

What is *Semagystia clathrata* (Christoph, 1884) (Lepidoptera, Cossidae: Cossinae)?

Roman V. Yakovlev

Altai State University, 61 Lenina Ave., Barnaul 656049, Russia. <https://orcid.org/0000-0001-9512-8709>

The article gives a redescription of the little studied species, *Semagystia clathrata* (Christoph, 1884) (Lepidoptera, Cossidae: Cossinae). For the first time, we provide the images of the male and female adults from various portions of the distribution range, and describe the male genitalia. The species is reported for the first time for the fauna of Kazakhstan (Mangystau Region). The species distribution map is presented, the article is illustrated with nine figures.

Corresponding author: Roman V. Yakovlev (yakovlev_asu@mail.ru)

Academic editor: A. Matsyura | Received 9 November 2022 | Accepted 30 November 2022 |
Published 14 December 2022

<http://zoobank.org/319C5D5A-E6ED-4699-9081-60975FD38023>

Citation: Yakovlev RV (2022) What is *Semagystia clathrata* (Christoph, 1884) (Lepidoptera, Cossidae: Cossinae)? Acta Biologica Sibirica 8: 713–719. <https://doi.org/10.14258/abs.v8.e44>

Keywords

Biodiversity, Carpenter Moths, fauna, Central Asia, Turkmenistan, Uzbekistan, Kazakhstan

Introduction

Endagria clathrata Christoph, 1884 is one of the least studied Central-Asian species of Carpenter-Moths (Lepidoptera, Cossidae: Cossinae), described on a series of specimens from Turkmenistan. Seitz (1912: 427) established a new combination, *Dyspessa clathrata*. Daniel (1961: 203), without any arguments, used the combination *Catopta clathrata*. Schoorl (1990: 84) once again offered a new combination, moving *clathrata* to the genus described by him, *Semagystia* Schoorl, 1990 (type species, by original designation: *Endagria agilis* Christoph, 1884). Yakovlev (2011: 42) and Yakovlev & Witt (2016: 170) also used the combination suggested by Schoorl. In the literature, there are still no reasoned (confirmed by morphological information) published data on this little studied species. Basing on an extensive material, in this study we give a detailed redescription of the species and prove its taxonomic position.

Material and methods

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

Abbreviation list

ISEA – Institute of Systematic and Ecology of Animals (Novosibirsk, Russia);

MWM – Museum of Thomas Witt (Munich, Germany);

NHMUK – National History Museum (London, G.B.);

RYB – collection of Roman Yakovlev (Barnaul, Russia);

ZISP – Zoological Institute of the Russian Academy of Science (Saint-Petersburg, Russia).

Results

Taxonomical part

Semagystia clathrata (Christoph, 1884)

Figs 1–9

Endagria clathrata Christoph, 1884: 114–115, pl. 7: 4

Type locality: Kyzyl Arvat und Bami [Turkmenistan, Gyzyrabad and Bami].

Type material (syntypes) in ZISP. Christoph (1884) gives the following information on the type specimens and type range, “Dieser Schmetterling wurde am 15. April an den Stations – laternen der Eisenbahn zwischen dem Michailow-Busen und Kisil-Arvat in beiden Geschlechtern gefangen. Später fing ich noch ein ♀ in der Nacht, auf dem Wege zwischen Kisil-Arvat und Bami”. In the collection of ZISP, I managed to find only one female from “Kisil-Arvat”, which is the syntype.

Material examined. Syntype, female, Kyzyl-Arvat (ZISP); 13 males, 9 females, Kara-Kum, 50 km N Ashabad, 38°22' N, 58°33' E, 10.v.1991, leg. Danilevsky (GenitalPräparat Heterocera: 28.220; MWM); 6 males, 5 females, same locality, 17.04.1993, leg. Hreblay, Laszlo & Podlussany (MWM); 1 male, Kopet-Dagh, Parkhay, 38°22' N, 56°13' E, 26.iv.1991, leg. Csorba, Fabian, Herczig, Hreblay & Ronkay (MWM); 1 male, Kara-Kum, Pavlan Kui, 12.vi.1972 (MWM); 3 males, 3 females, Ayakguzhumdy, 40 km E Dzging, Kyzylkum, 15.iv.1970, Falkovitch (ZISP); 12 males, 5 females, Turkmenistan, Kara-Kumy, 50 km N Ashkhabad, on the road to Bakhardok, 17.iv.1991, leg. V.V. Dubatolov (slide AN053, ISEA); 1 male, Western Kazakhstan, Mangystau Region, N scarp of the Kaudy depression, near the Kurbanbay Mt., 42°59' N 52°51' E, 19.v.2002, leg. V. Karalius & J. Miatleuski (slide AN052; RYB).

Redescription. Male. Length of fore wing 8–11 mm. Antenna about 2/3 of fore wing in length, setae (in medium third of antenna) 3–3.5 times longer than antenna stem in diameter. Tegulae and patagia, thorax and abdomen covered with light-brown scales. Fore wing brown; costal margin with wide creamy stroke with thin transverse brown hatches; narrow longitudinal creamy stroke in discal cell; small creamy spot in base of cubital cell; poorly expressed wavy brown pattern postdiscally and submarginally; border thin, brown; fringe mottled (brown at veins, creamy between veins). Hind wing light-brown, without pattern.

Male genitalia. Uncus triangular, apically acute; tegumen significantly wider than base of uncus; gnathos arms thick, relatively short; gnathos poorly structured, ribbon-like; valve relatively wide, with clearly expressed sacculus, apex of valve semicircular, membranous; costal edge of valve (on border between sclerotized and membranous portions) with distinctive semicircular process with uneven edge; transtilla process located very close to base of costal edge of valve, short, basally very thick, sharply narrowing to acute apex; juxta shaped as “Turkish saddle” with leaf-like lateral processes widely diverged to sides; saccus robust, semicircular; phallus equal to valve in length,

poorly curved throughout length, slightly narrowing from base to apex, vesica aperture in dorso-apical position (about third of phallus in length), vesica without cornuti.

Female. Length of fore wing 10–12 mm. Antenna bipectinate, setae (in medium third of antenna) twice longer than antenna stem in diameter. Colour slightly darker, light-coloured pattern less developed. Ovipositor very long.

Taxonomical remarks. The genitals are typical for the representatives of the nominative subfamily Cossinae, which is confirmed by a series of characteristic features (the valve divided into the sclerotized proximal and the membranous distal portion, the developed transtilla process, and the big bump developed on the costal margin of the valve). For the subfamily Catoptinae and the subfamily and genus *Catopta* Staudinger, 1899 (type species, by original designation, *Catopta albimacula* Staudinger, 1899) there are other characteristic apomorphies, the most important of which is the presence of small spiky cornuti in vesica (Yakovlev 2009). Thus, the opinion of Daniel (1961) is not confirmed. The species noticeably differs from other species of the genus in the more developed antennae (considering the length of antenna and its setae in relation to the stem diameter), and in the special structure of the transtilla process.



♀
bisil
an.

*Endagria
clathrata*
christoph, 1884
TYPE

кол. б. Вел. Кн.
Николая
Михайловича

E. clathrata
for Chi



USSR, Turkmenia, Kara Kum
desert, 100m, 50km N of
Ashkabad, 38° 22' N 58° 33' E
10.5.91 leg. Danielevsky



USSR, Turkmenia, Kara Kum
desert, 100m, 50km N of
Ashkabad, 38° 22' N 58° 33' E
10.5.91 leg. Danielevsky

Genitalpräparat
Heterocera
Nr. 28.220
Museum WTT München



Аякгужумды 40 км 0
Джинг. Кызылкум
Фалькович 15IV70



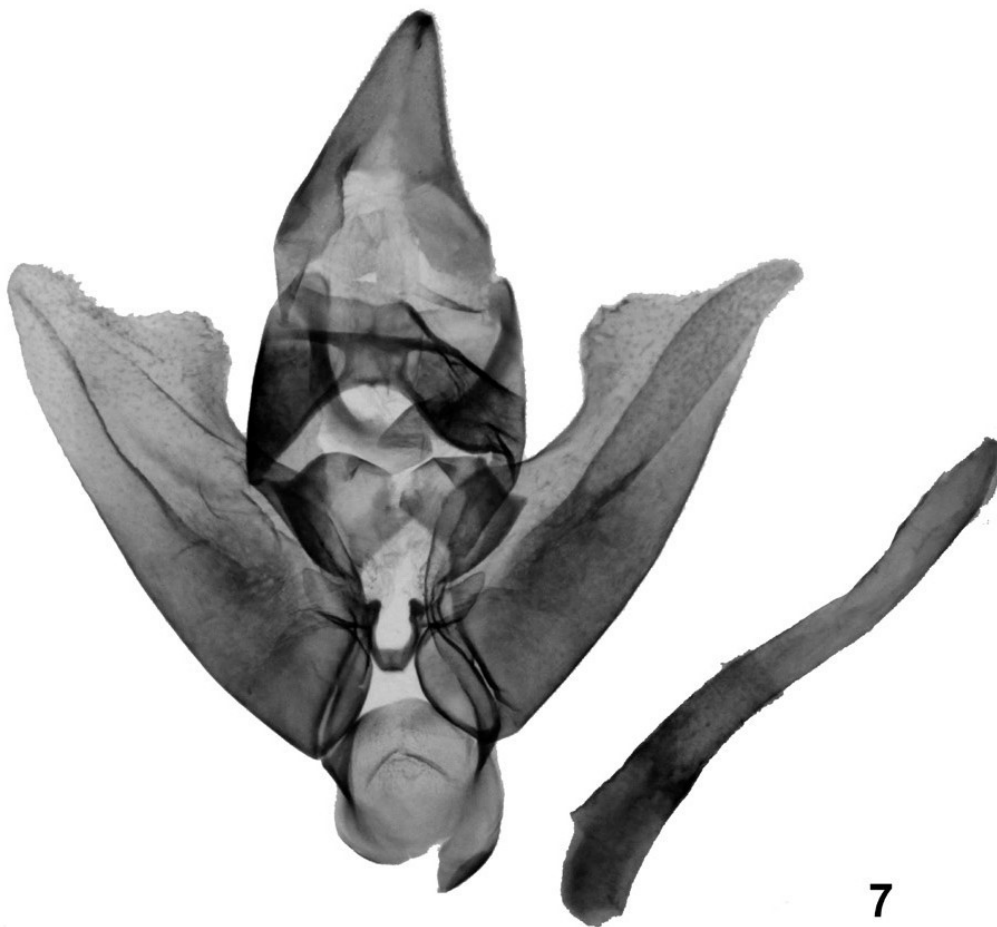
Kazakhstan - W., Mangystau dist.
N. scarp of the Kaundy depression
near the Kurganbay mt.
42°59' S 52°51' E, 19.05.2002
Leg. Karalius V. & Miatleuski J.



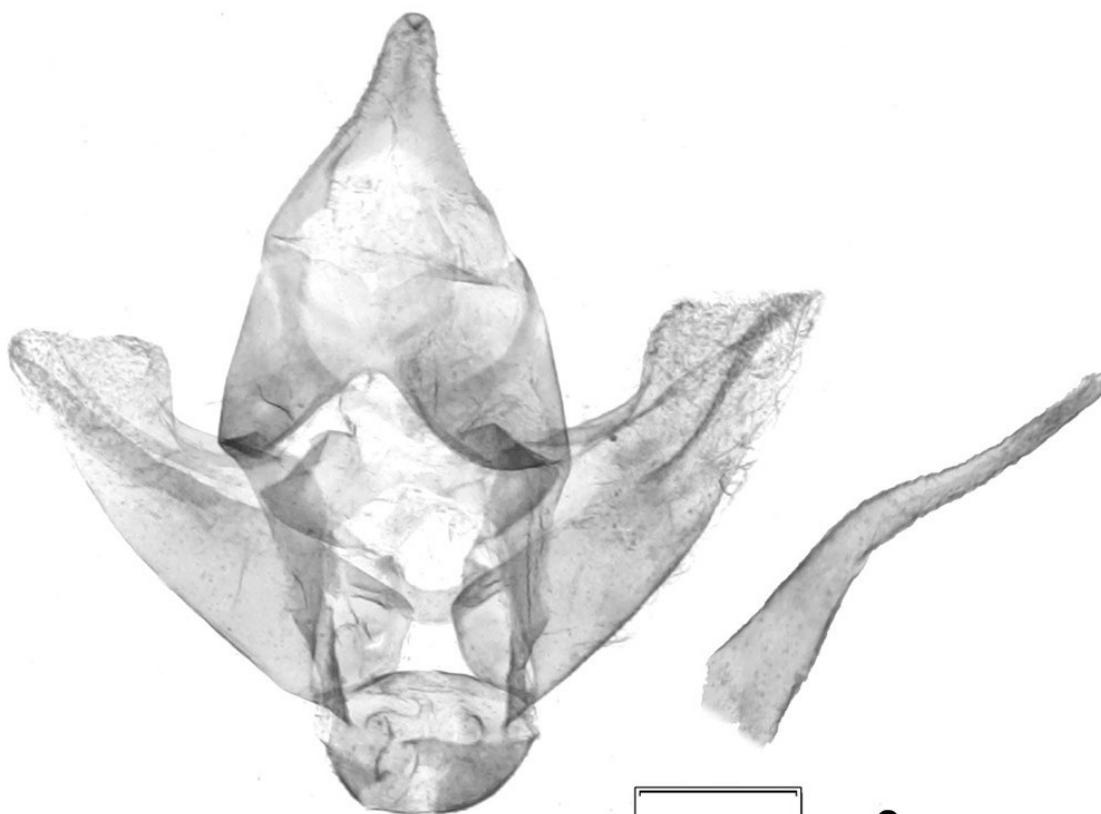
USSR, Turkmenia, Kara Kum
desert, 100m, 50km N of
Ashkabad, 38° 22' N 58° 33' E
10.5.91 leg. Danielevsky

Figure 1. Figures 1-6. *Semagystia clathrata* (Christoph, 1884), imago: 1. Female, Syntype (ZISP); 2. Male, Turkmenistan (MWM); 3. Male, Turkmenistan (MWM); 4. Male, Uzbekistan (ZISP), 5. Male, Kazakhstan (RYB); 6. Female, Turkmenistan (MWM).

Distribution: Turkmenistan, Uzbekistan (Daniel 1961; Krivokhatskyi 1985; Falkovich 1986; Weisert 1997), SW Kazakhstan (new record). The indication for Afghanistan (Daniel 1964, 1971) has not been confirmed by the study of the factual material (Yakovlev et al. 2015). Additionally, Schoorl (1990: 86) reported *S. clathrata* for Kyrgyzstan (Issyk-Kul) on the materials from NHMUK, but my research of the factual material from NHMUK and large new materials on Kyrgyzstan (including specimens from the Issyk-Kul lake shores), has not confirmed this finding. Thus, this species is an endemic of the deserts Kara-Kum and Kyzyl-Kum (Yakovlev & Dubatolov 2013; Yakovlev 2015).



7



0.5 mm

8

Figure 2. Figures 7–8. *Semagystia clathrata* (Christoph, 1884), male genitalia: 7. Turkmenistan (GenitalPräparat Heterocera: 28.220; MWM); 8. Kazakhstan (slide # slide AN052; RYB).

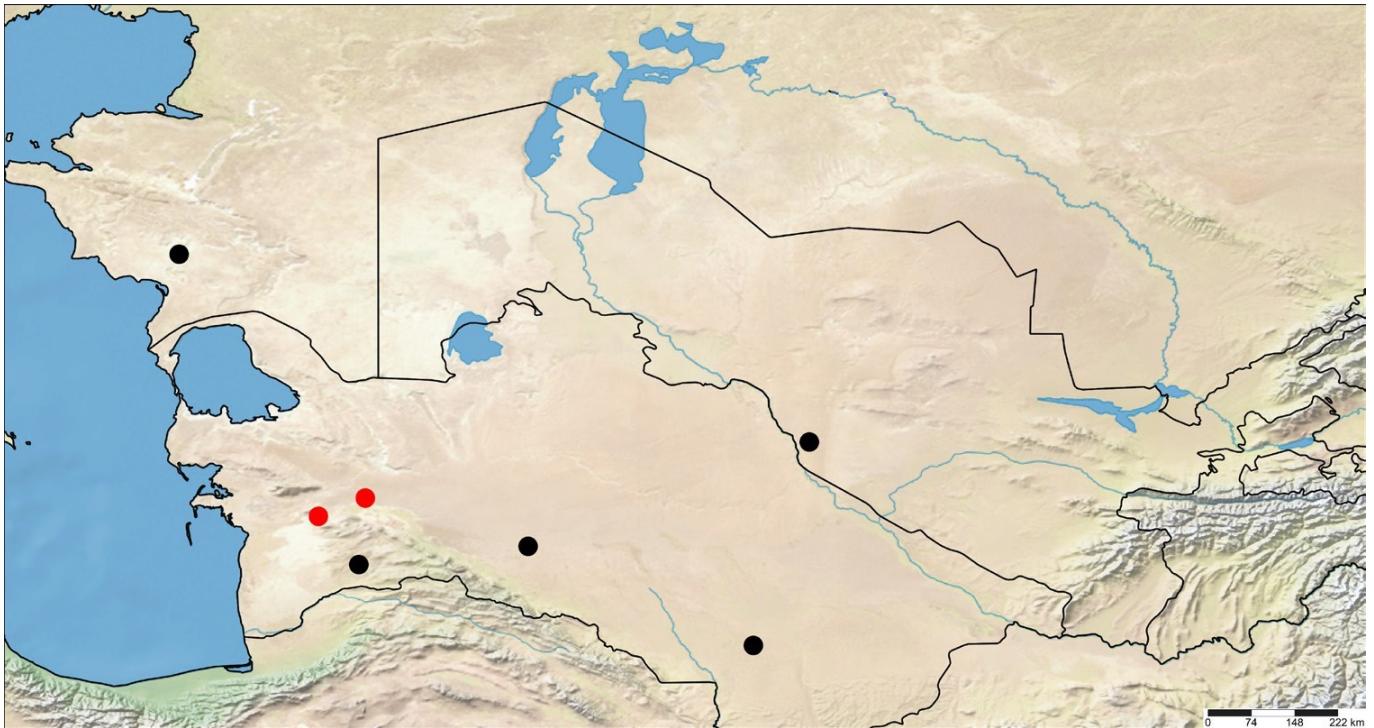


Figure 3. Figure 9. Map showing distribution of *Semagystia clathrata* (Christoph, 1884) (red circles - the type locality).

Acknowledgements

The authors are indebted to Mr. Thomas Witt† and Mr. Harald Sulak (Museum Witt, Munich), Sergei Sinev (Sankt-Petersburg), and Vladimir V. Dubatolov (Novosibirsk) for their kind assistance provided during the study of the deposited material, and to Anna Ustjuzhanina (Tomsk) for language improvements.

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

References

Christoph H (1884) Lepidoptera aus dem Achal-Tekke-Gebiete 1. Mémoires sur les Lépidoptères par N. M. Romanoff 1: 93–138.

Daniel F (1961) Monographie der palaearktischen Cossidae. V. Die Genera *Parahypopta* g.n., *Sinicossus* Clench und *Catopta* Stgr. Mitteilungen der Münchner Entomologischen Gesellschaft 51: 160–212.

Daniel F (1964) Cossidae aus Afghanistan (Lep.). Opuscula Zoologica 77: 1–8.

Daniel F (1971) Österreichische Expeditionen nach Persien und Afghanistan. Annalen des Naturhistorischen Museums in Wien 75: 651–660.

Falkovich MI (1986) Lepidoptera of remnant Kuldzhuktau mountains and the piedmont plain (southwestern Kyzylkum Desert). Fauna cheshuekrylykh (Lepidoptera) SSSR: 131–186, [in

Russian]

Krivokhatskyi VA (1985) Insects of Repetek. Cadastre of species. Ylym, Ashkhabad, 70 p. [in Russian]

Lafontaine JD, Mikkola K (1987) Lock-and-key system in the inner genitalia of Noctuidae(Lepidoptera) as taxonomic character. Entomologiske Meddelelser 55: 161–167.

Schoorl JW (1990) A phylogenetic study on Cossidae (Lepidoptera: Ditrysia) based on external adult morphology. Zoologische Verhandelingen 63: 4–295.

Seitz A (1912) Die Gross-Schmetterlinge der Erde. Die palaearktischen Spinner & Schwärmer. Alfred Kernen, Stuttgart, 479 s.

Weisert F. (1997) Österreichische Turkmenistan-Expedition 1993 und 1996. Zeitschrift der Arbeitsgemeinschaft österreichischer Entomologen 49: 65–70.

Yakovlev RV (2009) Catoptinae subfam. n. is a new subfamily of Carpenter-Moths (Lepidoptera, Cossidae). Zoologicheskii Zhurnal 88 (10): 1207–1212. [in Russian]

Yakovlev RV (2011) Catalogue of the Family Cossidae of the Old World. Neue Entomologische Nachrichten, 66, 1–129.

Yakovlev RV (2015) Patterns of Geographical Distribution of Carpenter Moths (Lepidoptera: Cossidae) in the Old World. Contemporary Problems of Ecology 8 (1): 36–50.
<https://doi.org/10.1134/S1995425515010151>

Yakovlev RV, Dubatolov VV (2013) Distribution of Carpenter-Moths (Lepidoptera, Cossidae) in the Palaeractic Deserts. Entomological Review 93 (8): 991–1004

Yakovlev RV, Pljustch IG, Skrylnik Yu, Pak O, Witt Th (2015) The Cossidae (Lepidoptera) of Afghanistan with description of three new species and special notes on the fauna of Bande-Amir National Park. Zootaxa 3990 (1): 41–72. <https://doi.org/10.11646/zootaxa.3990.1.3>

Yakovlev RV, Witt TJ (2016) Carpenter-moths of Turkmenistan (Lepidoptera: Cossidae). Biological Bulletin of Bogdan Chmelnitskiy Melitopol State Pedagogical University 6(3): 164–173.