



New data on the systematics and distribution of snout moths of the genus *Evergestis* Hübner, [1825] in Kyrgyzstan (Lepidoptera: Crambidae)

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Abstract

New data about distribution and systematics of snout moths of the genus *Evergestis* in Kyrgyzstan are presented. *Evergestis radagastalis* sp. n. is described, with the type locality: “Kyrgyzstan, Moldo-Too Mts., 7 km E of Kyzyl-Korgon, 41°43'43.08"N, 74°16'38.54"E, 1491 m”. It differs from the closely related species *E. caesialis* (Herrich-Schäffer, [1849]) and *E. impervialis* Sinev & Korb, 2021 by the wing pattern and genitalia structures. *Evergestis grummi* (Christoph, 1885) is recorded from Kyrgyzstan for the first time, *Evergestis sorhageni* (Sauber, 1899) is recorded for the first time from the Alai region, and *Evergestis frumentalis* (Linnaeus, 1761) is recorded for the first time from West Tian-Shan.

Key words: new species, new records, snout moths, range, taxonomy

Introduction

The snout moth fauna of Kyrgyzstan has been preliminarily explored by Sinev and Korb (2022), yet this fauna remains far from fully documented. Notably, the Kyrgyzstanian border regions are of particular interest as they might host species from adjacent faunal regions. There is also significant interest in the underexplored early spring and late autumnal phenological aspects of these moths. To address these gaps, the authors conducted field trips to various regions of Kyrgyzstan in September–October 2022 and April 2023. These trips, along with data from other expeditions, have been utilized to compile the findings presented in this paper.

Evergestis Hübner, 1825, is a Holarctic genus of snout moths within the subfamily Glaphyriinae (Léger *et al.*, 2021) and currently comprises 102 species (Nuss *et al.*, 2003–2024). Despite being a well-studied genus, ongoing entomological research continues to reveal previously undescribed species. In the past decade alone, five new species of *Evergestis* have been described (Alipanah *et al.*, 2018; Chen & Wang, 2013; Morente *et al.*, 2015; Seizmair, 2021; Sinev & Korb, 2021).

The current article aims to publish the results of studies on *Evergestis* conducted in recent years in Kyrgyzstan. These studies have led to the description of one new species and the documentation of several new species records for the country.

Material and methods

The genitalia preparation, dissection, specimen photography, and image processing techniques followed Stradomsky (2005). Distribution maps were generated using Google Maps with exact coordinates from a Garmin Oregon 750 GPS device and subsequently edited with Corel Draw 2022. Photographs were taken using a Canon EOS 5D Mark II with a Canon 24–105mm f/4L IS II USM EF lens, and a Nikon D7100 with a Nikon NIKKOR Z MC 105mm

f/2.8 VR S lens. Microphotographs were captured with a LOMO MS-VP microscope equipped with a Canon EF adaptor. The following abbreviations are used in this article: CSK—collection of S.K. Korb, CSM—collection of S.F. Melyakh, ZIN—collection of the Zoological Institute, Saint Petersburg, Russia.

Results

New species description

Evergestis radagastalis Korb, P. Gorbunov & Melyakh, sp. n.

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Material. Holotype ♂, 23–24.04.2023 Kyrgyzstan, Moldo-Too Mts., 7 km E of Kyzyl-Korgon, 41°43'43.08"N, 74°16'38.54"E, 1491 m, leg. S.K. Korb, P.Y. Gorbunov, S.F. Melyakh. Paratypes: 6 ♂, 16 ♀, 23–24.04.2023, same locality, leg. S.K. Korb, P.Y. Gorbunov, S.F. Melyakh. 3 ♂, 21–22.04.2023 Kyrgyzstan, Fergansky Mts., 15 km NE Kazarman, Naryn river, left bank, 41°30'46.55"N, 73°55'36.91"E, 1223 m, leg. S.K. Korb, P.Y. Gorbunov; 2 ♂, 3 ♀, 23.04.2023, Kyrgyzstan, Fergansky Mts., 12 km NE of Tash-Kumyr (center), Sary-Bel river, 41°25'16"N, 72°18'59"E, 892 m, leg. S.F. Melyakh. Holotype deposited in ZIN; paratypes are in CSK and CSM.

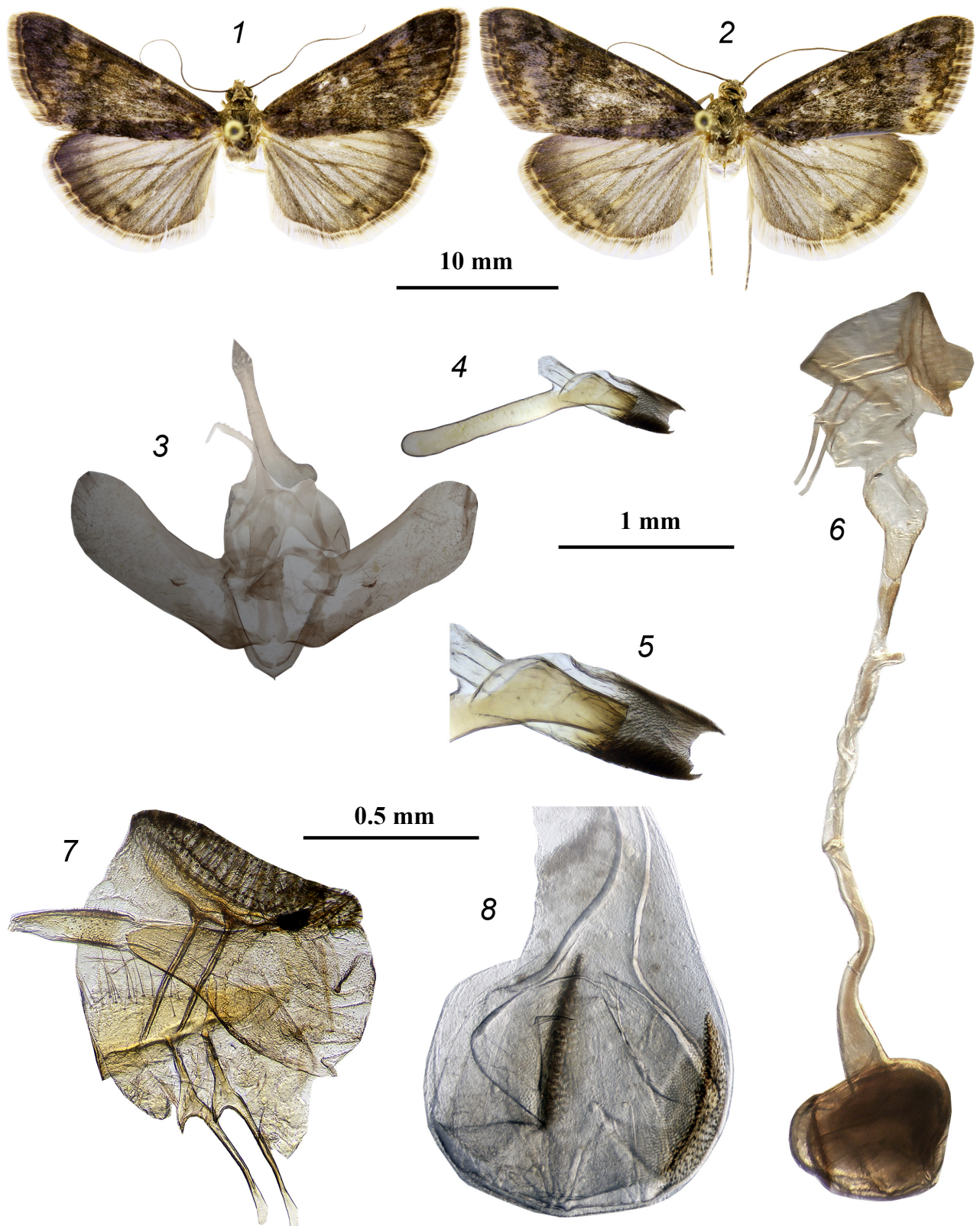
Description (figs 1, 2, 10). Forewing length 12–15 mm (13 mm in holotype). Head, thorax, abdomen, legs and antennae brown. Eyes gold-brown. Forewing brown, with illegible olive-grey submarginal belt and randomly located illegible dark and light spots, mostly located in the middle part of the wing; submarginal line poorly visible, dark, incomplete; marginal pattern dark, presented by three small lunules in the apical part of wing. Forewing fringe brownish with light strokes at the vein terminations. Hindwing lighter than forewing, light-brown, with grey margin (about 20% of the wing width) and yellow stroke in the anal angle. Hindwing fringe two-colored, brown in basal part and white in outer part. Underside of wings the same color as upper side, but a bit lighter, with no pattern. Male is slightly smaller than female, its olive-grey submarginal belt narrower and in general not so well visible.

Male genitalia (figs 3–5). Uncus elongated, arrow-shaped with pointed apex. Gnathos of approximately the same thickness along the entire length, with thin process at the apex; denticles on its dorsal surface quite big, well visible. Valva lobe-shaped, 1.25 mm long, a bit expanded in its apical part; clasper small, ear-shaped but well visible, located in the central part of valva. Anellus wide, in preparation is together with phallus, bearing a field of densely packed small spines in apical half. Phallus slender, distinctly longer than valva, with a single long spike-shaped cornutus in apical part.

Female genitalia (figs 6–8). Length about 5 mm. Anal papillae flat lunule-shaped, about 3.9 times wider than their length. Posterior apophyses almost the same length as the anterior ones, straight and thin. Anterior apophyses two-branched. Antrum funnel-shaped, sclerotized just a bit stronger than other parts of genitalia. Colliculum almost as long as antrum, elongated-oval. Ductus bursae long and narrow; bursa copulatrix rounded, with two large equal-sized signa bearing tiny spikes on almost their entire length.

Diagnosis. This new species belongs to the group of *Evergestis caesialis* (Herrich-Schäffer, [1849]); it has two closely related species: *E. caesialis* and *E. impervialis* Sinev & Korb, 2021, but differs from both by the wing pattern and genitalia structures. Differences in the wing pattern from *E. impervialis* are: no black spots or lines in forewing upperside (present in *E. impervialis*), and forewing upperside with olive-grey submarginal belt (belt in *E. impervialis* light-brown). Differences in wing pattern from *E. caesialis* are: olive-grey submarginal belt in forewing upperside (belt in *E. caesialis* light-brown), and absence of dark discal spot in forewing upperside (present in *E. caesialis*). Another clear difference is in the eye color: in *E. caesialis* and *E. impervialis*, the eyes are dark-brown, whereas *E. radagastalis* sp. n. has gold-brown eyes. The female genitalia differ very clearly in the apophyses posterior, which are one-branched in *E. caesialis*, two-branched in *E. radagastalis* sp. n., and three-branched in *E. impervialis*. In the male genitalia all three species differ in the aedeagus structure: in *E. caesialis* and *E. impervialis*, it is expanded basally, while in *E. radagastalis* sp. n. it is the same width throughout the entire length; They also differ in the number of cornuti in the apical aedeagus, with 2–3 in *E. caesialis*, 8–12 in *E. impervialis*, and only one cornutus in *E. radagastalis* sp. n.. *E. radagastalis* sp. n. also has a very characteristic arrow-shaped uncus, whereas in the closely related species it is straight, and without a pointed apex.

Etymology. The species is named after the wizard in the books of J.R.R. Tolkien, Radagast, who had the nickname Radagast the Brown, referring to the brown color of the forewings.



FIGURES 1–8. *Evergestis radagastalis* sp. n. 1: holotype male. 2: paratype female. 3: male genitalia, frontal view, aedeagus removed, holotype. 4–5: aedeagus, holotype. 6: female genitalia, paratype. 7: apophyses, paratype. 8: bursa copulatrix and signa, paratype. Scale bar: 10 mm for figs 1–2; 1 mm for figs 3, 4, 6; 0.5 mm for figs 5, 7, 8.



FIGURES 9–11. *Evergestis* habitats and shots in nature. 9: type locality of *E. radagastalis* sp. n. 10: *E. radagastalis* sp. n. 11: *E. grummi* (Christoph, 1885).

Biology. We discovered this new species in mid-spring (second decade of April) in low-mountainous regions at altitudes of 1200–1500 meters. The specimens were primarily collected in the basin of the Dyungereme River near its confluence with the Kekemeran River, within the valley and on the lower parts of the steep red sandstone slopes (fig. 9). The valley forest in this area is composed of *Betula tianschanica*, *Populus talassica*, *Fraxinus sogdiana*, and *Salix wilhelmsiana*, with an undergrowth featuring *Berberis* and *Cotoneaster* species. In the lower parts of the slopes, there are patches of shrubs such as *Spiraea hypericifolia*, *Rosa* sp., *Prunus prostrata*, *Zygophyllum atriplicoides*, and others. The herbaceous layer is dominated by wormwood (*Artemisia* spp.), *Krascheninnikovia ceratoides*, and various Poaceae species.

In the Naryn valley, the new species was collected at an altitude of 1220 meters, on the border between a floodplain and an eastern-facing slope. The area featured *Populus talassica* trees and patches of undergrowth including *Berberis nummularia* and *Crataegus* sp. The river floodplain here is approximately 160 meters wide, with the river itself occupying about half of this width. The dry part of the floodplain consists of sandy pebbles covered

with *Salix* sp. (willow) and vegetation such as *Pseudosaphora alopecuroides*, *Glycyrrhiza shiheziensis*, *Xanthium strumarium*, and *Artemisia* sp., which are prominent in summer and autumn. The lower part of the slope is treeless and features dense or sparse shrubbery, including *Spiraea hypericifolia*, *Rosa* sp., *Prunus prostrata*, *Ephedra* sp., *Krascheninnikovia ceratoides*, and *Artemisia* sp.

Distribution. The species is known from only two localities separated by 40 km (in a straight line): the valley of the middle course of the Naryn River and the basin of the lower reaches of the Kekemeran River (fig. 13). It is likely endemic to the region's dry steppes and semi-deserts of the Inner Tien Shan.



FIGURE 12. Observation place of *Evergestis grummi*.

***Eversgestis grummi* (Christoph, 1885), new to the fauna of Kyrgyzstan**

Evergestis grummi (Christoph, 1885), originally described from Turkmenistan (Nokhur) and found in South Turkmenistan, Iran, and Afghanistan (Christoph, 1885; Alipanah *et al.*, 2018), had not been previously recorded in Kyrgyzstan. However, during field studies of Lepidopterous insects in 2020, the second author captured an unequivocal photograph of this species in its natural habitat in the Turkestansky Mountain Ridge (fig. 11). The high quality of the photograph and the clear positioning of the moth allowed for definitive identification, leading us to officially record *Evergestis grummi* in Kyrgyzstan for the first time. This discovery expands the known distribution of the species to include Kyrgyzstan (fig. 13).

Material. Photograph, 04.07.2019, 23:44, Kyrgyzstan, Batken Province, Leilek District, 11 km SE of Katran vill., Turkestanskii Mt. Range, Leilek River basin, Buldzhuma Stream valley, 1790 m, 39°44'57"N, 70°05'52"E.

Biology. The moth that was attracted to the light was photographed at the site on the edge of a walnut (*Juglans regia*) grove, located on the floodplain terrace of the Buldzhuma stream (Fig. 12). Herbage is represented by large herbs of *Ligularia* sp., ragwort and cereals that were severely damaged by grazing. In the neighborhood in the stream valley there were also fragments of floodplain forest of *Salix*, *Populus*, *Betula*, *Crataegus* and *Sorbus*, accompanied by shrub vegetation of *Berberis*, *Rosa* and *Colutea*. The lower parts of the steep rocky slopes are covered with shrubs (*Spiraea*, *Rosa*, *Ephedra*, etc.).



FIGURE 13. Records of *Evergestis* in Kyrgyzstan in 2019–2023.

Evergestis sorhageni (Sauber, 1899), new to Alai

Evergestis sorhageni (Sauber, 1899) was previously known in Kyrgyzstan only from the North and Inner Tian-Shan regions, specifically the Sarydzhas, Terskey Ala-Too, and Moldo-Too mountain ranges (Sinev & Korb, 2022). This species is widely distributed across the Central Palearctic mountains, from the Altai (Huemer *et al.*, 2017) and Uighur Ili (Kemal & Koçak, 2018) to the North and Inner Tian-Shan. In the summer of 2022, it was also recorded in the Alai region, extending its known range westward by approximately 400 km (fig. 13).

Material. 2 ♂, 1 ♀, 23–24.07.2022, Kyrgyzstan, Alai Mts., Kyzyl-Eshme valley, 39°37'13.98" N, 72°17'10.77" E, 2960 m, leg. S.K. Korb (CSK).

Biology. Moths were collected at light in the dry high-mountainous low-grass meadow at the altitude of 2960 m. The meadow was located near a small stream on clay soils.

Evergestis frumentalis (Linnaeus, 1761), new to West Tian-Shan

Evergestis frumentalis (Linnaeus, 1761) is a widely distributed West Palearctic species, with a range extending “from the Iberian Peninsula to Sweden and southern Finland, and eastwards through central and southern Europe to European Russia. Outside Europe, it is found in Asia Minor, the Caucasus, Altai, Central Asia, and Southern Siberia” (Goater *et al.*, 2005: 76). The species’ distribution in Central Asia had remained unclear until the recent publication on the snout moths of Kyrgyzstan (Sinev & Korb, 2022). According to this study, its distribution includes the North Tian-Shan (Kirghizsky Mts.), Inner Tian-Shan (mountain ranges Susamyrtoo, Dzhumgal-Too, and Moldo-Too), and Northern Alai. In the Central Asian mountains, this species is localized. During our trip in April 2023, we found it in the Fergansky and Chatkalsky mountain ranges (West Tian-Shan) (fig. 13).

Material. 2 ♂, 17–18.04.2023 Kyrgyzstan, Chatkalsky Mts., 13 km N of Tash-Komyr, 41°28'6.32"N, 72°12'54.65"E, 787 m, leg. S.K. Korb, P.Y. Gorbunov, S.F. Melyakh (CSM); 4 ♂, 21–22.04.2023 Kyrgyzstan, Fergansky Mts., 15 km NE Kazarman, Naryn river, left bank, 41°30'46.55"N, 73°55'36.91"E, 1223 m, leg. S.K. Korb, P.Y. Gorbunov, S.F. Melyakh (CSM, CSK).

Biology. Moths collected in low elevations, from 733 to 1223 m, in dry steppe places with *Artemisia* sp. and different Poaceae.

Discussion

Snout moths are not a very popular target for collectors in Central Asia, a region more renowned for its famous Parnassians, sulfurs, and other butterflies. Consequently, almost any trip that involves collecting snout moths yields fruitful results for understanding their systematics and distribution.

Evergestis is one of the most studied genera of Pyraloidea due to its typically large size and attractive wing patterns (Alipanah *et al.*, 2018; Fazekas, 2013). We anticipate more new data on the range of this genus, and new investigations in Central Asia will undoubtedly enhance the taxonomy and systematics of this group of Lepidoptera.

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