marginal area; discal spot and medial line absent; cilia pale brown. Underside of wings pale ochreous, only the faint, light brownish beginnings of the transverse lines and the reniform stigma visible.

It is worth mentioning that the single male was a freshly emerged one, and during transport a part of the body fluids leaked out and the specimen became sticky, which

could only be removed by prolonged solvent soaking, so the fringe was very incomplete.

**Male genitalia** (Fig. 73). Distal part of uncus missing; taking into consideration the structure, it is likely to be long, curved, terminally hooked and apically acute, as in the closely related species Other features of the genitalia are characterized by the long tegumen; broadly cup-shape juxta with a medial conical extension ventrally and two small, more sclerotized symmetrical extensions with a slight medial depression among them dorsally; clavus short, vinculum broadly V-shaped; valvae not evenly wide; the dorsal costa with a large rounded enlargement medially, while the ventral costa almost evenly slightly arcuate; both costae evenly tapered toward the cucullus “neck”; cucullus elongate, hairy, evenly tapered terminally, rounded apically; harpe strong, long, distally almost straight, terminally slightly curved inward, apically acute. Aedeagus straight with a long, strongly sclerotized, eversible carinal bar on to the basal section of vesica; vesica ample, membranous, subbasal diverticulum prominent, broad, drop-like, armed with a small acute cornutus apically; distal part of vesica coiled-twisted, with a long, narrow, strongly sclerotized ribbon in the inner bend.

**Female genitalia.** unknown.

**Bionomics and distribution.** This new species is known only from type locality. Habitat was in a rather low mountainous part of the western Thian Shan; rocky hillsides with sparse scrubs and scattered smaller oak trees; down a small stream valley with giant Rubus and low Salix bushes.

#### *Dichagyris verecunda pakistana* ssp. n. (Figs 35, 36 and 76, 106)

**Holotype:** male (Fig. 35), Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII.-12.VIII.2005, 1500-2500 m, leg. V. Gurko, slide no. GYP 1865 (coll. PGM, later to be deposited in HNHM).

**Paratypes.** 4♀♀, with the same data (coll. PGM). slide: GYP 5477f, 1♂ Pakistan, Balochistan, Ziarat NP, forest, 10-20.VII.2009, 2000 m, leg. V. Gurko (coll. M. Dvorak) **Diagnosis.** *Dichagyris verecunda* ssp. *pakistana* (Figs 35-36) differs from nomotypical *D. verecunda* (Püngeler, 1898) (Figs 30-32) (type specimen: Kyrgyzstan, Issik-kul), by the larger size (37-40 mm, versus 30-35 mm), the slightly browner suffused forewings and the more defined wing pattern. These distinctive external characters are more conspicuous than in the very isolated Mongolian *D. verecunda psammodis* Varga, 1993 (Figs 32-34). The male genitalia of ssp. *pakistana* (Fig. 76) differ from those of the nominotypical one (Fig. 75) in the somewhat longer uncus, shorter dorso-medial appendage of the juxta, shorter harpe and the discoid carinal extension; the last is flap-like in nominotypical *D. verecunda*. In the female genitalia, the new subspecies (Fig. 106) has longer appendix and corpus bursae than in the nominotypical *D. verecunda* (Fig. 105).

**Description** (Figs 35-36). Wingspan 37-40 mm. The vesture of body and ground colour of the forewings pale ochre, with a sparse scattering of light brown scales. The ante- and postmedian crosslines well defined, dark brown; antemedian line zigzag, postmedian line arcuate, sinuous-serrate. The hindwings whitish with slight brown suffusion, which is somewhat darker in the diffuse marginal area; wing pattern absent.

**Male genitalia** (Fig. 76). Uncus long, narrow, distally evenly tapered; juxta trapezoid, with weaker ventro-medial and a dorso-medial, appendages; vinculum V-shaped; valvae elongate, dorsal costa medially slightly evenly dilated; cucullus section apically broad, asymmetrically rounded, terminated with long corona, composed of long spines; harpe strong, straight, terminally slightly curved, apically pointed; ampulla slight. Aedeagus tubular, straight, with a long, narrow, strongly sclerotized carinal extension on to the basal section of vesica, terminated with a strongly sclerotized discoid plate; vesica ample, twisted-coiled, with a tiny cornutus subbasally.

**Female genitalia** (Fig. 106). Papillae anales setose, long and narrow; apophyses posteriores longer than apophyses anteriores Antrum plate subdivided to two symmetrical, strongly sclerotized parts; ductus bursae tubular, anteriorly much wider; appendix bursae and corpus bursae long, saccate; the latter much longer.

**Biology and distribution.** *D. verecunda pakistana* ssp. n. was found in a province of Pakistan.

**Etymology.** The new subspecies *paktiana* is named after the country name.

***Dichagyris verecunda paktiana* ssp. n.** (Figs 37, 38 and 77, 107)

**Holotype:** male (Fig. 37), Afghanistan, 3500 m, Prov. Paktia, Kotar-e-Sirkej, 28. VI.-15. VII. 1999, leg. S. Assad, slide no. GYP 5476 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 4♀♀, with the same data (coll. PGM); slide: GYP 5477f

**Diagnosis.** *Dichagyris verecunda paktiana* (Figs 37, 38) differs from nominotypical *D. verecunda* (Püngeler, 1898) (Figs 30, 31, 32) (type specimen: Kyrgyzstan, Issik-kul), in the larger size (37-40 mm, versus 30-35 mm), the lighter, pale ochre and slightly brown suffused forewings and the more clearly defined wing pattern. These external features are also conspicuous in comparison with the geographically very isolated Mongolian *D. verecunda psammodis* Varga, 1993 (Figs 33-34). In the male genitalia, the new subspecies (Fig. 77) can be distinguished from that of the nominotypical one (Fig. 75) in the somewhat longer uncus, shorter dorso-medial appendage of the juxta, shorter harpe and the discoid carinal extension, the latter flap-like in the nominotypical one. In the female genitalia, the new subspecies (Fig. 107) differs from that of the nominotypical subspecies (Fig. 105) in the strictly separated, elongate, two symmetrical, strongly sclerotized parts of the antrum plate; the smaller appendix bursae and the weaker corpus bursae. From that of *D. verecunda pakistana* ssp. n. (Fig. 106), ssp. *paktiana* can be separated by the much smaller size, the significantly shorter ovipositor, the strictly separated, weaker pair of symmetrical, strongly sclerotized parts of the antrum plate, the much smaller appendix bursae and the weaker corpus bursae. Comparing it to the geographically very isolated Mongolian *D. verecunda psammodis* Varga, 1993 (Fig. see Varga, 1993), it has shorter, broader ovipositor and much weaker corpus bursae.

**Description** (Figs 37-38). Wingspan 37-40 mm. The vesture of body and ground colour of the forewings pale ochre, sparsely scattered with light brown scales. The ante- and postmedian crosslines conspicuous, dark brown; antemedian line zigzag, postmedian line arcuate, sinuous-serrate. The hindwings whitish with slight brown suffusion, which is somewhat darker in the diffuse marginal area; wing pattern absent.

**Male genitalia** (Fig. 77). Uncus long, narrow, distally evenly tapered; juxta trapezoid, with a ventro-medial and a dorso-medial, weaker appendages; vinculum V-shaped; valvae elongate, dorsal costa medially slightly evenly dilated; cucullus section apically broad, asymmetrically rounded, terminated with long corona, composed by long spines; harpe strong, straight, terminally slightly curved, apically pointed; ampulla slight. Aedeagus tubular, straight, with a long, narrow, strongly sclerotized carinal extension on to the basal section of vesica, terminated with a strongly sclerotized discoid plate; vesica spacious, with a tiny cornutus subbasally; twisted-coiled.

**Female genitalia** (Fig. 107). Papillae anales setose, triangular, apically pointed; apophyses posteriores longer than apophyses anteriores; the two symmetrical, strongly sclerotized parts of the antrum plate strictly separated. Ductus bursae tubular, medially somewhat narrower; appendix bursae posteriorly prominent, evenly rounded, then tapered; corpus bursae long, saccate.

**Biology and distribution.** *Dichagyris verecunda paktiana* was found in the southern province of Afghanistan.

**Etymology.** The new subspecies *paktiana* is named after the Province of the type locality.

***Dichagyris ilseae meridionalis* ssp. n.** (Figs 43, 44 and 80, 110)

**Holotype:** male (Fig. 43), Iran, Prov. Fars, Zagros Mts., Persepolis, 1200 m, 25 -26. V. 1999, leg. T. Hácz & G. Kőszegi, slide no. GYP 5516 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 1♂, Iran, Prov. Fars, 30 km S. of Estahban t., 2300 m, 28. V. 2008, leg. Czech collector (coll. PGM); 1♀, Iran, Prov. Esfahan, Zagros Mts., Fereidun Shar, 3000 m, 15 -17. VI. 2010, leg. B. Benedek & T. Hácz, (coll. PGM) slide no. GYP 110f

**Diagnosis.** In the diagnosis of the original description of *D. ilseae*, Stangelmaier & Fibiger, (2003) erroneously associated this species to the *D. squalorum-celebrata* species group (in fact, these species themselves do not belong to the same species group), and they did not know that the central Anatolian *D. catalaipa* Varga, 1993 (Figs 39-40), at that time undescribed, was the most similar to *D. ilseae*. *D. ilseae* (Figs 41-42) differs from *D. catalaipa* (Figs 39-40) in the somewhat larger size (32-37 mm, versus 32-33 mm), darker colouration of forewings and the marginal area in the hindwings in males; the much darker hindwing of females; slightly longer uncus and vesica tube, with steeper apical cornutus in the subbasal diverticulum (males, Figs 79 and 78) and longer ductus bursae and appendix bursae (females, Figs 109 and 108). Correct separation can be supported by the great geographical isolation and the phenology; flight period of *D. ilseae* May-middle of June, that of *D. catalaipa* July-August. *D. ilseae meridionalis* ssp. n. from southern Iran (Figs 43, 44) slightly differs externally from the nominotypical *D. ilseae* Stangelmaier & Fibiger, 2003 (type specimen: NE Iran, Khorasan) (Figs 41, 42), by the shorter forewing apex and by the shape of the postmedian line, which is less prominent in the fore section and slightly less arcuate and lacy. Correct identification is supported by the great geographical isolation of the nominotypical and the new subspecies. In the male genitalia, the new subspecies (Fig. 80) can be distinguished from that of the nominotypical one (Fig. 79) by the somewhat longer uncus, shorter dorso-medial appendage of the juxta, longer aedeagus, thicker apical cornutus in the subbasal diverticulum. In the female genitalia, the distinctive characters are more conspicuous; the new subspecies (Fig. 110) has anteriorly less sclerotized, significantly longer ductus bursae and somewhat larger appendix bursae, than in the nominotypical subspecies (see the Fig. 109 and the figure in the original description); in which the terminal part of the genitalia was broken off from the distal section of the ductus bursae).

**Description** (Figs 43, 44). Wingspan 32-37 mm. The vesture of body and ground colour of the forewings pale ochre, sparsely scattered with light brown scales. The ante- and postmedian crosslines sharp, dark brown; antemedian line zigzag, postmedian line arcuate, sinuous-serrate. Hindwings whitish with slight brown suffusion, which is somewhat darker in the diffuse marginal area; wing pattern absent.

**Male genitalia** (Fig. 80). Uncus long, narrow, distally evenly tapered; juxta trapezoid, with a ventro-medial and a weaker dorso-medial appendage; vinculum V-shaped; valvae elongate, dorsal costa medially slightly evenly dilated; cucullus section apically broad, asymmetrically rounded, terminated with long corona composed of long spines; harpe strong, straight, terminally slightly curved, apically pointed; ampulla slight. Aedeagus tubular, straight, with a long, narrow, strongly sclerotized carinal extension on to the basal section of vesica, terminated with a strongly sclerotized discoid plate; vesica twisted-coiled, spacious, with a tiny cornutus subbasally.

**Female genitalia** (Fig. 110). Papillae anales setose, triangular, apically pointed; apophyses posteriores longer than apophyses anteriores. The two symmetrical, strongly sclerotized parts of the antrum plate strictly separated; ductus bursae tubular, medially

somewhat narrower; appendix bursae posteriorly prominent, evenly rounded, then tapered; corpus bursae long, saccate.

**Biology and distribution.** *Dichagyris ilseae meridionalis* was found in the southern Zagros Mountains. It is geographically isolated from the nominotypical subspecies, described from the eastern Alborz. The populations in the western Alborz, show no significant differences in either external or genitalia features.

**Etymology.** The new subspecies *meridionalis* is named from its southerly distribution.

***Dichagyris amoena malulai* ssp. n. (Figs 46, 47, 82, 83, 112)**

**Holotype:** male (Fig. 46), Syria, Prov. Dimashq, Jabal Lubnan as Sharqi, Ma'lula, 15-16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5487, slide no. GYP 5501 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 4♂♂, 5♀♀, with the same data (coll. PGM); 7♂♂, 2♀♀, Syria, prov. Dimashq, Jabal Lubnan ash Sharqi, Dier Atteiah, Qarah, 10 -11. X. 2004, leg.P. Gyulai & A. Garai (coll. PGM).

slides: GYP 5289m, 5486f

**Diagnosis.** *D. malulai* ssp. n. (Figs 46, 47) differs clearly from the nominotypical *D. amoena* (Stdgr, 1892) (Fig. 45) and the other two subspecies in the orange shaded ground colour of forewings, the obscure wing pattern and the clear white hindwing of the males. In the male genitalia structure, (Fig. 82, 83) it differs from that of the typical subspecies (Fig. 81) in the much narrower valvae with less convex configuration of the dorsal costa; longer aedeagus and more prominent subbasal diverticulum in the vesica. In the female genitalia, the new subspecies (Fig. 112) has less sclerotized, evenly broad ductus bursae and smaller appendix bursae, than in nominotypical *D. amoena* (Fig. 111).

**Comment.** The yellowish forewinged *Rhyacia flavida* (Corti & Draudt, 1933) (type locality: S. Turkey, Maras) is a synonym of the nominotypical *D. amoena* (Stdgr, 1892); see Hacker, 1990. The similar specimens from Lebanon are very likely the same.

**Description** (Figs 46, 47). Wingspan 28-33 mm. The vesture of body and ground colour of the forewings pale orange, the wing pattern obscure, hindwings and cilia pure white in the males. In the females, the pale orange forewings are finely scattered with fine brownish scales; the ante- and postmedian crosslines more defined by brown scales than in the males, and the hindwings are whitish with light brown suffused broad, diffuse median fascia and broad marginal area; cilia light brownish.

**Male genitalia** (Figs 82, 83). Uncus very long, medially broadened, tapered distally; juxta broadly cup-shaped, vinculum V-shaped; valvae elongate, costa medially slightly evenly dilated, cucullus section apically broad, costa almost straight; harpe strong, slightly curved, apically rounded; ampulla slight. Aedeagus tubular, with a long, narrow, strongly sclerotized carinal extension on to the basal section of vesica; vesica spacious, twisted-coiled medially, with a slightly prominent subbasal diverticulum dorsally, armed apically with a tiny cornutus;

**Female genitalia** (Fig. 112). Papillae anales setose, terminally angular; apophyses posteriores longer but finer than apophyses anteriores. Antrum finely sclerotized with U-shaped plate with symmetrical narrow lobes; ductus bursae tubular, evenly wide; appendix bursae large, globular; corpus bursae long, saccate.

**Biology and distribution.** *Dichagyris amoena malulai* ssp. n. was found in stony, warm hills at moderate altitude. It seems to be endemic in Noctuidae fauna of Levante.

**Etymology.** The new subspecies *malulai* is named after Ma'lula, the ancient small Orthodox Christian city, destroyed during the war a few years ago; the type locality was not far from it.

***Dichagyris (Yigoga) forcipula throne* ssp. n.** (Figs 50, 51, 85, 86, 114)

**Holotype:** male (Fig. 50), Iran, Prov. Fars, S - Zagros, 40 km SW of Sivand; 09 -10. VI. 2005, leg. P. Gyulai & A. Garai, slide no. GYP 5539 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 3♂♂, 1♀, with the same data (coll. PGM); 1♂, Iran, Fars, S – Zagros, 5 km NE of Saidatshahr, 09 -10. VI. 2005, leg. P. Gyulai & A. Garai (coll. PGM); 1♂, Iran, Prov. Fars, Dasht-e-Arjan, 9. VI. 1999, leg. J. Klir (coll. PGM); 1♀, Iran, Prov. Fars, Neyris reg., 18. V. 2019, leg. S. Azadbakhs (coll. PGM); 13♂♂, 8♀♀, Iran, Zagros Mts., Prov. Fars, Dasht-e-Arjan, 28. V. 2013, leg. V. Major (coll. M. Dvorak); 5♂♂, Iran, Zagros Mts., Prov. Fars, Kuh-e-Kum, 10 km N. Nriris, 30. V. 2013, leg. V. Major (coll. M. Dvorak); 1♂, 1♀, Iran, Zagros Mts., Prov. Fars, Eqlid, 15 km W Timur Gun pass, 5. VI. 2013, leg. J. Klir (coll. M. Dvorak); 1♂, Iran, Prov. Boyerahmad-va-Kohgiluyeh, SE- Zagros, Kuh-e-Dena, 2450 m, 5 km SW of Sisakht, 04-05. VI. 2005, leg. P. Gyulai & A. Garai (coll. PGM); 1♀, Iran, Prov. Boyerahmad, Zagros, 2400 m, 28.-30. VI. 2005, leg. T. Hácz, I. Juhász & G. Petrányi (coll. PGM); 1♀, Iran, Prov. Esfahan, Qohrud, Kuhha-ye-Qohrud, 1750m, 5. VI. 2007, leg. T. Hácz (coll. PGM); 2♂♂, Iran, Prov. Esfahan, Qohrud, Qomhar, 2500-2800 m, 5-6. VII. 2005, leg. T. Hácz, I. Juhász & G. Petrányi (coll. PGM); 1♂, Iran, Prov. Kordestan, Sanandag, 1400 m, 25. VI. 2005, leg. T. Hácz, I. Juhász & G. Petrányi (coll. PGM); 1♂, Iran, Prov. Kordestan, Askaran, 25 km S of Sanandag, Kuhhá-ye-Zagros, Kuh-e-Shahn, 1350 m, 8. VI. 2007, leg. T. Hácz (coll. PGM). slides: GYP 5524f, 5525m, 5532m, 5533m, 5536m, 5537f, 5545m.

**Diagnosis.** *Dichagyris (Yigoga) forcipula* subsp. *throne* (Figs 50, 51) differs from the most closely distributed subspecies *amasicola* Koçak, 1980 (Fig. 49), in the more unicolorous greyish-brownish ground colour of body vesture and forewings, with lighter inner area and evenly broader, darker marginal area in the hindwings, features which are more conspicuous in the males.

The male genitalia of ssp. *throne* (Figs 85, 86) differ from those of *D. (Y.) forcipula* ssp. *amasicola* (Fig. 84) in the ventrally less concave medial section of the valvae, the much broader juxta without the small dorso-medial hump-like prominence and the large, broad, but not prominent subbasal diverticulum in the vesica. In the female genitalia, the only remarkable difference is the longer papillae anales in subsp. *throne* (Figs 114 versus 113).

**Description** (Figs 50, 51). Wingspan 30-35 mm. The vesture of body and ground colour of the forewings unicolorous greyish-brownish. The wing pattern obscure, with slightly darker shade of ground colour. The most visible features of pattern are the short black basal dash, the arcuate postmedian line, the row of the tiny black streaks basad the subterminal line, the small, elongate orbicular spot and the typical reniform stigma, both finely encircled with white line. Hindwings whitish, with light brown suffusion and evenly broad dark marginal area; always darker in the females.

**Male genitalia** (Figs 85, 86). Uncus very long, distally evenly narrowed; narrowed juxta broadly cup-shaped, dorsally with a wide angular depression with two symmetrical lateral extension; vinculum V-shaped; dorsal costa of valvae medially prominently expanded, ventral costa medially slightly concave; valvae elongate, particularly in the cucullus section, which is apically pointed and with strong bristles of corona; harpe strong, slightly falcate, apically pointed; ampulla slight. Aedeagus tubular, with a long, narrow, strongly sclerotized carinal extension on to the basal section of vesica; vesica spacious, with a slight basal and a large, broad, but not prominent subbasal diverticulum, armed apically with a tiny cornutus; distal section tubular, somewhat twisted medially.

**Female genitalia** (Fig. 114). Papillae anales long and narrow, densely covered with strong bristles; apophyses posteriores and apophyses anteriores very long, about the

same length. Antrum with wide, sclerotized V-shaped plate; ductus bursae tubular, evenly slim; appendix bursae and corpus bursae saccate, the former shorter.

**Biology and distribution.** *Dichagyris (Yigoga) forcipula throne* was found in the central and southern Zagros Mts. in SW Iran. In NW Iran, the Anatolian *D. (Y.) forcipula amasicola* was found.

**Etymology.** The new subspecies *throne* is named after the Iranian name of the famous historical ancient city of that region. (Persepolis = Taht-e Dzsamsid = the throne of Dzsamsid).

***Dichagyris (Yigoga) forcipula ardasirae* ssp. n. (Figs 52–54, 87, 88, 115)**

**Holotype:** male (Fig. 52), Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000m, 21. IV. 2000, leg. B. Benedek, slide no. GYP 5355 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 12♂♂, 3♀♀, with the same data (coll. PGM); slides: GYP 5517f, 5567m, 5571m

**Diagnosis.** *D. (Y.) forcipula ardasirae* ssp. n. is the south-easternmost subspecies of *D. (Y.) forcipula* ([Denis & Schiffermüller], 1775). It usually smaller than all the other subspecies, and the most contrast in the hindwing, in which the inner area is white in the males, the marginal area very widely and evenly dark brown suffused. The females are somewhat larger than the males, the inner area of the hindwings slightly brown suffused. In the male genitalia, the new subspecies (Figs 87, 88) can be distinguished from that of the geographically nearest south-western *D. (Y.) forcipula throne* (Figs 85, 86, see above) by the presence of the small dorso-medial, hump-like prominence and larger lateral extensions and much larger ventro-medial conical extension of the juxta. The subbasal diverticulum in the vesica is much less broad, but prominent. In the female genitalia, *D. (Y.) forcipula ardasirae* ssp. n. (Fig. 115) has slightly broader ductus bursae, than in *D. (Y.) forcipula throne* (Fig. 114).

**Description** (Figs 5–8). Wingspan 29–34 mm. The vesture of body and ground colour of the forewings variegated greyish-brownish. The basal dash a fine black line, the crosslines obscure, hardly defined; the postmedian line marked with a row of minute black lines in the inner side; stigmata small, inconspicuous; orbicular spot elliptical; reniform stigma with only a slight white filling; claviform long but narrow, finely outlined black; cilia of forewing variegated blackish and whitish. Hindwings white in the males, whitish brown suffused in the females, without wing pattern, the evenly wide marginal area dark brown suffused.

**Male genitalia** (Fig. 87, 88). Uncus long, distally evenly tapered; juxta broadly cup-shaped, dorsally with a wide depression, with a small dorso-medial, hump-like prominence and two symmetrical lateral extensions and a large ventro-medial conical extension; vinculum V-shaped; valvae elongate, dorsal costa medially somewhat extended, ventral costa slightly concave; cucullus section apically pointed and with strong bristles of corona; harpe strong, almost straight; ampulla slight. Aedeagus tubular, with a long, narrow extension on to the basal section of the vesica; vesica basally slightly extended, subbasally with a prominent conical diverticulum, diverging side, armed apically with a tiny cornutus; distal section tubular, curved ventrad, terminal diverticulum slight.

**Female genitalia** (Fig. 115). Papillae anales long and narrow, apophyses anteriores and posteriores also, the posterior slightly longer. Antrum with V-shaped plate; ductus bursae tubular, anteriorly narrow, then almost evenly broad, distally with slightly sclerotized longitudinal wrinkles; appendix bursae and corpus bursae long, saccate, the former one shorter.

**Biology and distribution.** *Dichagyris (Yigoga) forcipula ardasirae* has been found only in Kerman Province, SE Iran.

**Etymology.** The new subspecies *ardasirae* is named after the Province of Kerman. The capital is the city of Kerman, which was probably established by the Sassanid Emperor I. Ardasir, in the third Century. The first name was *Ardasir Koreh*, during the Sassanid Empire, officially known as the Empire of Iranians.

***Dichagyris (Yigoga) ortus* sp. n. (Figs 57–60, 90, 91, 117, 118)**

**Holotype:** male (Fig. 57), Iran, Prov. Khorasan, Kopet Dagh, Qucan, 2000m, 10. VII. 2010, leg. T. Hácz, I. Juhász & G. Petrányi, no. GYP 5521 (coll. PGM, later to be deposited in HNHM).

**Paratypes:** 2♂♂, 1♀, with the same data (coll. PGM); 4♂♂, Iran, Prov. Prov. Khorasan, Kopet Dagh, 40 km N of Qucan, 2000 m, 4-5. VI. 2010, leg. B. Benedek & T. Hácz (coll. PGM); 1♀, Iran, Prov. Khorasan, Kuh-e-Binaloud, 1770 m, NE of Neyshapur, 7-8. VII. 2010, leg. P. Gyulai & A. Garai, (coll. PGM); 1♂, 1♀, Iran, Prov. Khorasan, Binaloud, 40 km SW of Mashad, Moghan-Pivejan site, 2000-2500 m, 6-7. VI. 2010, leg. B. Benedek & T. Hácz (coll. PGM); 3♂♂, 1♀, Iran, Prov. Khorasan, Kopet Dagh, Qucan, 1800 m, 23. VI. 1992, leg. Danilevsky (coll. PGM); 1♀, Turkmenistan, Kopet Dagh, 800-1500 m, valley of the Rivers Ipay-kala and Point-kala, Dushak, 38°13'N, 59°54'E, 30. VI.-4. VII. 1992, L63, leg. Gy. Fábián, B. Herczig, A. Podlussány (coll. PGM); 1♂, Turkmenistan, Kopet Dagh, Dushak, 2300 m, 37°57'N, 57°54'E, 6-8. VII. 1992, L64, leg. Gy. Fábián, B. Herczig, A. Podlussány & Z. Varga (coll. PGM); 6♂♂ 8♀♀, same data, (coll. Z. Varga); 8♂♂ 3♀♀, Turkmenistan, Kopet Dagh, 800-1500 m, valley of the Rivers Ipay-kala and Point-kala, 38°13'N, 59°54'E, 30. VI.-4. VII. 1992, L63, leg. Gy. Fábián, B. Herczig, A. Podlussány & Varga (coll. Z. Varga); slides: GYP 5296f, 5522f, 5528f, 5554m, VZ10463m, VZ10649m.

**Diagnosis.** *Dichagyris (Yigoga) ortus* sp. n. (Figs 57–60) resembles most closely *Dichagyris (Yigoga) iranicola* (Figs 55–56). It differs from *D. iranicola* and the other, similar, closely related taxa (Figs 55–56) in the unicolorous greyish-brownish ground colour of body vesture and forewings, the very obscure wing pattern and the less arched postmedian line, which is oblique toward the dorsum. In the male genitalia, the new species (Figs 90, 91) is distinctive those of in the distally more elongate and constricted valvae, the slightly narrower and more elongate, apically pointed cucullus section, which are very conspicuous in comparison with those of *Dichagyris iranicola*, and in the larger, more prominent subbasal diverticulum in the vesica. In the female genitalia, the new subspecies (Figs 117, 118) is easily distinguished by the presence of a wide, strongly sclerotized, V-shaped antrum plate.

**Description** (Figs 57–60). Wingspan 32-38 mm. The vesture of body and ground colour of the forewings unicolorous greyish-brownish. Wing pattern obscure or absent, in a very slightly darker shade of ground colour. The ante- and postmedian crosslines more or less defined; antemedian line wavy, postmedian line a faint, diffuse, oblique stripe; stigmata small, inconspicuous; reniform stigmata with just a slight white filling. Hindwings pale brown without wing pattern, the wide marginal area diffuse, somewhat darker suffused; cilia concolorous.

**Male genitalia** (Figs 90, 91). Uncus long, distally evenly tapered; juxta broadly cup-shaped, dorsally with a wide depression, ventrally with a conical extension in the middle; vinculum V-shaped; valvae elongate, dorsal costa medially prominently expanded, the ventral one slightly concave; cucullus section elongate, narrow, apically pointed, corona with strong bristles; harpe strong, slightly falcate, apically pointed; ampulla slight. Aedeagus tubular, with a long, narrow, strongly sclerotized carinal extensions on to the basal section of vesica; vesica spacious, with a small basal diverticulum and a large, prominent, dorsad subbasal diverticulum, armed apically with a minute cornutus; distal section tubular, somewhat twisted medially, terminal diverticulum slight.

**Female genitalia** (Figs. 117, 118). Papillae anales densely covered with strong bristles, long, somewhat falcate terminally; apophyses posteriores and apophyses anteriores very long, of almost equal length. Antrum with wide, strongly sclerotized V-shaped plate; ductus bursae tubular; appendix bursae and corpus bursae saccate, the former one larger but shorter.

**Remark.** *D. ortus* sp. n. has already been suspected as new species in: Aulombard F., Landry B., Curval Ph., Ronkay L., Ronkay G. & Varga Z. (2020).

**Biology and distribution.** This new species was found only in the stony, warm mountain slopes of the Kopet Dagh region in NE Iran (Prov. Khorasan) and in S Turkmenistan.

**Etymology.** *Dichagyris (Yigoga) ortus* is named after the eastern Province of Iran, named Khorasan; in Persian it means "where the sun arrives from". The Latin for sunrise is *ortus*. The name Khorasan was given to the eastern Province of Persia during the Sassanid Empire.

***Dichagyris (Yigoga) acutijuxta brunnescens* ssp. n.** (Figs 64, 121)

**Holotype:** female (Fig. 64), Pakistan, Karakoram Mts., Deintar valley, 3000 m, 28.VI.2014, leg. B. Benedek & J. Babics, slide no. GYP 5491 (coll. PGM, later to be deposited in HNHM).

**Paratype:** 1♀, with the same data (coll. PGM) slide: GYP 5297f.

**Diagnosis.** *Dichagyris acutijuxta brunnescens* (Fig. 64) differs from nominotypical *D. acutijuxta* (Boursin, 1957), (Fig. 63) in the shorter forewing apex, conspicuously darker, dark brown ground colour of body vesture and forewings and wing pattern and the much darker, unicolorous brown hindwings. In the female genitalia, there are no conspicuous differences, but the new subspecies *brunnescens* has more sclerotized, U-shaped antrum plate than in the nominotypical one (Fig. 120).

**Description** (Fig. 64). Wingspan 35-38 mm. The vesture of body and ground colour of the forewings brown and dark brown. Stigmata concolorous with ground colour, more or less finely black edged; orbicular spot elongate-elliptic, reniform stigma typical, arched; the basal streak and the interrupted terminal line black; crosslines obscure, diffuse; the row of the strong wedge-shaped dots in the inner side of the subterminal line dark brown. Hindwings unicolorous brown without wing pattern, the inner area slightly lighter.

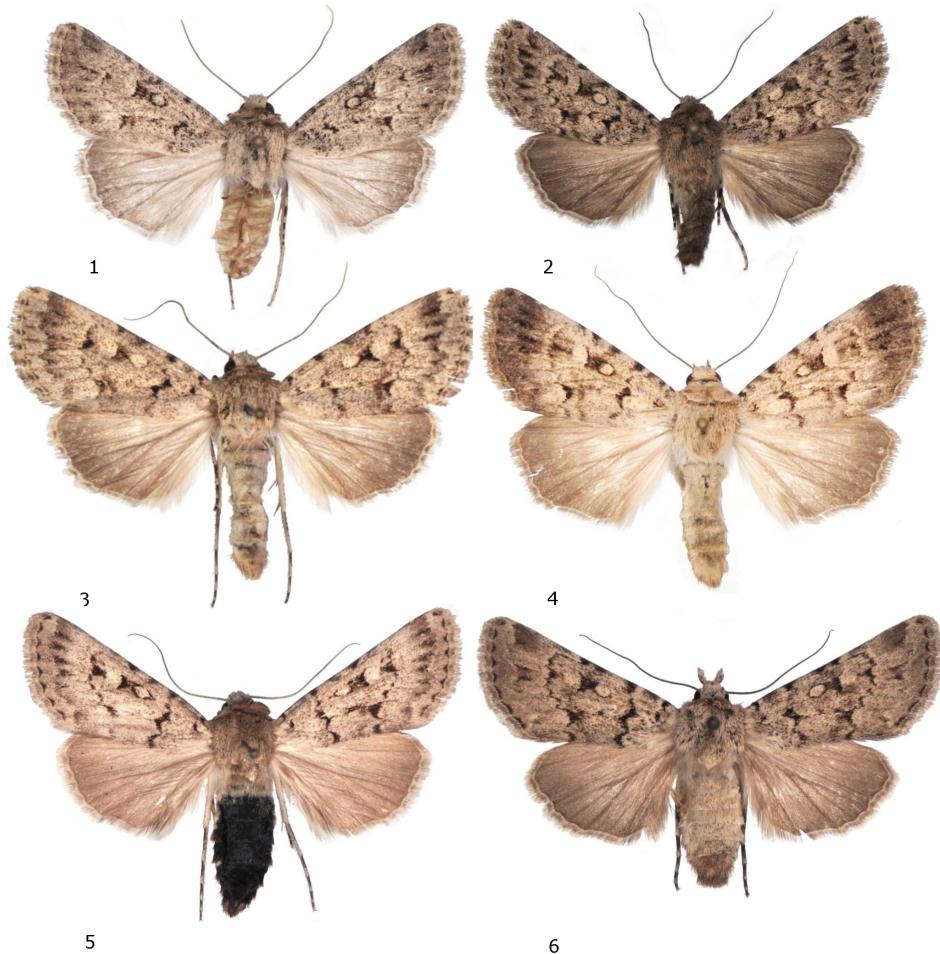
**Male genitalia.** Unknown.

**Female genitalia** (Figs. 121). Papillae anales short, densely covered with bristles, long; apophyses anteriores very short, apophyses posteriores about four times longer. Antrum with wide, strongly sclerotized U-shaped plate; ductus bursae tubular, slightly wrinkled-sclerotized; appendix bursae and corpus bursae saccate, the former much shorter.

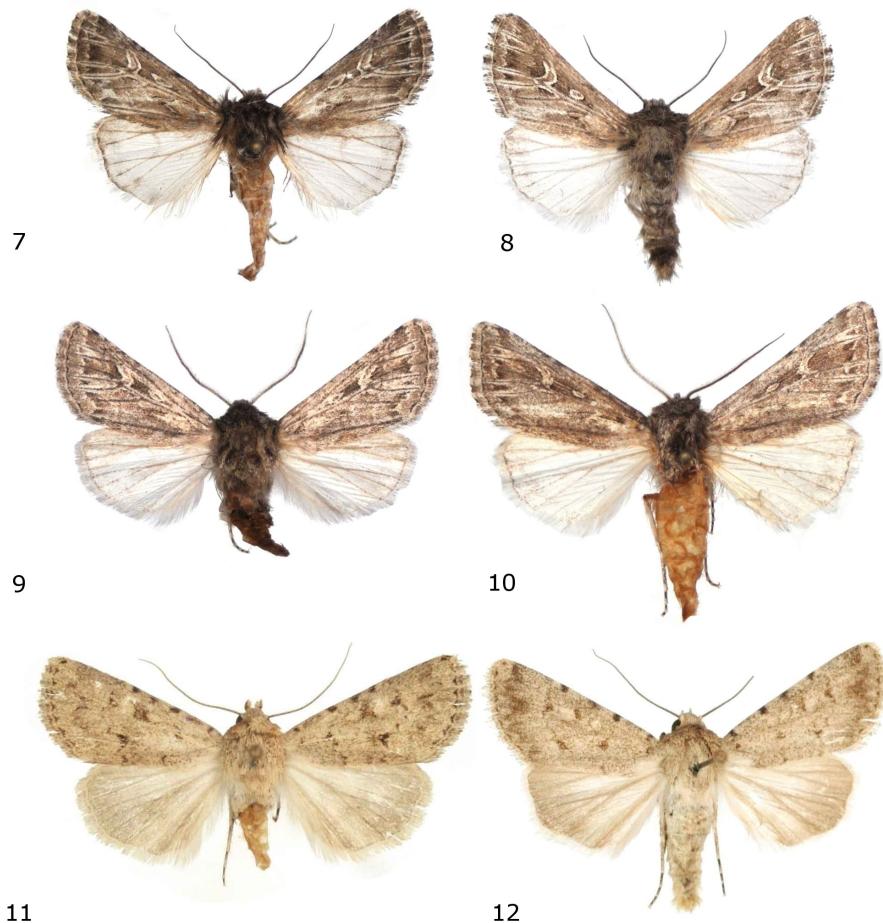
**Biology and distribution.** *D. acutijuxta brunnescens* ssp. nov. has been found only in the type locality.

**Etymology.** The new subspecies *brunnescens* is named from the brown colour of the body and wings.

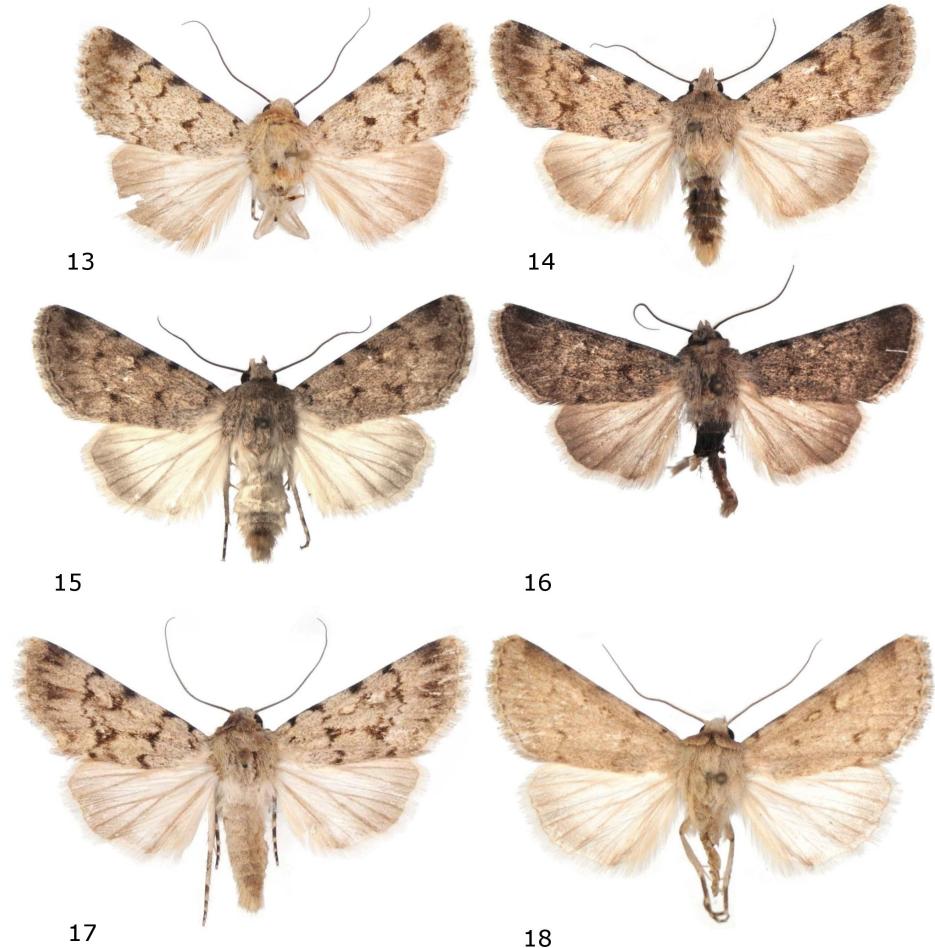
**Acknowledgements.** The author is grateful to Prof. Zoltán Varga (Zoological Institute of Debrecen University, Hungary) for consultation and useful advice; to his wife Adrienne Gyulai-Garai (Miskolc, Hungary) for much help in computer work; to Barry Goater (Hampshire, UK) for linguistic adjustments; to Imre Fazekas (Pannon Institute, Pécs, Hungary) for the publication of the manuscript and for the reviewers.



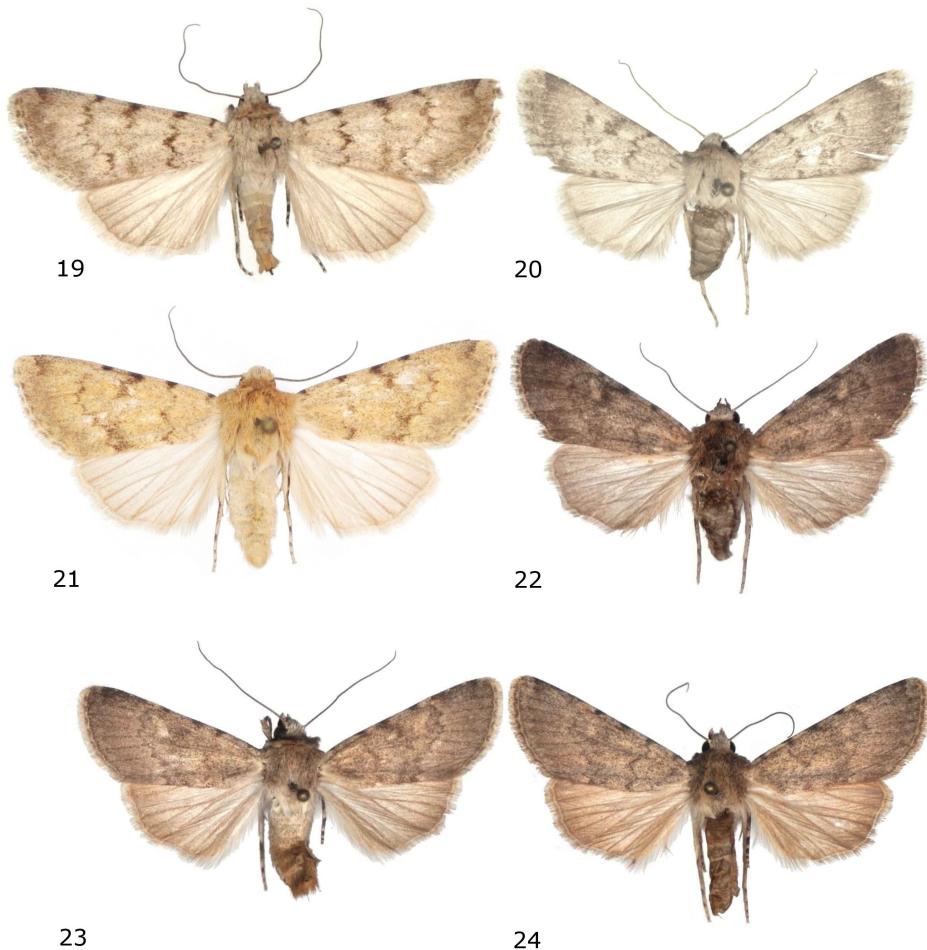
**Figures 1–6.** *Dichagyris* spp. and ssp. adults. **1.** *Dichagyris wazircola* sp. n., HT, ♀, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28. VII.-12. VIII. 2005, 1500-2500 m, leg. V. Gurko, GYP 5293 (PGM); **2.** *Dichagyris fuscashmiriana* Varga, Ronkay & Ronkay, 2020, ♀, PT, Pakistan, Kashmir, 2910 m, Himalaya range, Deosai Mts., n. Bubin village, 74°59'E, 35°12,6'N, 21-22. IX. 1998, leg. P. Gyulai & A. Garai, GYP 5562 (PGM); **3.** *Dichagyris tanaicola* sp. n., ♀, HT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII. - 12.VIII. 2005, 1500-2500 m, leg. V. Gurko, GYP 5569 (PGM); **4.** *Dichagyris striata beluchus* Brandt, 1941, ♀, Iran, Yazd, Qohrud, Bonkahar, Aliabad, 2500 m, 5-7. VII. 2005, leg. T. Hácz, I. Juhász & G. Petrányi, (PGM); **5.** *Dichagyris tyrannus* (A. Bang-Haas, 1912), ♀, Tajikistan, W Pamir Mts., Rushan, 3400 m, 10-20. VIII. 1998, leg. V. Gurko, GYP 5561 (PGM); **6.** *Dichagyris tyrannus* (A. Bang-Haas, 1912), ssp., ♀, Pakistan, Hindukush, Shandur pass, 3750, 24. VII. 2011, leg. B. Benedek (PGM).



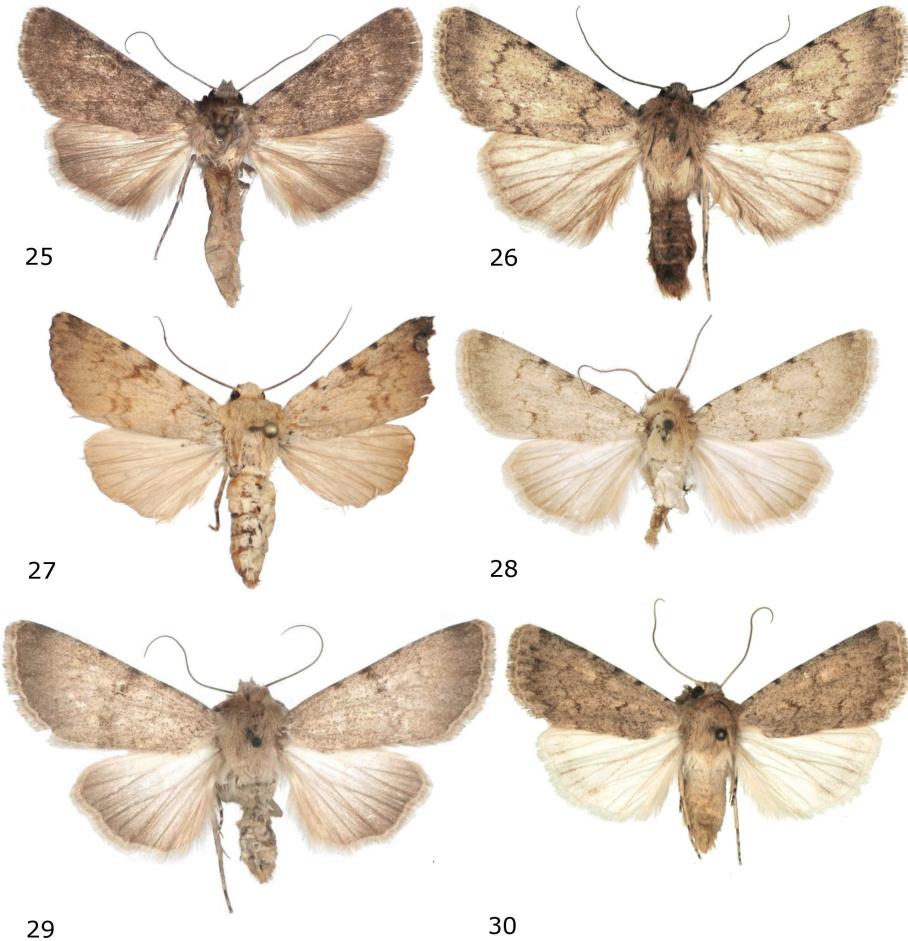
**Figures 7–12.** *Dichagyris* spp. and ssp. adults. **7.** *D. zagroica orientalis* ssp. n., HT, ♂, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 2.-12. IX. 2005, 1500-2500 m, leg. V. Gurko, GYP 5352 (PGM); **8.** *D. zagroica orientalis* ssp. n. PT, ♂, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 2.-12. IX. 2005, 1500-2500 m, leg. V. Gurko (PGM); **9.** *D. zagroica* Hacker & Ebert, 2002, ♂, Iran, Prov. Esfahan, Kuh-e-Karkas, 1700 m, 3 km SE of Natanz, 19 - 20. X. 2003. leg. P. Gyulai & A. Garai GYP 1680 (PGM); **10.** *D. zagroica* Hacker & Ebert, 2002, ♂, Iran, Prov. Esfahan, Kuh-e-Karkas, 1700 m, 3 km SE of Natanz, 3-4. X. 2002. leg. P. Gyulai & A. Garai GYP 1616 (PGM); **11.** *Dichagyris subcelebrata* sp. n., HT, ♂, Kasakhstan, Prov. Almaty, Taukum desert, 10 km W of Usharal, 450 m, 44°12' N, 076°47'E, 12. VII. 2009, leg. B. Benedek, slide no. GYP 2341 (PGM); **12.** *Dichagyris kongur* Varga, 1996, PT, ♂, Kazakhstan, Alma-Ata range, Boguty Mts., 900-1400 m, 9-11. VI. 1993, leg. V. A. Lukhtanov (PGM).



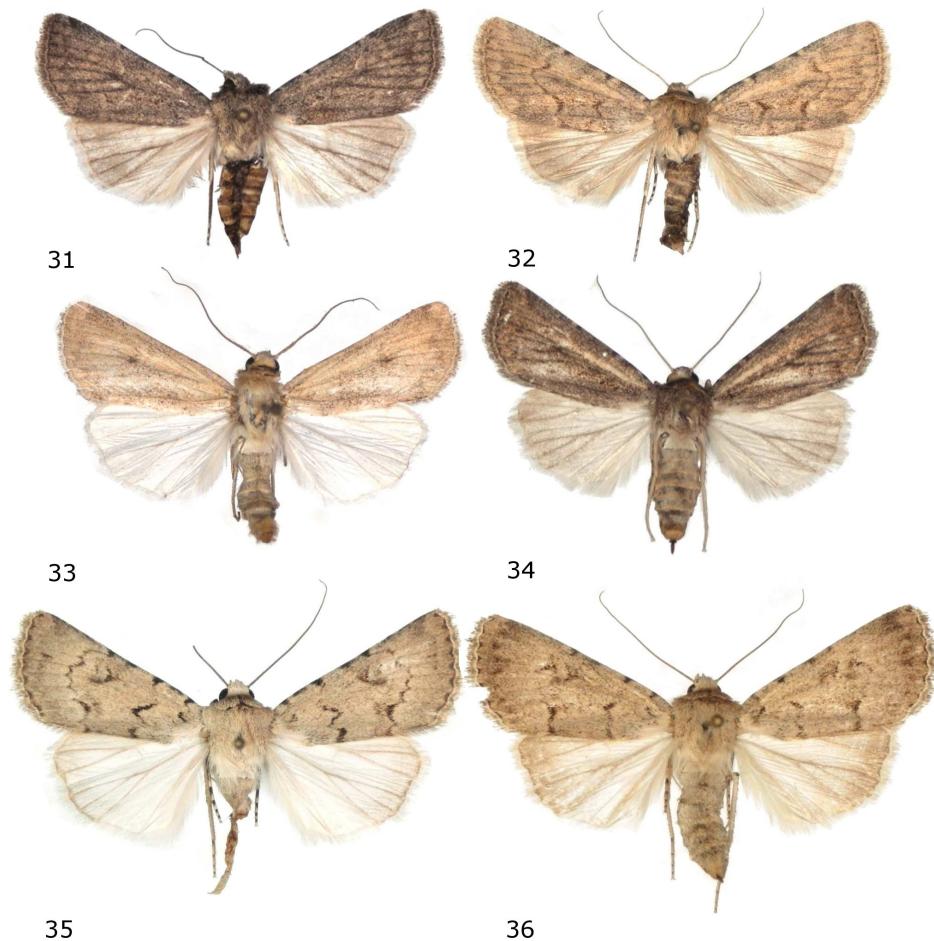
**Figures 13–18.** *Dichagyris* spp. and ssp. adults. **13.** *Dichagyris celebrata* (Alpheraky, 1897), ♂, Turkmenistan, Kopet Dagh, 800–1500 m, valley of the Rivers Ipay-kala and Point-kala, Dushak, 38°13'N, 59°54'E, 30. VI.–4. VII. 1992, L63, leg. Gy. Fábián, B. Herczig, A. Podlusány & Z. Varga GYP 5303 (PGM); **14.** *Dichagyris celebrata*, (Alpheraky, 1897), ♂, Iran, Prov. Semnan, 1300 m, 20 km W of Meyamei, 36°23'N, 35°29'E, 9. V. 2001, leg. B. Benedek & G. Csorba (PGM); **15.** *Dichagyris celebrata*, (Alpheraky, 1897), ♂, Iran, Prov. Semnan, 1300 m, 20 km W of Meyamei, 36°23'N, 35°29'E, 9. V. 2001, leg. B. Benedek & G. Csorba (PGM); **16.** *Dichagyris celebrata*, (Alpheraky, 1897), ♂, Iran, Prov. Yazd, Qohrud, Aliabad, 2000–2500 m, 27. V. 1999, leg. T. Hácz & G. Kőszegi, GYP 1366, (PGM); **17.** *Dichagyris celebrata pashtu*, Varga, 1996, ♂, Tajikistan, W Pamir, 3400 m, W-Pamir, Sarez lake area, n. Irkift meteor stant., 1 – 10. VIII. 2011, leg. V. Gurko (PGM); **18.** *Dichagyris celebrata pashtu* Varga, ♂, Pakistan, Karakoram Mts., Chapurson valley, near Rhaminji vill., 2500 m, 27. VIII. 2001, leg. B. Benedek & G. Ronkay, GYP 5303 (PGM).



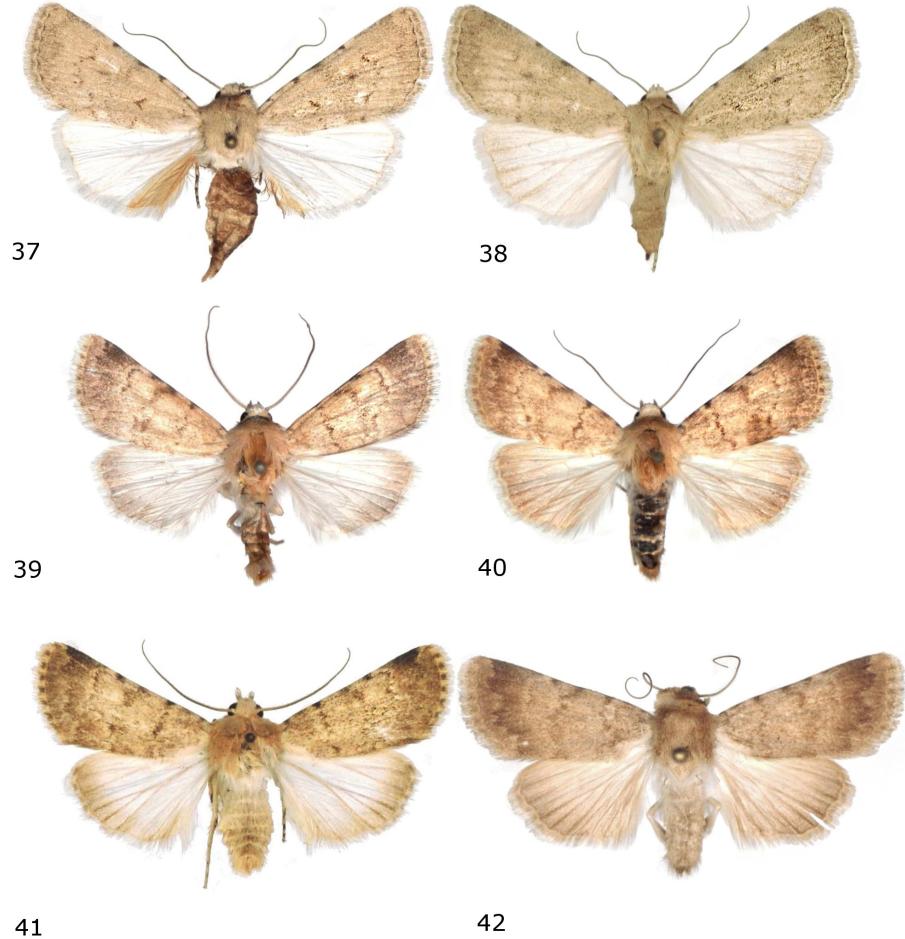
**Figures 19–24.** *Dichagyris* spp. and ssp. adults. **19.** *D. leucographa* Varga, 1990, PT, ♀, NO Afghanistan, Wakhan-Tal, Zamestani Baharak, 3300 m, UV-Li, 23.VII.1971, leg. Ebert & Naumann GYP 5509 (PGM); **20.** *D. pallidographa* sp. n., HT, ♀, Pakistan, S. Karakoram Mts., Hushe River, 3500–3800 m, 10–12. VIII. 2004, leg. V. Gurko, GYP 5492 (PGM); **21.** *D. himalayensis despecta* (Corti & Draudt, 1933), ♀, Tajikistan, 3400 m, W-Pamir, Vantsh Mts., Rushan distr., Gorno Badakhshan, 20–30.VII. 2015, leg. V. Gurko (PGM); **22.** *D. himalayensis karataui* ssp. n., HT, ♀, S. Kasakhstan, Tshymkent, Karatau Mts., Kentau, 650 m, 28. VI.–11.VII. 1994, leg. I. Pljutsh GYP 5302 (PGM); **23.** *D. himalayensis karataui* ssp. n., PT, ♀, S. Kasakhstan, Tshymkent, Karatau Mts., Kentau, 650 m, 28. VI.–11.VII. 1994, leg. I. Pljutsh (PGM); **24.** *D. himalayensis karataui* ssp. n., PT, ♀, S. Kasakhstan, Tshymkent, Karatau Mts., Kentau, 650 m, 28. VI.–11. VII. 1994, leg. I. Pljutsh GYP 5322 (PGM).



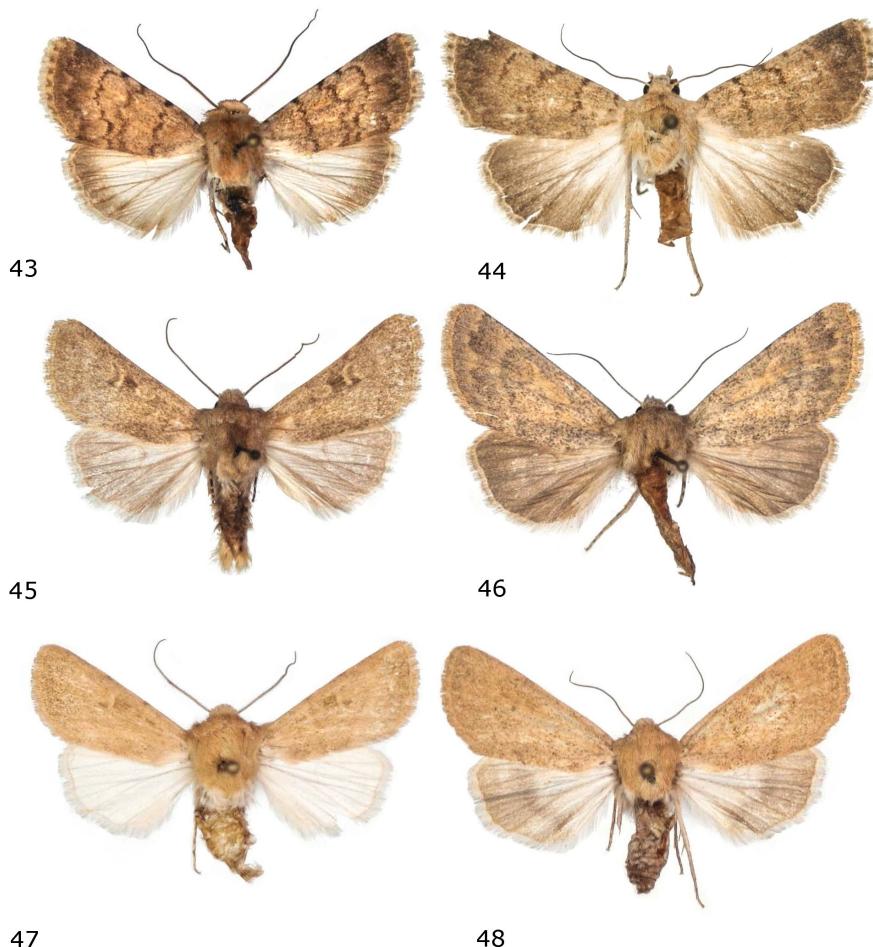
**Figures 25-30.** *Dichagyris* spp. and ssp. adults. **25.** *D. korsak* Varga, Gyulai & Miatleuski, 2002, PT, ♀, Kazakhstan, W. Ust'jurt plateau, West precipice, 3 km S from Beineu-Aktau road, 22-23.V. 2000, leg. Karaleus & Miatleuski, GYP 1388 (PGM); **26.** *D. himalayensis despecta* (Corti & Draudt, 1933), ♀, Tajikistan, 3400 m, W-Pamir, Vantsh Mts., Rushan distr., Gorno Badakhshan, 20-30. VII. 2015, leg. V. Gurko, GYP 5493 (PGM); **27.** *Dichagyris adrienneae* sp. n., HT, ♂, Uzbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25. VII. 1990, leg. P. Gyulai, GYP 471 (PGM); **28.** *Dichagyris apochora* Varga & Gyulai, 2001, PT, ♂, Tajikistan, Hissar Mts., gorge Takob, n. Warmonik, 2300 m, 21. VII. 1961, leg. Shtchetkin, GYP 1011 (PGM); **29.** *Dichagyris apochora* Varga & Gyulai, 2001, PT, ♀, Tajikistan, Guscharay, 1300 m, 31. VIII. 1965, leg. Shtchetkin (PGM); **30.** *D. verecunda* (Püngeler, 1898), ♂, Kirgisia, 1700 m, Issik-Kul, Kadzhy-sar, 31. VII. 1996, leg. I. Pljutsh PGM).



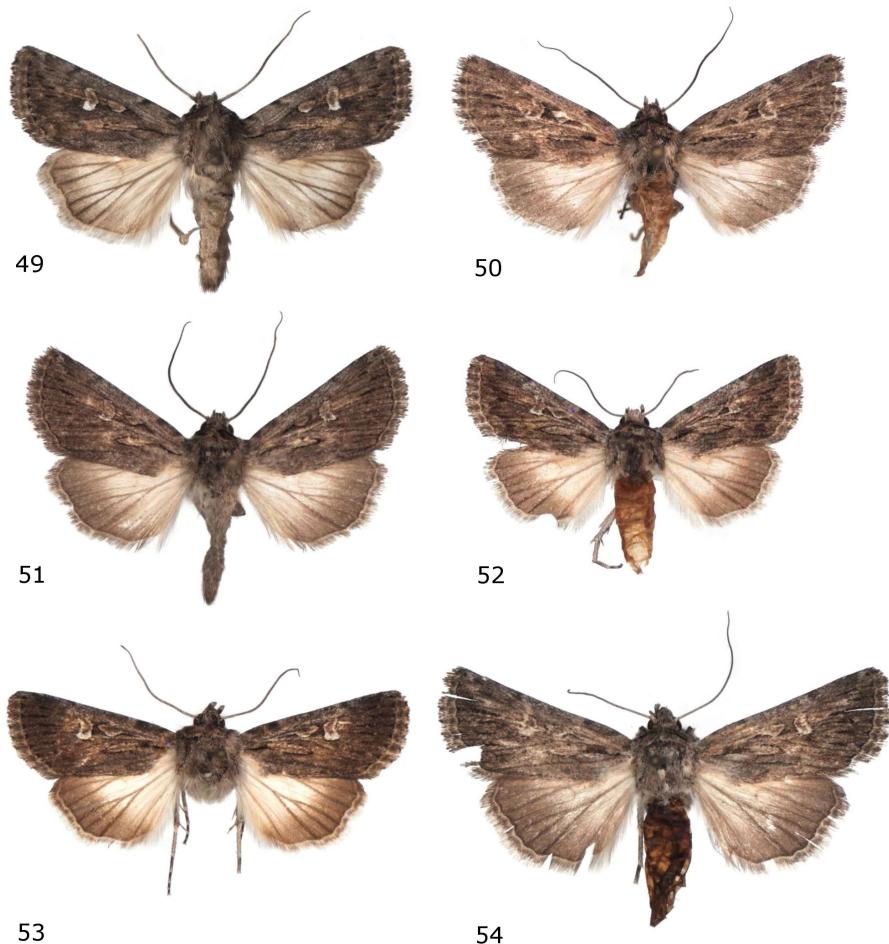
**Figures 31-36.** *Dichagyris* spp. and ssp. adults. **31.** *D. verecunda* (Püngeler, 1898), ♂, China, Qinghai, 20 km N of Da Qaidam, 3600 m, 15.-22. VII. 2005, leg. local collector GYP 5485 (PGM); **32.** *D. verecunda* (Püngeler, 1898), ♂, China, Qinghai, 20 km N of Da Qaidam, 3600 m, 15.-22. VII. 2005, leg. loc. collector (PGM); **33.** *D. verecunda psammodis* Varga, 1993, PT, ♂, Mongolia, Chovd aimak, Dzshungar Gobi, Bulgan sum (in the village), 31. VII.-1. VIII. 1986, leg. P. Gyulai (PGM); **34.** *D. verecunda psammodis* Varga, 1993, ♀, Mongolia, Ömnögobi aimak, 32 km S of Mandal Ovoo sum, Khain Khyar Bayan Khoshuuni, Mts., 21-22. VIII. 1997, leg. P. Gyulai & A. Garai (PGM); **35.** *D. verecunda pakistana* ssp. n., HT, ♂, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII.-12. VIII. 2005, 1500-2500 m, leg. V. Gurko, slide no. GYP 1865 (PGM); **36.** *D. verecunda pakistana* ssp. n., PT, ♀, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28. VII.-12. VIII. 2005, 1500-2500 m, leg. V. Gurko (PGM).



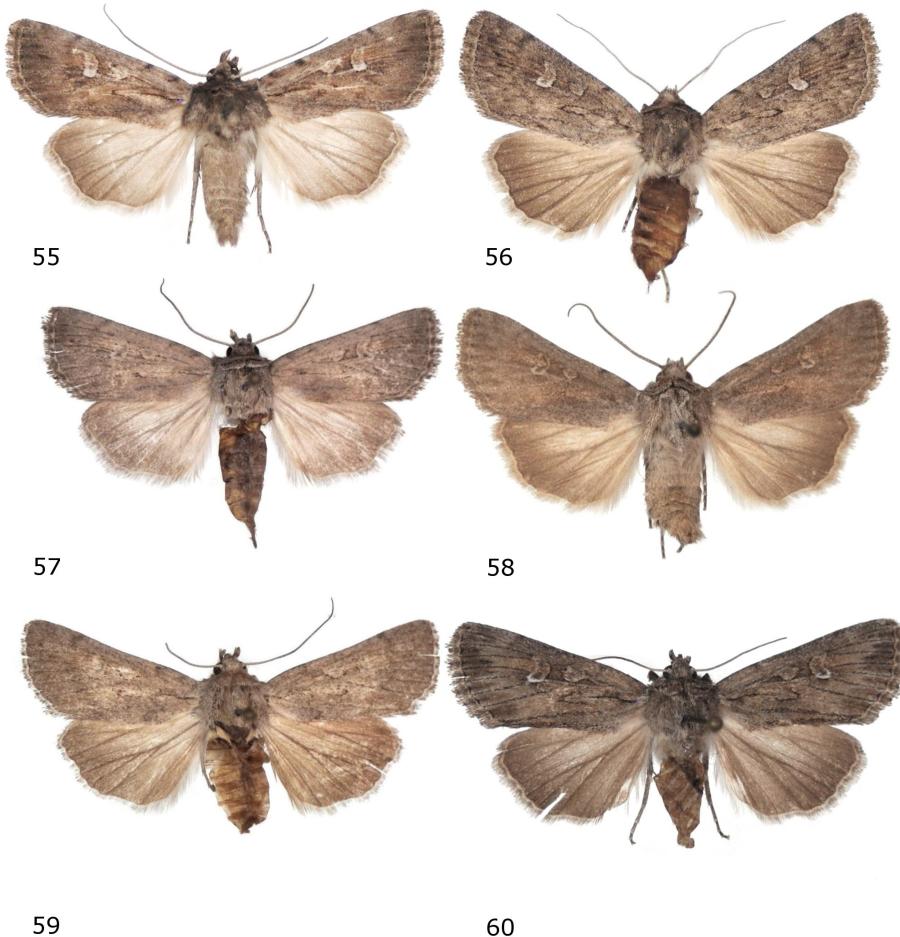
**Figures 37-42.** *Dichagyris* spp. and ssp. adults. **37.** *D. verecunda paktiana* ssp. n., HT, ♂, Afghanistan, 3500 m, Prov. Paktia, Kotar-e-Sirkej, 28. VI.-15. VII. 1999, leg. S. Assad, GYP 5476 (PGM); **38.** *D. verecunda paktiana* ssp. n., PT, ♀, Afghanistan, 3500 m, Prov. Paktia, Kotar-e-Sirkej, 28. VI.-15. VII. 1999, leg. S. Assad (PGM); **39.** *D. cataleipa* Varga, 1993, PT, ♂, Turkey, Prov. Sivas, Ziyaret gecidi, E36°45', N38°42', 1950-2050 m, 10. VIII. 1988, leg. Gyulai, Hreblay, Ronkay & Ronkay (PGM); **40.** *D. cataleipa* Varga, 1993, PT, ♀, Turkey, Prov. Sivas, Ziyaret gecidi, E36°45', N38°42', 1950-2050 m, 10. VIII. 1988, leg. Gyulai, Hreblay, Ronkay & Ronkay (PGM); **41.** *D. ilseae* Stangelmaier & Fibiger, 2003, ♂, Iran, Prov. Golestan, E Elburs Mts., Khosyelaq, 2100 m, 3. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5508 (PGM); **42.** *D. ilseae* Stangelmaier & Fibiger, 2003, ♀, Iran, Prov. Zangan, Zangan, 1800-2000 m, 6-11. VI. 1999, leg. T. Hácz & G. Kószegi (PGM).



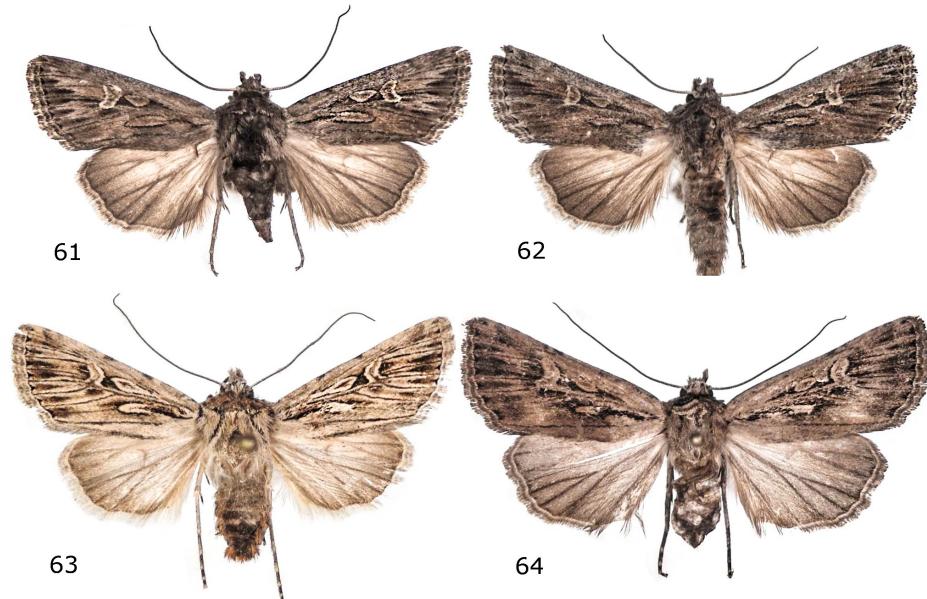
**Figures 43-48.** *Dichagyris* spp. and ssp. adults. **43.** *D. ilseae meridionalis* ssp. n., HT, ♂, Iran, Prov. Fars, Zagros Mts., Persepolis, 1200 m, 25-26. V. 1999, leg. T. Hácz & G. Kőszegi GYP 5516 (PGM); **44.** *D. ilseae meridionalis* ssp. n., PT, ♀, Iran, Prov. Esfahan, Zagros Mts., Fereidun Shar, 3000 m, 15-17. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5454 (PGM); **45.** *D. amoena* (Staudinger, 1892), ♂, Turkey, Prov. Erzincan, 3 km W of Yollarsüstü, 1500 m, 26-27. IX. 2001, leg. P. Gyulai & A. Garai, GYP 5499 (PGM); **46.** *D. amoena* (Staudinger, 1892), ♀, Iran, Prov. Mazandaran, 2400 m, Mazandaran valley, 2 km W of Vniknamde, 14-15. IX. 2001, leg. P. Gyulai & A. Garai, GYP 2811 (PGM); **47.** *D. amoena malulai* ssp. n., HT, ♂, Syria, Prov. Dimashq, Jabal Lubnan as Sharqi, Malula, 15-16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5487 (PGM); **48.** *D. amoena malulai* ssp. n., PT, ♀, Syria, Prov. Dimashq, Jabal Lubnan as Sharqi, Malula, 15-16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5486 (PGM).



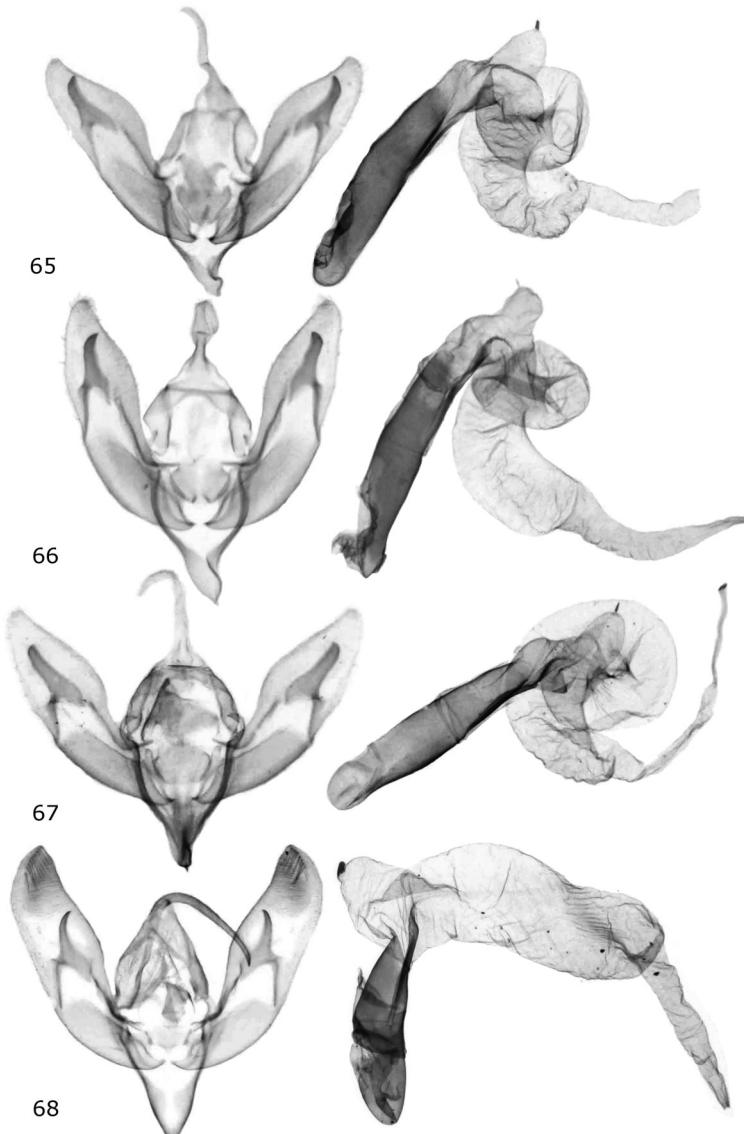
**Figures 49-54.** *Dichagyris* spp. and ssp. adults. **49.** *D. (Yigoga) forcipula amasicola* Koçak, 1980, ♂, Turkey, Prov. Sivas, 5 km W of Gürün, 1500 m, 28. VII. 1988, leg. P. Gyulai, M. Hreblay, G. Ronkay & L. Ronkay, GYP 5573 (PGM); **50.** *D. (Y.) forcipula throne* ssp. n., HT, ♂, Iran, Prov. Fars, S - Zagros, 40 km SW of Sivand, 9 -10. VI. 2005, leg. P. Gyulai & A. Garai, slide no. GYP 5539 (PGM); **51.** *D. (Y.) forcipula throne* ssp. n., PT, ♂, Iran, Prov. Fars, S - Zagros, 40 km SW of Sivand, 9-10. VI. 2005, leg. P. Gyulai & A. Garai (PGM); **52.** *D. (Y.) forcipula ardasirae* ssp. n., HT, ♂, Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000m, 21. IV. 2000, leg. B. Benedek, slide no. GYP 5355 (PGM); **53.** *D. (Y.) forcipula ardasirae* ssp. n., PT, ♂, Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000m, 21. IV. 2000, leg. B. Benedek, GYP 5567 (PGM); **54.** *D. (Y.) forcipula ardasirae* ssp. n., PT, ♀, Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000 m, 21. IV. 2000, leg. B. Benedek, GYP 5517 (PGM).



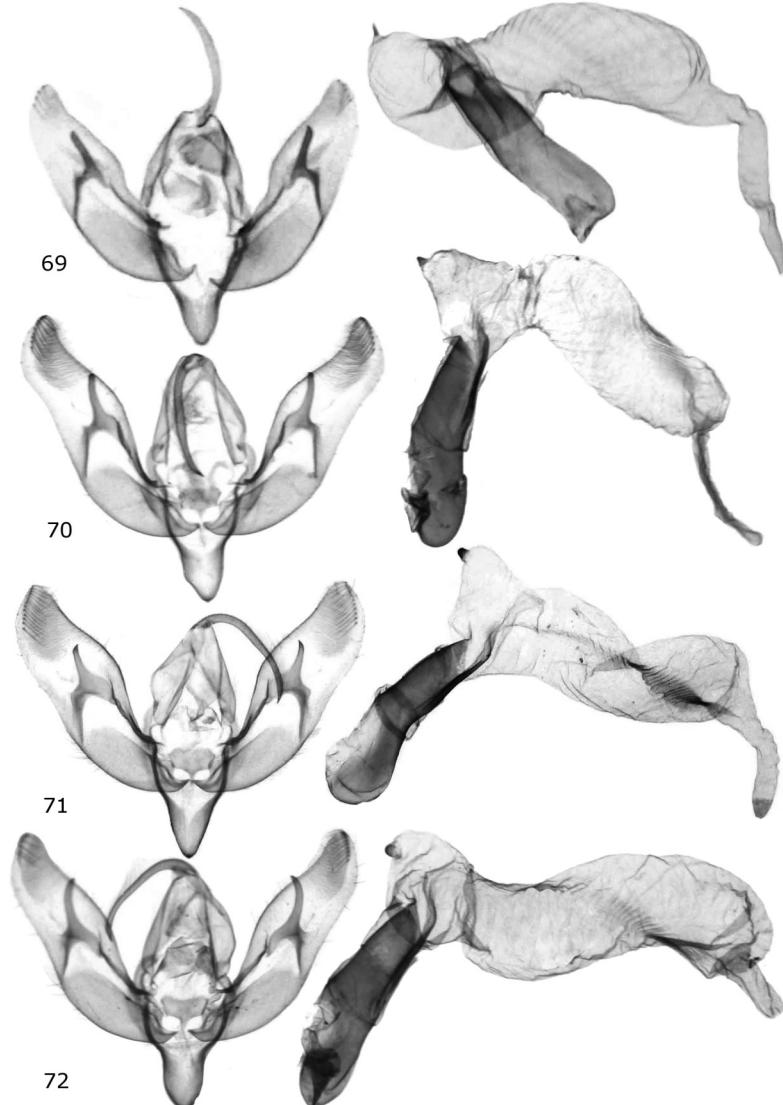
**Figures 55- 60.** *Dichagyris* spp. and ssp. adults. **55.** *Dichagyris iranicola* Koçak, 1980, ♂, Iran, Prov. Golestan, E Elburs Mts., Khosyelaq, 2100 m, 3. VI. 2010, leg. B. Benedek & T. Hácz (PGM); **56.** *Dichagyris iranicola* Koçak, 1980, ♀, Turkmenistan, Kopet Dagh, 800-1500 m, valley of the Rivers Ipay-kala and Point-kala, Dushak, 38°13'N, 59°54'E, 30.VI.-4.VII. 1992, L63, leg. Gy. Fábián, B. Herczig, A. Podlusány GYP 5526 (PGM); **57.** *Dichagyris ortus* sp. n. HT, ♂, Iran, Prov. Khorasan, Kopet Dagh, Qucan, 2000 m, 10.VII. 2010, leg. T. Hácz, I. Juhász & G. Petrányi, GYP 5521 (PGM); **58.** *Dichagyris ortus* sp. n. PT, ♂, Iran, Prov. Khorasan, Kopet Dagh, Qucan, 1800 m, 23. VI. 1992, leg. Danilevsky (PGM); **59.** *Dichagyris ortus* sp. n. PT, ♂, Iran, Prov. Khorasan, Kopet Dagh, Qucan, 2000 m, 10. VII. 2010, leg. T. Hácz, I. Juhász & G. Petrányi, no. GYP 5554 (PGM); **60.** *Dichagyris ortus* sp. n. PT, ♀, Iran, Prov. Khorasan, Binaloud, 40 km SW of Mashad, Moghan-Pivejan site, 2000-2500 m, 6-7. VI. 2010, leg. B. Benedek & T. Hácz GYP 5528 (PGM).



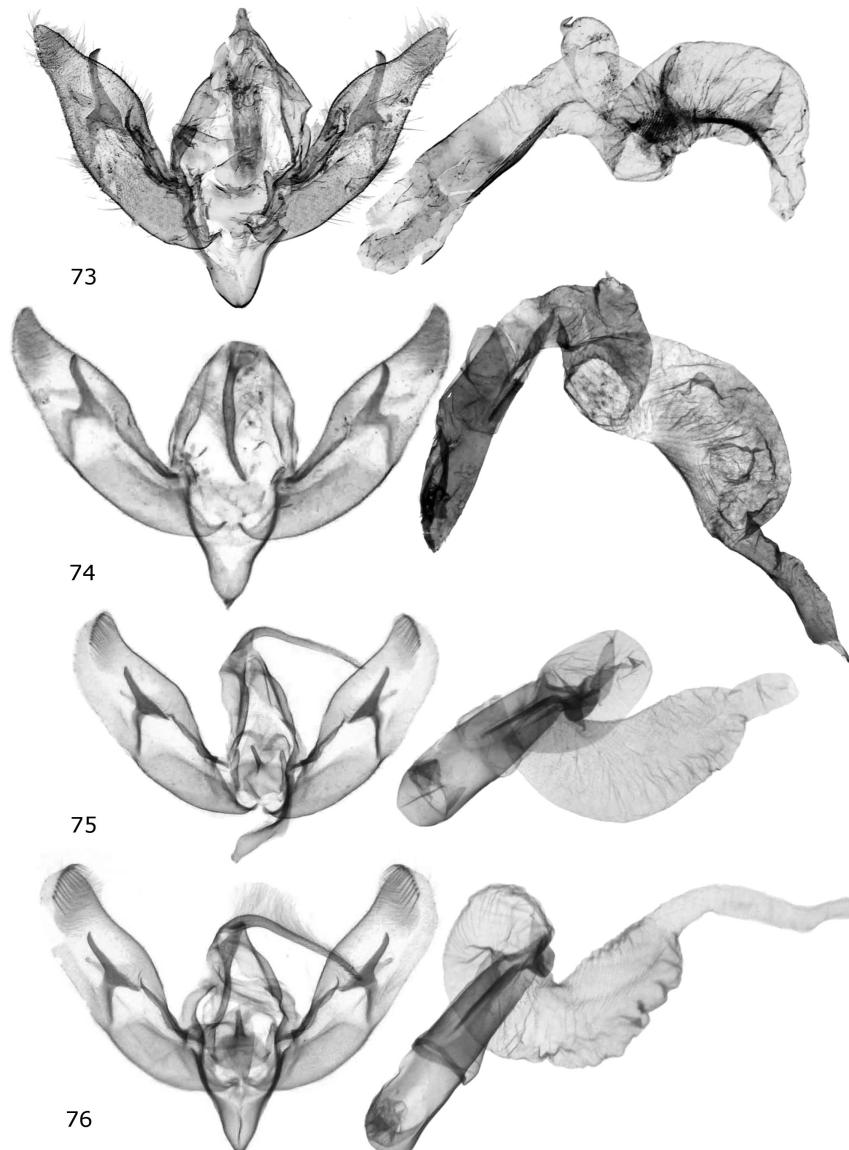
**Figures 61-64.** *Dichagyris* spp. and ssp. adults. **61.** *D. mysteriosa* Varga, Ronkay & Ronkay, 2020, PT, ♂, Iran, Prov. Khorasan, Kopet Dagh, 40 km N of Qucan, 2000 m, 4 -5. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5558 (PGM); **62.** *D. mysteriosa* Varga, Ronkay & Ronkay, 2020, PT, ♀, Prov. Khorasan, Kopet Dagh, 10 km N of Jevenly, Tandure NP, 2300 m, 9-10. VII. 2010, leg. P. Gyulai & A. Garai (PGM); **63.** *D. acutijuxta* (Boursin, 1957), ♀, Tajikistan, W-Pamir, Shugnan range; 3300 m, n. Chorog, Sangou-Dara, 14-29.VI.2018, leg. D. Goshko (PGM); **64.** *D. acutijuxta brunnescens* ssp. n., HT, ♀, Pakistan, Karakoram Mts., Deintar valley, 3000 m, 28.VI. 2014, leg. B. Benedek & J. Babics, GYP 5491 (PGM).



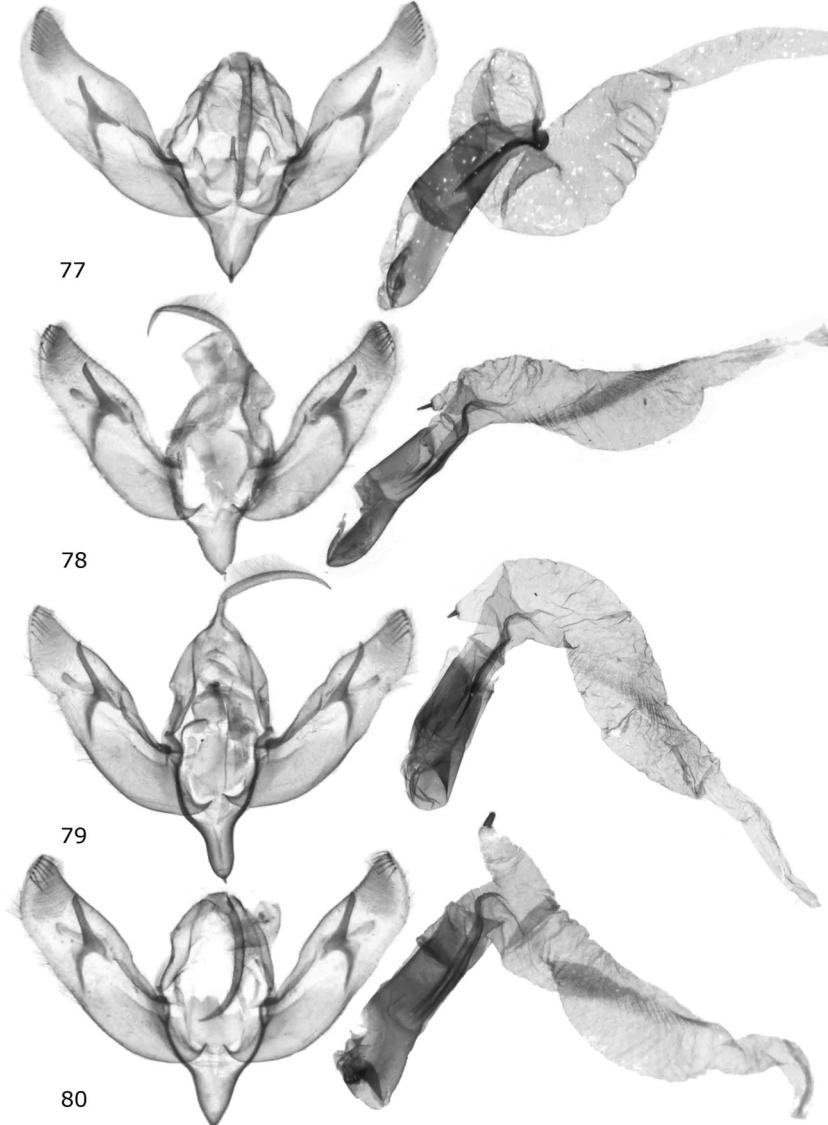
**Figures 65–68.** *Dichagyris* spp. and ssp. male genitalia. **65.** *D. zagroica* Hacker & Ebert, 2002, Iran, Prov. Esfahan, Kuh-e-Karkas, 1700m, 3 km SE of Natanz, 3-4. X. 2002, leg. P. Gyulai & A. Garai GYP 1616 (PGM); **66.** *D. zagroica* Hacker & Ebert, 2002, Iran, Prov. Esfahan, Kuh-e-Karkas, 1700 m., 3 km SE of Natanz, 19-20. X. 2003. leg. P. Gyulai & A. Garai GYP 1680 (PGM); **67.** *D. zagroica orientalis* ssp. n., HT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 2-12.IX. 2005, 1500-2500 m, leg. V. Gurko, GYP 5352 (PGM); **68.** *Dichagyris kongur* Varga, 1996, PT, Kazakhstan, Almaty range, Ili River, Kyzylzhykeil, 3 km S of Aidarly, 29. V. 2015, leg. P. Gorbunov, GYP 4455 (PGM).



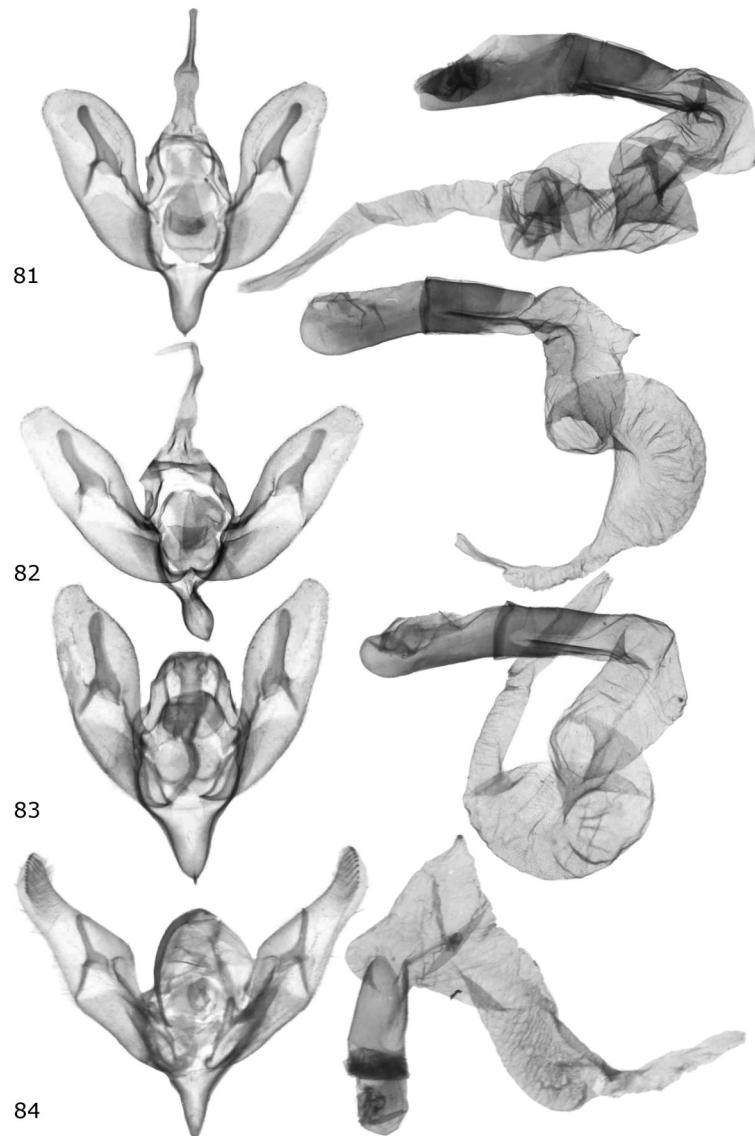
**Figures 69–72.** *Dichagyris* spp. and ssp. male genitalia. **69.** *Dichagyris subcelebrata* sp. n., HT, Kazakhstan, prov. Almaty, Taukum desert, 10 km W of Usharal, 450 m,  $44^{\circ} 12' N$ ,  $076^{\circ} 47'E$ , 12. VII. 2009, leg. B. Benedek, slide no. GYP 2341 (PGM); **70.** *Dichagyris celebrata*, (Alpheraky, 1897), Iran, Prov. Yazd, Qohrud, Aliabad, 2000–2500 m, 27. V.1999, leg. T. Hácz & G. Kőszegi, GYP 1366, (PGM); **71.** *Dichagyris celebrata*, (Alpheraky, 1897), Tajikistan, Hissar Mts., Kaliningrad env., Tabakchi range, Kalinin pass, 600 m, 10. VI. 2014, leg. D. A. Safronov, GYP 4060 (PGM); **72.** *Dichagyris celebrata pashtu* Varga, Pakistan, Karakoram Mts., Chapurson valley, near Rhaminji vill., 2500 m, 27. VIII. 2001, leg. B. Benedek & G. Ronkay, GYP 5572 (PGM).



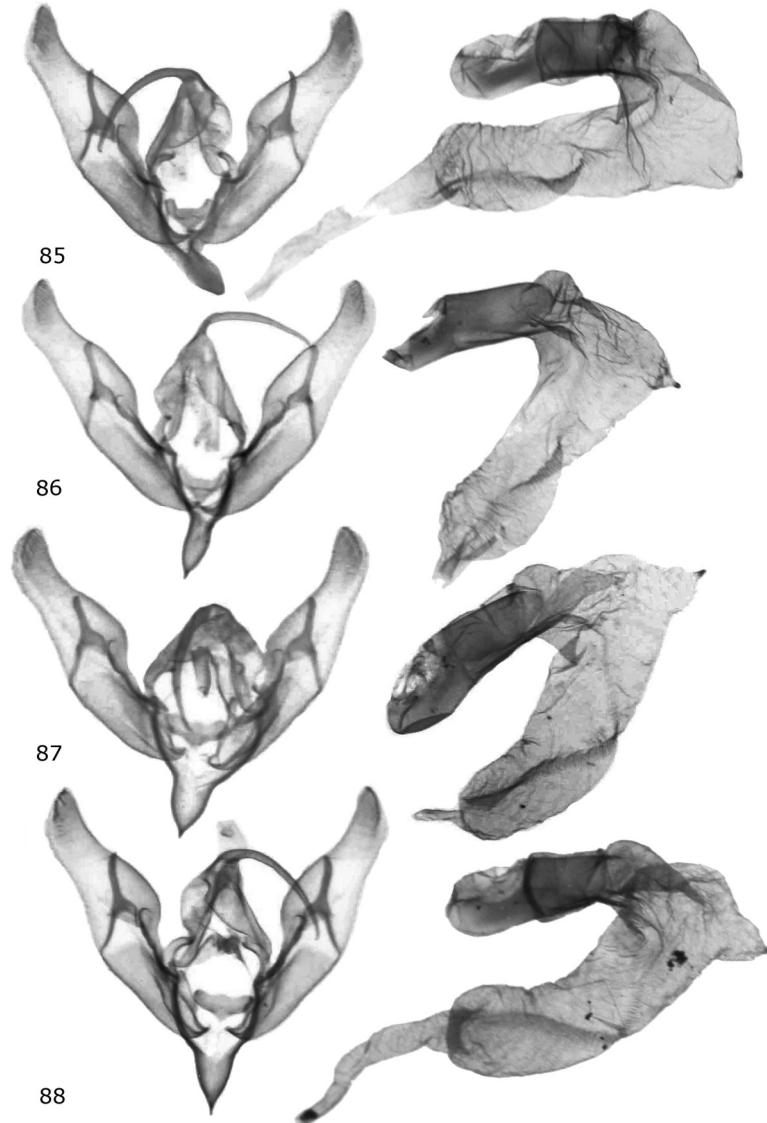
**Figures 73–76.** *Dichagyris* spp. and ssp. male genitalia. **73.** *Dichagyris adrienneae* sp. n., HT, Uzbekistan, W Thian Shan Mts. Chimgan, 800-2000 m, E69°58'E, 41°32' N, 18-25. VII. 1990, leg. P. Gyulai, GYP 471 (PGM); **74.** *Dichagyris apochora* Varga & Gyulai, 2001, PT, Tajikistan, Hissar Mts., gorge Takob, n. Warmonik, 2300 m, 21. VII. 1961, leg. Shtchetkin, GYP 1013 (PGM); **75.** *D. verecunda* (Püngeler, 1898), Kirgisia, 1700 m, Issik-Kul, Kadzhy-sar, 31. VII. 1996, leg. I. Pljutsh GYP 5490 (PGM); **76.** *D. verecunda pakistana* ssp. n., HT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII.-12. VIII. 2005, 1500-2500 m, leg. V. Gurko, slide no. GYP 1865 (PGM).



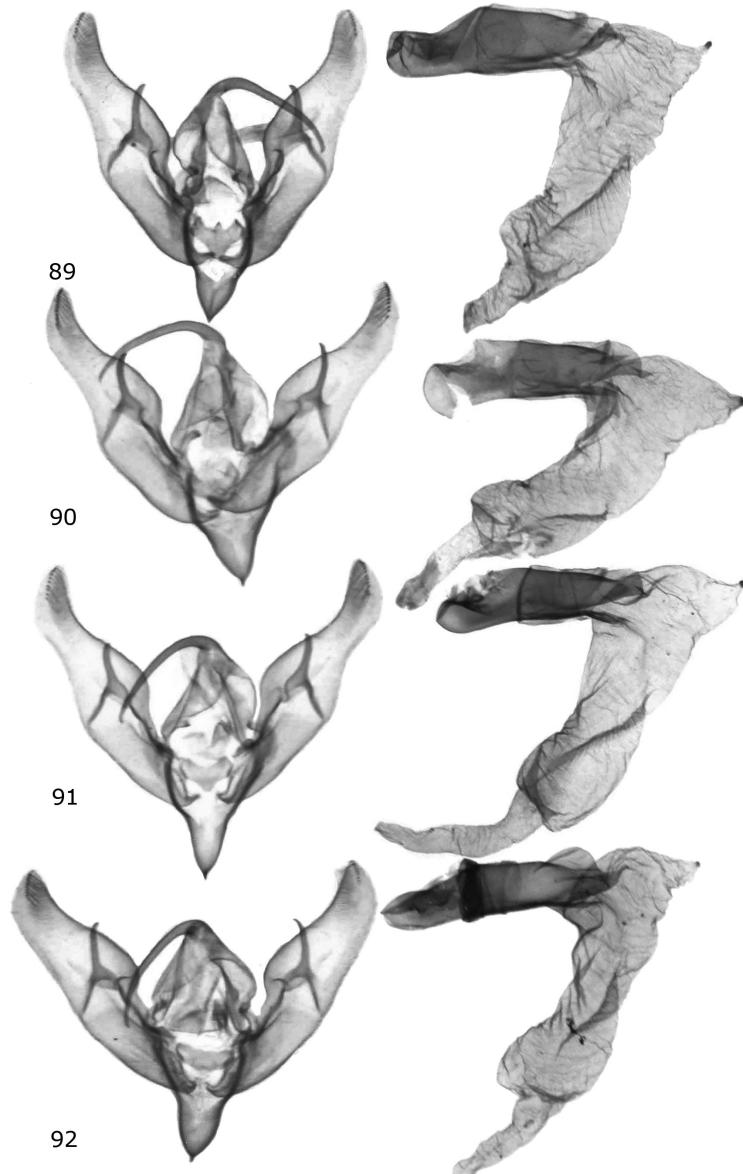
**Figures 77–80.** *Dichagyris* spp. and ssp. male genitalia. **77.** *D. verecunda paktiana* ssp. n., HT, Afghanistan, 3500 m, Prov. Paktia, Kotar-e-Sirkej, 28. VI.-15. VII. 1999, leg. S. Assad, GYP 5476 (PGM); **78.** *D. catalipa* Varga, 1993, PT, Turkey, Prov. Sivas, Ziyaret gecidi, E36°45', N38°42', 1950-2050 m, 10. VIII. 1988, leg. Gyulai, Hreblay, Ronkay et Ronkay, GYP 5514 (PGM); **79.** *D. ilseae* Stangelmaier & Fibiger, 2003, Iran, Prov. Golestan, E Elburs Mts., Khosyelaq, 2100 m, 3. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5508 (PGM); **80.** *D. ilseae meridionalis* ssp. n., HT, Iran, Prov. Fars, Zagros Mts., Persepolis, 1200 m, 25-26. V. 1999, leg. T. Hácz & G. Kószegi, slide no. GYP 5516 (PGM).



**Figures 81–84.** *Dichagyris* spp. and ssp. male genitalia. **81.** *D. amoena* (Staudinger, 1892), Turkey, Prov. Erzina, 3 km W of Yollarsübü, 1500 m, 26-27. IX. 2001, leg. P. Gyulai & A. Garai, GYP 5499 (PGM); **82.** *D. amoena malulai* ssp. n., HT, Syria, Prov. Dimashq, Jabal Lubnan as Sharqi, Malula, 15-16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5487 (PGM); **83.** *D. amoena malulai* ssp. n., PT, Syria, Prov. Dimashq, Jabal Lubnan as Sharqi, Malula, 15-16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5289 (PGM); **84.** *D. (Yigoga) forcipula amasicola* Koçak, 1980, Turkey, Prov. Sivas, 5 km W of Gürün, 1500 m, 28. VII. 1988, leg. P. Gyulai, M. Hreblay, G. Ronkay & L. Ronkay, GYP 5573 (PGM).



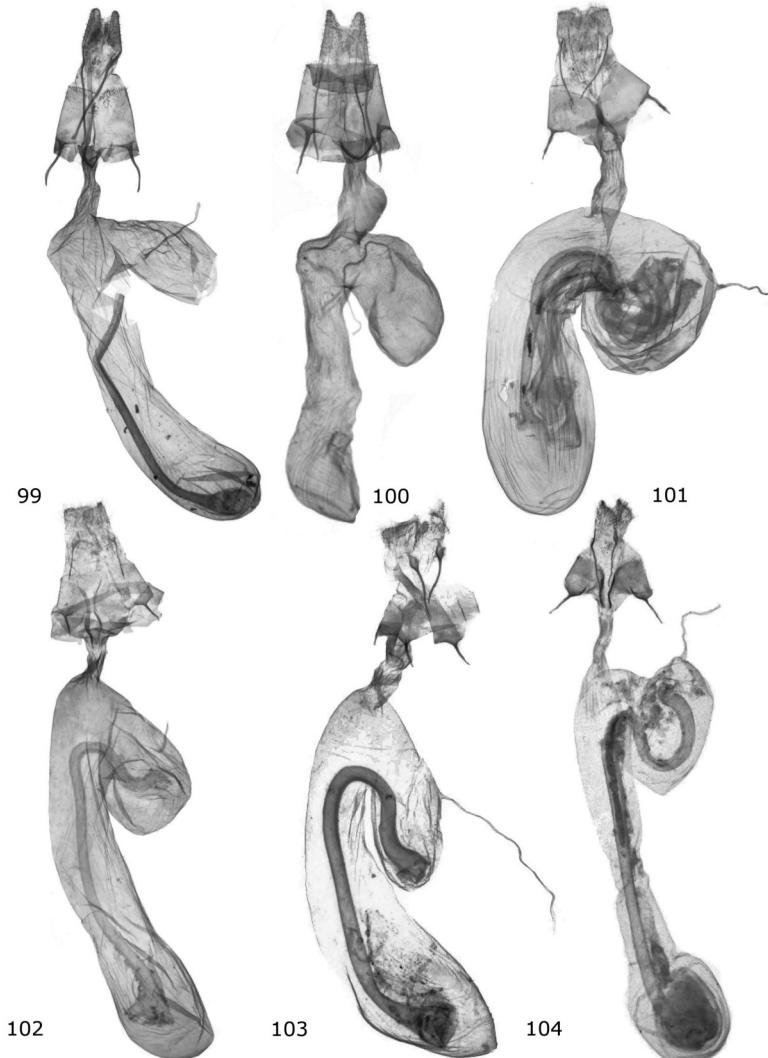
**Figures 85–88.** *Dichagyris* spp. and ssp. male genitalia. **85.** *D. (Y.) forcipula throne* ssp. n., HT, Iran, Prov. Fars, S - Zagros, 40 km SW of Sivand, 9 -10. VI. 2005, leg. P. Gyulai & A. Garai, GYP 5539 (PGM); **86.** *D. (Y.) forcipula throne* ssp. n., PT, Iran, Prov. Fars, S - Zagros, 40 km SW of Sivand, 9-10. VI. 2005, leg. P. Gyulai & A. Garai, GYP 5539 (PGM); **87.** *D. (Y.) forcipula ardasirae* ssp. n., HT, Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000m, 21. IV. 2000, leg. B. Benedek, GYP 5355 (PGM); **88.** *D. (Y.) forcipula ardasirae* ssp. n., PT, Iran, Prov. Kerman, Kuh -e-Gebal Barez, 10 km N of Deh Bakri, 2000m, 21. IV. 2000, leg. B. Benedek, GYP 5371(PGM).



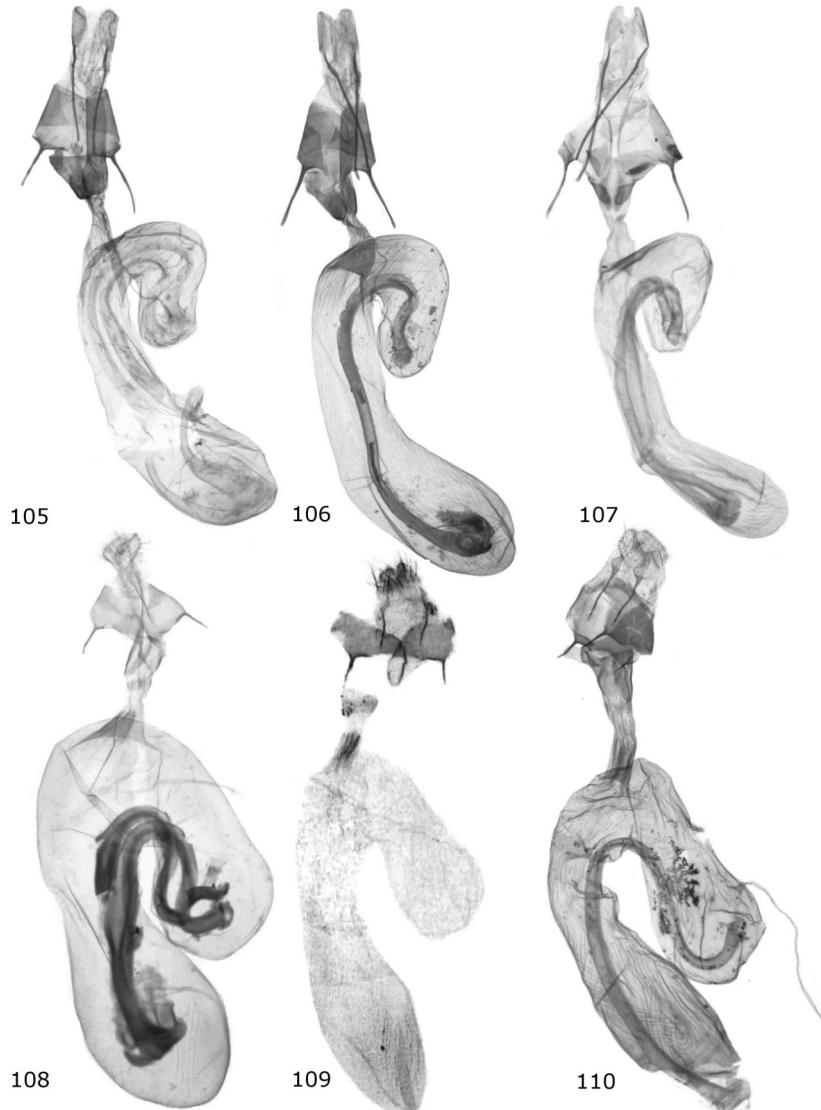
**Figures 89–92.** *Dichagyris* spp. and ssp. male genitalia. **89.** *Dichagyris iranicola* Koçak, 1980, Turkmenistan, Eskhan, 200 m, 27. VI. 1992, leg. M. Danilevsky, GYP 5553 (PGM); **90.** *Dichagyris ortus* sp. n. HT, Iran, Kopet Dagh, Qucan, 2000 m, 10. VII. 2010, leg. T. Háczi, Juhász & G. Petrányi, GYP 5521 (PGM); **91.** *Dichagyris ortus* sp. n., PT, Iran, Kopet Dagh, Qucan, 2000 m, 10. VII. 2010, leg. T. Háczi, Juhász & G. Petrányi, GYP 5554 (PGM); **92.** *Dichagyris mysteriosa* Varga, Ronkay & Ronkay, 2020, Iran, Kopet Dagh, Iran, Prov. Khorasan, Kopet Dagh, 40 km N of Qucan, 2000 m, 4–5. VI. 2010, leg. B. Benedek & T. Háczi, GYP 5558 (PGM).



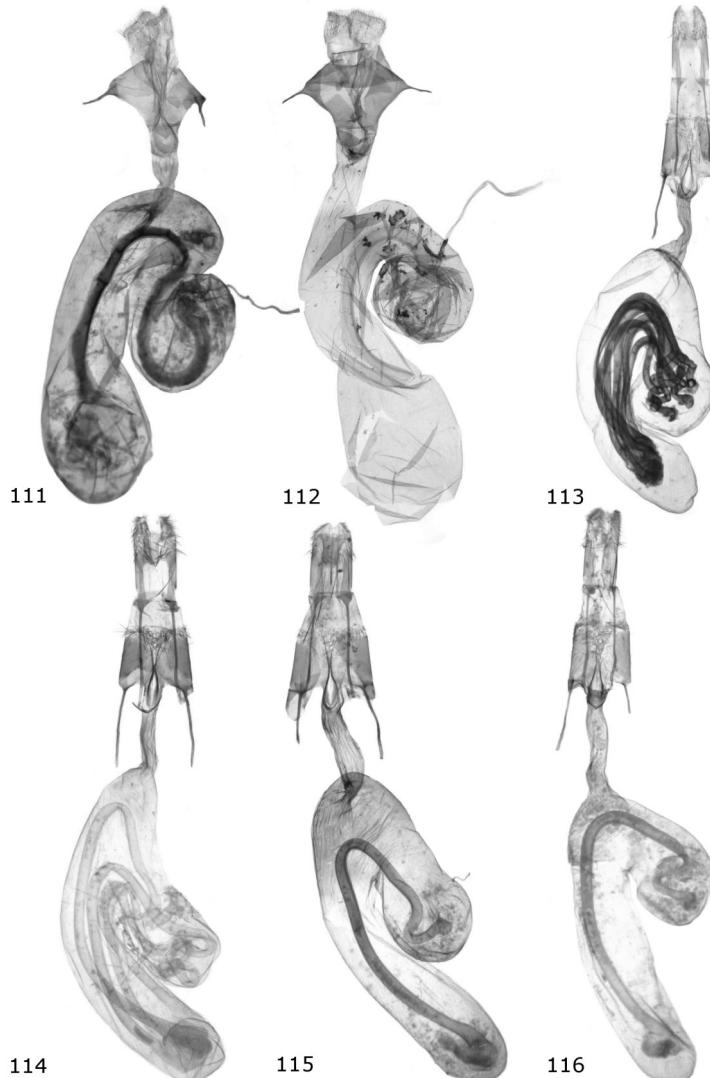
**Figures 93–98.** *Dichagyris* spp. and ssp. female genitalia. **93.** *Dichagyris wazircola* sp. n., HT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28. VII.-12. VIII. 2005, 1500-2500 m, leg. V. Gurko, GYP 5293 (PGM); **94.** *Dichagyris fuscashmiriana* Varga, Ronkay & Ronkay, 2020, PT, Pakistan, Kashmir, 2910m, Himalaya range, Deosai Mts., n. Bubin village, 74°59'E, 35°12,6'N, 21-22. IX. 1998, leg. P. Gyulai & A. Garai, GYP 5562 (PGM); **95.** *Dichagyris tanaicola* sp. n., HT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII.-12.VIII. 2005, 1500-2500 m, leg. V. Gurko, GYP 5569 (PGM); **96.** *Dichagyris striata beluchus* Brandt, 1941, Iran, Yazd, Qohrud, Bonkahar, Aliabad, 2500 m, 5-7. VII. 2005, leg. T. Hácz, I. Juhász & G. Petrányi, GYP 5575 (PGM); (PGM); **97.** *Dichagyris tyrannus* (A. Bang-Haas, 1912), Tajikistan, W Pamir, Mts., Rushan, 3400 m, 10-20. VIII. 1998, leg. V. Gurko, GYP 5561 (PGM); **98.** *Dichagyris tyrannus* (A. Bang-Haas, 1912), ssp., Pakistan, Hindukush, Shandur pass, 3750 m, 24. VII. 2011, leg. B. Benedek GYP 5570 (PGM).



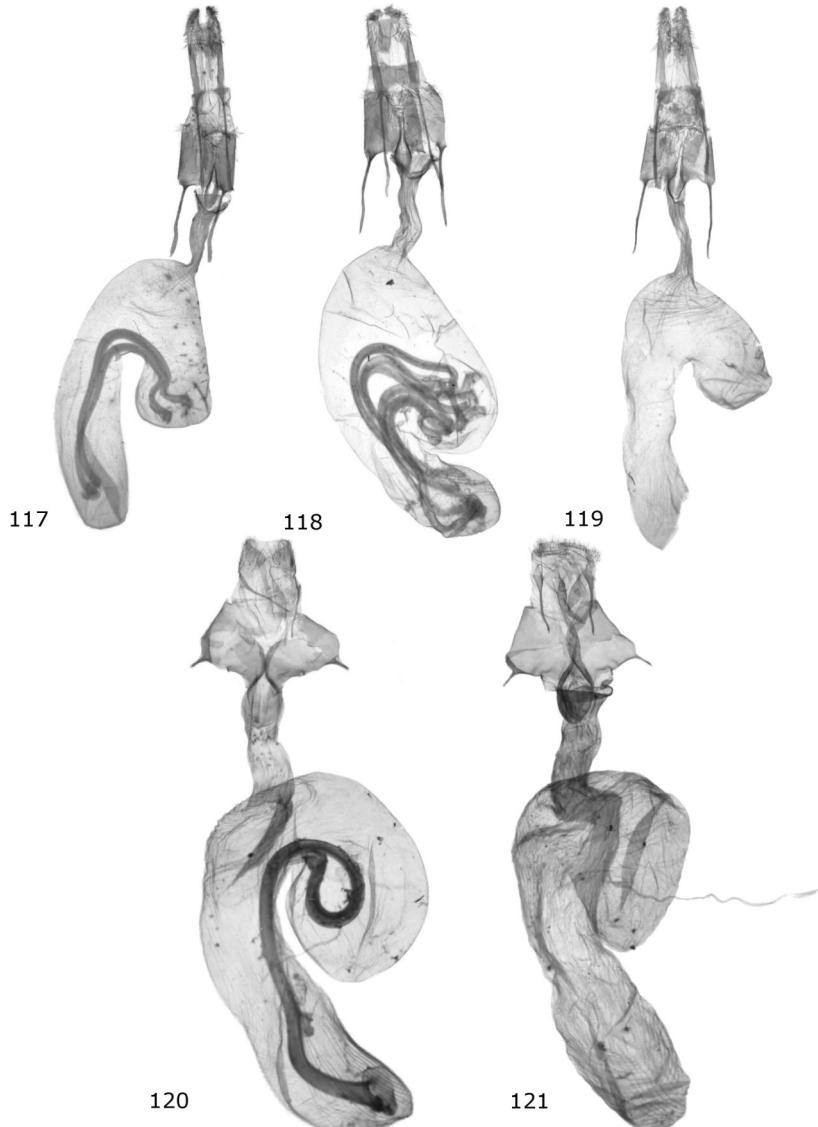
**Figures 99–104.** *Dichagyris* spp. and ssp. female genitalia. **99.** *D. leucographa* Varga, 1990, PT, NO Afghanistan, Wakhan-Tal, Zamestani Baharak, 3300 m, UV-Li, 23.VII.1971, leg. Ebert & Naumann GYP 5509 (PGM); **100.** *D. pallidographa* sp. n., HT, Pakistan, S. Karakoram Mts., Hushe River, 3500-3800 m, 10-12. VIII. 2004, leg. V. Gurko, GYP 5492 (PGM); **101.** *Dichagyris apochora* Varga & Gyulai, 2001, Tajikistan, Guschary, 1300 m, 31. VIII. 1965, leg. Shtchetkin (PGM); **102.** *D. himalayensis despecta* (Corti & Draudt, 1933), Tajikistan, Pamir Mts., Rushan, 3400 m, 1-10. IX. 1998, leg. V. Gurko, GYP 5513 (PGM); **103.** *D. himalayensis karataui* ssp. n., HT, S. Kazakhstan, Tshymkent, Karatau Mts., Kentau, 650 m, 28.VI.-11.VII. 1994, leg. I. Pljutsh GYP 5302 (PGM); **104.** *Dichagyris korsak* Varga, Gyulai & Miatileuski, PT, 2002, Kazakhstan, W. Ust'jurt plateau, West precipice, 3 km S from Beineu-Aktau road, 22-23. V. 2000, leg. Karaleus & Miatileuski, GYP 1388 (PGM).



**Figures 105–110.** *Dichagyris* spp. and ssp. female genitalia. **105.** *D. verecunda* (Püngeler, 1898), China, Qinghai, 20 km N of Da Qaidam, 3600 m, 15–22. VII. 2005, leg. loc. collector GYP 5475 (PGM); **106.** *D. verecunda pakistana* ssp. n., PT, Pakistan, NWFP S. Waziristan agency, near Tanai vill., 28.VII.–12. VIII. 2005, 1500–2500 m, leg. V. Gurko, GYP 5477 (PGM); **107.** *D. verecunda paktiana* ssp. n., PT, female, Afghanistan, 3500 m, prov. Paktia, Kotar-e-Sirkej, 28.VI.–15.VII. 1999, leg. S. Assad, GYP 5479 (PGM); **108.** *D. catalaipa* Varga, 1993, PT, Turkey, prov. Sivas, Ziyaret gecidi, E36°45', N38°42', 1950–2050 m, 10. VIII. 1988, leg. Gyulai, Hreblay, Ronkay et Ronkay, GYP 4128 (PGM); **109.** *D. ilseae* Stangelmaier & Fibiger, 2003, N. Iran, Elburs, prov. Khorasan, NP, Golestan, Almeh-Tal, 1300–1500 m, 23–24. V. 2001, leg. Stangelmaier, slide Chr. Wieser, without slide number, (coll. M. Fibiger), photo. P. Mildner, downloaded from Internet; **110.** *D. ilseae meridionalis* ssp. n., PT, Iran, prov. Esfahan, Zagros Mts., Fereidun Shar, 3000 m, 15–17. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5454 (PGM).



**Figures 111–116.** *Dichagyris* spp. and ssp. female genitalia. **111.** *D. amoena* (Staudinger, 1892), Iran, prov. Mazandaran, 2400 m, Mazandaran valley, 2 km W of Vniknamde, 14–15. IX. 2001, leg. P. Gyulai & A. Garai, GYP 2811 (PGM); **112.** *D. amoena malulai* ssp. n., PT, Syria, prov. Dimashq, Jabal Lubnan as Sharqi, Malula, 15–16. X. 2004, leg. P. Gyulai & A. Garai, GYP 5486 (PGM); **113.** *Dichagyris forcipula amasicola*, Turkey, Sivas, Camlibel gecidi, 3–4. VII. 1986, leg. W. Pavlas, GYP 5564 (PGM); **114.** *Dichagyris forcipula throne* ssp. n. PT, Iran, Prov. Fars, Keyris reg. 18. V. 2019, leg. Azadbakhs, GYP 5524 (PGM); **115.** *D. (Y.) forcipula ardasirae* ssp. n., PT, Iran, Prov. Kerman, Kuh-e-Gebal Barez, 10 km N of Deh Bakri, 2000 m, 21. IV. 2000, leg. B. Benedek, GYP 5517 (PGM); **116.** *Dichagyris iranicola* Kocak 1980, Turkmenistan, Kopet Dagh, 800–1500 m, valley of the rivers Ipay-kala and Point-kala, Dushak, 38°13'N, 59°54'E, 30.VI.–4. VII. 1992, L63, leg. Gy. Fábián, B. Herczig, A. Podlusány, GYP 5526 (PGM).



**Figures 117–121.** *Dichagyris* spp. and ssp. female genitalia. **117.** *Dichagyris ortus* sp. n. PT, Iran, prov. Khorasan, Binaloud, 40 km SW of Mashad, Moghan-Pivejan site, 2000–2500 m, 6–7. VI. 2010, leg. B. Benedek & T. Hácz GYP 5528 (PGM); **118.** *Dichagyris ortus* sp. n. PT, Iran, prov. Khorasan, Kopet Dagh, Qucan, 2000 m, 10. VII. 2010, leg. T. Hácz, I. Juhász & G. Petrányi, no. GYP 5522 (PGM); **119.** *D. mysteriosa* Varga, Ronkay & Ronkay, 2020, PT, Iran, prov. Khorasan, Kopet Dagh, 40 km N of Qucan, 2000 m, 4–5. VI. 2010, leg. B. Benedek & T. Hácz, GYP 5558 (PGM); **120.** *D. acutijuxta* (Boursin, 1957), Kirgisia, Alai, Tengizbai river, 3500 m, VII. 1997, leg. S. Toropov, GYP 5558 (PGM); **121.** *D. acutijuxta brunnescens*, HT, female, Pakistan, Karakoram Mts., Deintar valley, 3000 m, 28. VI. 2014, leg. B. Benedek & J. Babics, GYP 5491 (PGM).

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