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DESCRIPTION OF FEMALE OF *THARGELIA LEUCOSTIGMA* VARGA & L. RONKAY, 1991 WITH NEW DATA ON DISTRIBUTION OF THE SPECIES (LEPIDOPTERA: NOCTUIDAE)

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The paper contains description of a female of the poorly known Noctuidae species *Thargelia leucostigma* Varga & L. Ronkay, 1991 described from South Mongolia. The species is reported for Kazakhstan (Zaisan Depression) for the first time. Populations from SW Mongolia and East Kazakhstan were compared by COI sequences, and have no molecular differences. COI sequence of the species is presented. The map of known localities of the species is presented, adults, male and female genitalia, habitat and adults in nature are illustrated.

Key words: *Lepidoptera, Noctuidae, Thargelia, Asia, Kazakhstan, Mongolia, female, COI barcode.*

INTRODUCTION

The genus *Thargelia* Püngeler, 1900 belongs to the family Noctuidae Latreille, 1809, subfamily Hadeninae Guenée, 1852, tribe Hadenini Guenée, 1852. The genus is close to the genera *Odontelia* Hampson, 1905 and *Anarta* Ochsenheimer, 1816, and its systematic was discussed in detail by Sukhareva (1970), Varga & Ronkay (1991) and Ronkay & Gyulai (2006). The genus comprises 10 described species. All species of the genus are eremic and distributed in West (Iran and Israel) and Central Asia; only one species, *T. gigantea* Rebel, 1909 is known from North Africa (Saharan region) (Sukhareva, 1970; Varga & Ronkay, 1991; 1998; Ronkay & Gyulai, 2006; Müller & al., 2007).

Thargelia leucostigma Varga & L. Ronkay, 1991 was described from South Mongolia based on five male specimens (Varga & Ronkay, 1991), and no other records were published. Additional specimens of both sexes were recently collected by R.V. Yakovlev in Dzhungarian Govi in South-West Mongolia. In the course of faunistical studies on Noctuidae of Kazakhstan, a series of specimens close to *T. leucostigma* has been collected by authors in the Zaisan Depression in East Kazakhstan. Examination of their genitalia showed no differences of the specimens from Mongolia (Figs 9, 10), but the unusual collecting locality, as well as a high external and genital variability of species of the genus made the correct determination questionable. To solve the problem the populations from Mongolia and East Kazakhstan were compared by DNA barcode sequences of the mitochondrial cytochrome oxidase c subunit (COI barcodes), which were identical. The present paper contains description of previously unknown female of the species, and new data on its distribution.

MATERIAL AND METHODS

The moths were collected using ultraviolet and mercury light-traps. The genitalia were dissected and mounted in euparal on glass sides. Photos of the genitalia where made using the microscope Zeiss Stemi

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2000-C and the camera Zeiss AxioCam Erc 5c, and processed in Adobe Photoshop CS4® software. Photos of imago where taken using the camera Nikon D3100/AF-S Nikkor, 18–55 mm. DNA barcode sequences of the mitochondrial cytochrome oxidase c subunit (COI barcodes) were obtained through sequencing at the Canadian Centre for DNA Barcoding (CCDB, Guelph). The barcode sequences were compared using neighbour-joining trees constructed using the Kimura-2-Parameter distance model.

RESULTS

Thargelia leucostigma Varga & L. Ronkay, 1991
(Figs 1–11)

Thargelia leucostigma Varga & L. Ronkay, 1991, *Acta Zoologica Hungarica* **34**: 268, pl. 1, figs 5,6, text figs 8, 9 (Type locality: "Mongolia, Ömnögovi aimak, Naran Bulag, 1500 m").

Material examined. MONGOLIA: 1 male, 13–14.V.2012, W Mongolia, Hovd aimak, Dzhungarian Govi, 30 km S Uench, Uenchijn-Gol river valley, h = 1200 m, 45°54'05'' N, 91°50'20'' E, Yakovlev R.V. leg., slide AV1446 Volynkin, DNA No. BC ZSM Lep 90266; 3 males, 5 females, 16–17.V.2015, SW Mongolia, Khovd aimak, Dzhungarian Govi, Bodonchijn-Gol river valley, 36 km SW of Altai somon, 1280 m, 45°46' N, 92°12' E, Yakovlev R.V & Yakovlev A.R. leg., slide AV1489 Volynkin (male); EAST KAZAKHSTAN: 7 males, 3 females, 06.V.2015, E Kazakhstan, East Kazakhstan area, Kurchum district, 15.5 km NNE of Amanat village, Kiin-Kirish Massif, clay/chalk hills, 447 m. 48°7.885'' N, 84°29.378'' E, Volynkin A.V. & Titov S.V. leg., slides AV1435, AV1447, AV1448, AV1449, AV1450, AV1461, AV1462, AV1463 (males), AV1743 Volynkin (female), DNA No. BC ZSM Lep 90265 (all specimens are deposited in coll. Anton Volynkin, AVB, Barnaul, Russia).

Diagnosis of female. Externally, female (Figs 3, 5) is very close to male (Figs 2, 4), but has filiform antennae (in males antennae are serrate), somewhat broader fore wings, and connected orbicular and reniform stigmata. Previously, only female genitalia of species of the *T. distincta* (Christoph, 1884) species-group were published (*T. spinipes* Sukhareva, 1970, *T. atilla* L. Ronkay & Gyulai, 2006, and *T. balazsi* L. Ronkay & Gyulai, 2006). *T. leucostigma* belong to the *T. gigantea* species-group, and its female genitalia (Fig. 11) differ from those of species of *T. distincta* species-group (*T. distincta* – see fig. 12, other ones – see Sukhareva (1970) and Ronkay & Gyulai (2006)) in the broader ductus bursae.

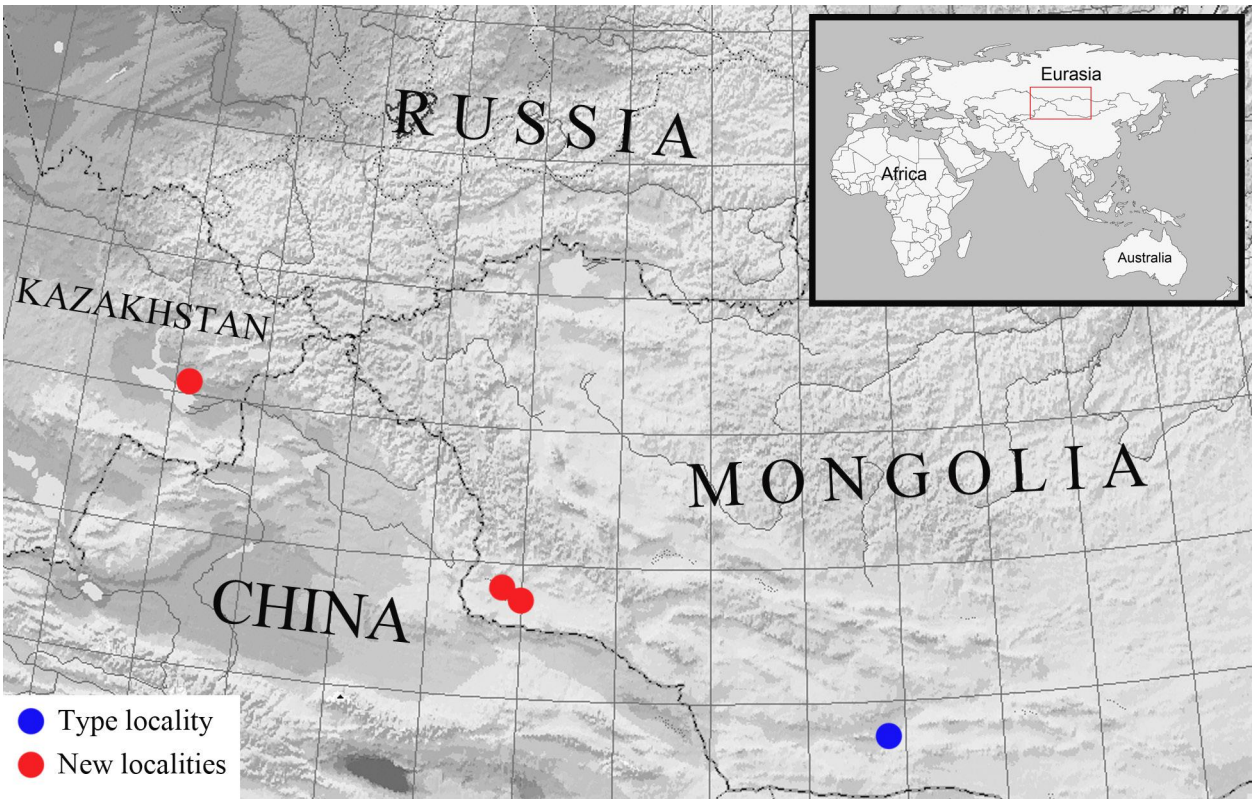
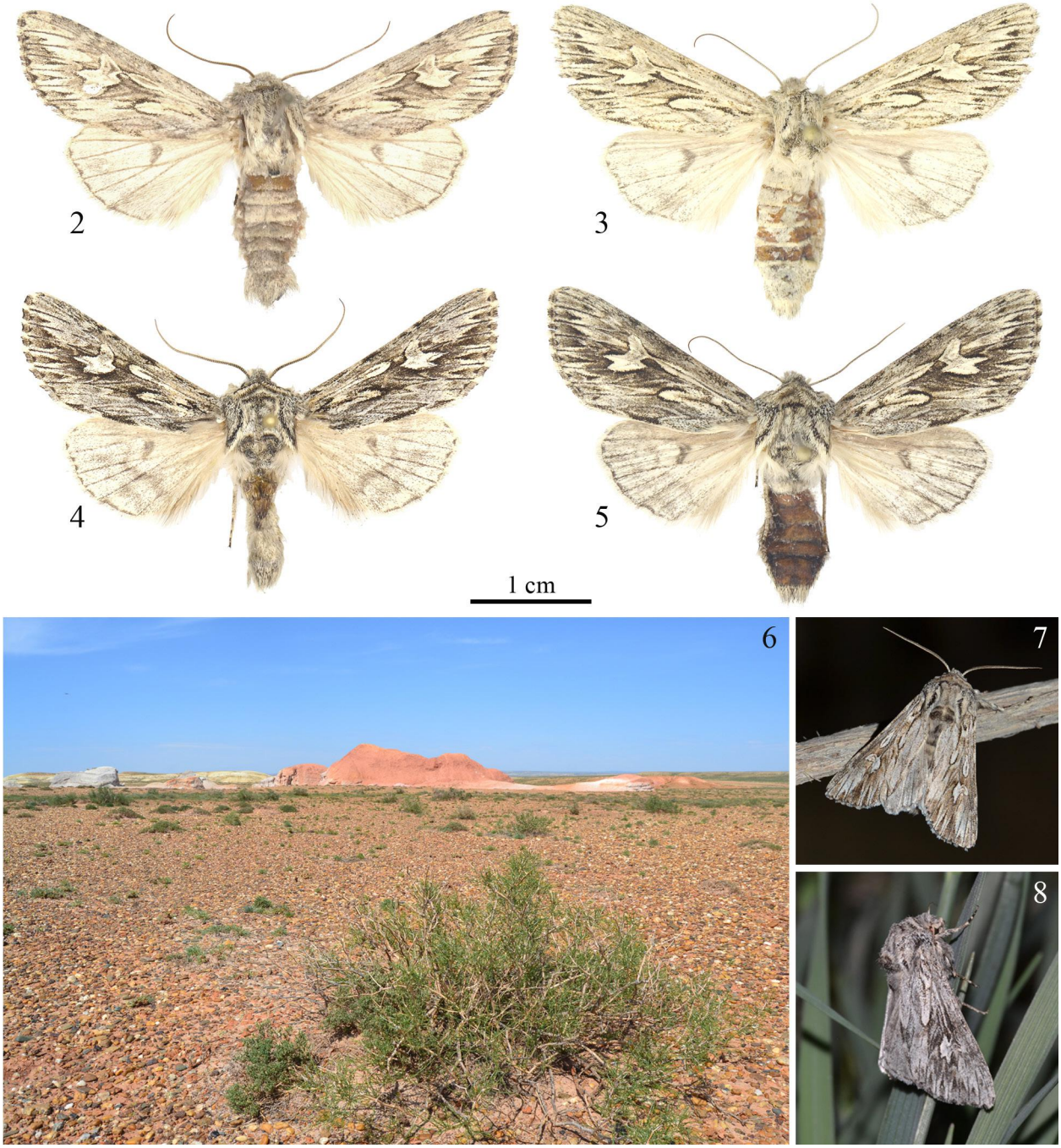


Figure 1. Map of known localities of *T. leucostigma*.

Description of female. External morphology. Length of fore wing 20–21 mm. Head, thorax, abdomen and ground colour of fore wings from greyish or whitish ochreous to ochreous-grey and slate-grey. Tegulae and patagia with blackish scales. Fore wing pattern blackish. Claviform, orbicular and reniform stigmata encircled with blackish; claviform long and broad; orbicular very long and narrow, connected with reniform;

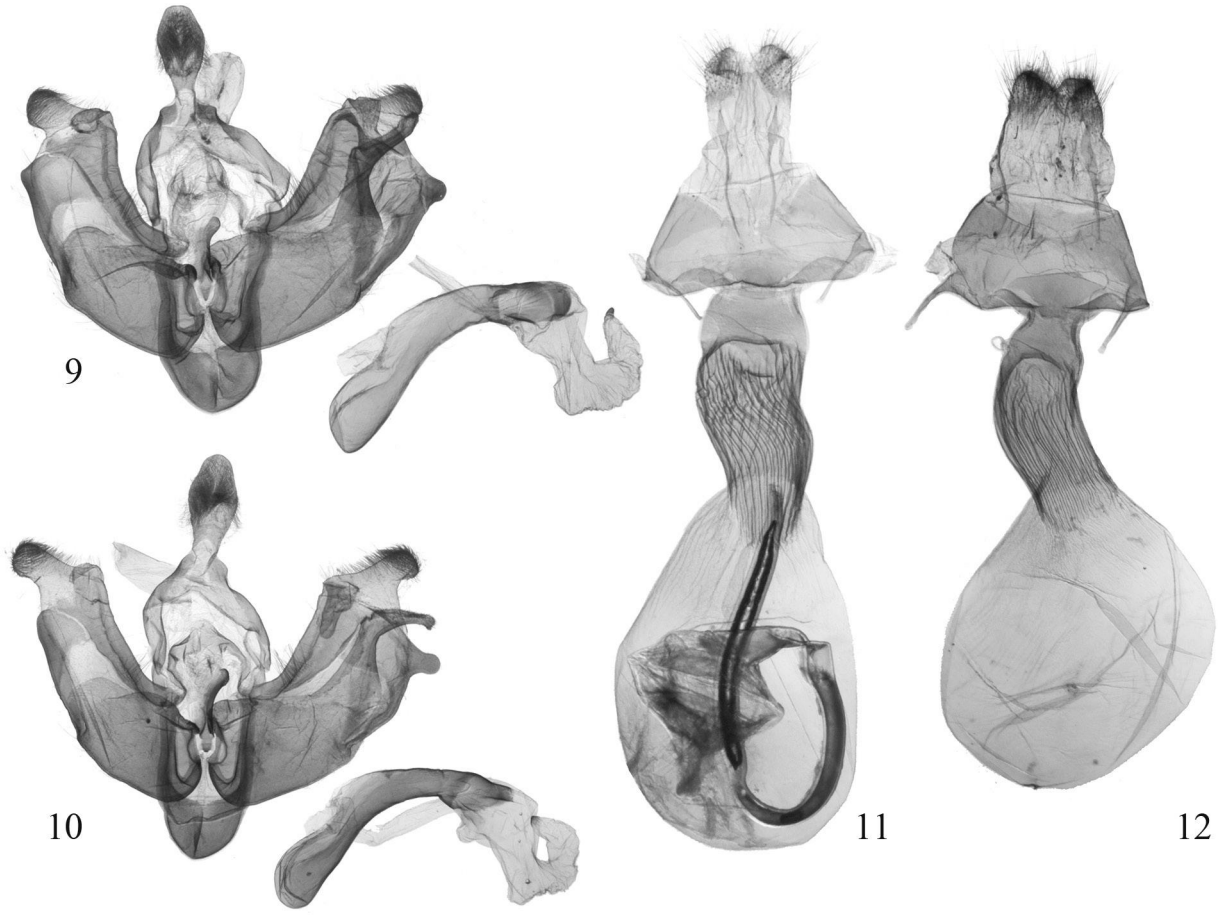


Figures 2–8. *T. leucostigma*, adults and habitat. 2 – male, 13–14.V.2012, W Mongolia, Hovd aimak, Dzhungarian Govi, 30 km S Uench, Uenchijn-Gol river valley, h = 1200 m, 45°54’05’’ N, 91°50’20’’ E, Yakovlev R.V. leg., DNA No. BC ZSM Lep 90266 (AVB); 3 – female, 16–17.V.2015, SW Mongolia, Khovd aimak, Dzhungarian Govi, Bodonchijn-Gol river valley, 36 km SW of Altai somon, 1280 m, 45°46’ N, 92°12’ E, Yakovlev R.V & Yakovlev A.R. leg. (AVB); 4 – male, 06.V.2015, E Kazakhstan, East Kazakhstan area, Kurchum district, 15.5 km NNE of Amanat village, Kiin-Kirish Massif, clay/chalk hills, 447 m. 48°7.885” N, 84°29.378” E, Volynkin A.V. & Titov S.V. leg., DNA No. BC ZSM Lep 90265 (AVB); 5 – female, same locality and date (AVB); 6 – habitat, East Kazakhstan, 15.5 km NNE of Amanat village, Kiin-Kirish Massif, 07.V.2015; 7 – adult male in nature, E Kazakhstan, Kiin-Kirish Massif, 06.V.2015; 8 – adult female in nature, same locality and date.

reniform very large, with long outer peaks. Terminal field with large blackish trigonal strokes between veins. Terminal line blackish, as row of dots between veins. Cilia dark grey or grayish brown, with pale spots in front of veins. Hind wing grayish brown, with dark grey suffusion in outer part; medial band wavy, dark grey, diffuse; discal spot distinct, dark grey or greyish brown, V-like; terminal line narrow, wavy, dark grey; cilia pale grayish ochreous. **Female genitalia.** Ovipositor short, broad, papillae anales densely setose; apophyses anteriores and posteriores long and narrow, apophyses anteriores shorter than posteriores. Ostium bursae broad, but narrow dorso-ventraly; ductus bursae strongly sclerotized, long, broad, dorso-ventrally flattened, its posterior section trapezoidal, smooth, anterior section with strongly sclerotized longitudinal ribs. Appendix bursae very small, conical; corpus bursae egg-like, membranous, without signa.

Molecular data. The COI sequense of the male specimen from Mongolia (Hovd aimak, Dzhungarian Govi, 30 km S Uench, Uenchijn-Gol river valley, No. BC ZSM Lep 90266) is following:

AACATTATATTTTATTTTTGGAATTTGAGCAGGAATAGTAGGAACTTCATTAAGATTATT
AATTCGAGCTGAATTAGGAAATCCTGGATCTTTAATTGGAGATGATCAAATTTATAATAC
TATTGTTACAGCTCATGCTTTTATTATAATTTTTTTTATAGTTATACCTATTATAATTGG
AGGATTTGGAAATTGACTTGTTCCATTAATATTAGGTGCTCCTGATATAGCATTTCCTCG
AATAAACAATATAAGTTTTTGACTTCTACCCCCTTCTTTAACTCTACTAATTTCAAGTAG
AATTGTAGAAAATGGAGCAGGAACAGGATGAACAGTGTACCCCCCACTTTCATCTAATAT
TGCACATGGAGGAAGATCAGTAGATTTAGCTATTTTTTCTCTTCACTTAGCTGGTATTTC
TTCTATTTTAGGAGCTATTAACTTTATTACTACAATTATTAATATACGATTAAATAGATT
ATCATTTGATCAAATACCTTTATTTGTTTGAGCTGTAGGAATTACTGCATTTTTATTATT
ATTATCATTACCTGTTTTAGCTGGAGCTATTACTATACTTTTAACAGATCGAAATTTAAA
TACATCTTTTTTTGATCCTGCTGGTGGAGGTGATCCAATTTTATATCAACATTTATTT



Figures 9–12. *Thargelia* spp., male (9, 10) and female (10, 11) genitalia. 9 – *T. leucostigma*, SW Mongolia, Dzhungarian Govi, 30 km S Uench, Uenchijn-Gol river valley, slide AV1446 Volynkin; 10 – *T. leucostigma*, East Kazakhstan, 15.5 km NNE of Amanat village, Kiin-Kirish Massif, slide AV1448 Volynkin; 11 – *T. leucostigma*, East Kazakhstan, 15.5 km NNE of Amanat village, Kiin-Kirish Massif, slide AV1743 Volynkin; 12 – *T. distincta*, Turkmenistan, Kara-Kum desert, 50 km N of Ashkhabad, slide AV1744 Volynkin.

Distribution. South and South-West Mongolia (Transaltai and Dzhungarian Govi), East Kazakhstan (Zaisan Depression) (Fig. 6).

Bionomics. The species inhabits dry stony or clayish biotopes with *Haloxylon* (Fig. 6). Moths fly in May, females (Fig. 8) are on wing in the early night, whereas males (Fig. 7) fly in the late night only. Early stages are unknown.

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REFERENCES

Müller, G.C., Kravchenko, V.D., Ronkay, L., Speidel, W., Witt, Th., Mooser, J., Junnila, A. & Zilli, A. (2007). A new species of *Odontelia* Hampson, 1905 from Israel and its ecology (Lepidoptera: Noctuidae, Hadeninae). *Entomologische Zeitschrift, Stuttgart, 117*(6), 243–247.

Ronkay, L. & Gyulai, P. (2006). New Noctuidae (Lepidoptera) from Iran and Tibet. *Esperiana*, 12, 211–241.

Sukhareva, I.L. (1970). Novye i maloizvestnye vidy sovok rodov *Thargelia* Püng. i *Odontelia* Hmps. (Lepidoptera, Noctuidae) iz Srednej Azii [New and little-known species of noctuid moths of the genera *Thargelia* Püng. and *Odontelia* Hmps. (Lepidoptera, Noctuidae) from Middle Asia]. *Entomological Review, 49*, 678–682.

Varga, Z. & Ronkay, L. (1991). Taxonomic studies on the Palaearctic Noctuidae (Lepidoptera). I. New taxa from Asia. *Acta Zoologica Hungarica, 34*(3–4), 263–312.

Varga, Z. & Ronkay, L. (1998). On the taxonomy of the genera *Odontelia* Hampson, 1905, and *Thargelia* Püngeler, 1900 (Lepidoptera, Noctuidae: Hadeninae). *Annales historico-naturales Musei nationalis hungarici, 90*, 175–193.