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Two new records of the genus *Idaea* Treitschke, 1825 (Lepidoptera: Geometridae: Sterrhinae) for Iran

DOMINIC WANKE[1,2*], PEDER SKOU[3] & HOSSEIN RAJAEI[1,4]
[1]*State Museum of Natural History Stuttgart, Rosenstein 1, D-70191 Stuttgart, Germany.*
[2]*Center of Excellence for Biodiversity and Integrative Taxonomy (KomBioTa), Wollgrasweg 23, D-70599, Stuttgart, Germany.*
[3]*Aamosen 1, Ollerup, DK-5762 Vester Skerninge, Denmark*
pederskou1@gmail.com; https://orcid.org/0009-0009-2526-986X
[4] *hossein.rajaei@smns-bw.de; https://orcid.org/0000-0002-3940-3734*
[*]*Corresponding author: dominic.wanke@smns-bw.de; https://orcid.org/0000-0001-5390-8993*

Abstract

Two species, *Idaea admiranda* Hausmann, 2004 and *Idaea subsericeata* (Haworth, 1809) are reported as new faunal elements for Iran. Wing pattern and genitalia structures of both species are depicted and their diagnostic characters are highlighted.

Key words: *Idaea admiranda*, *Idaea subsericeata*, Middle East, Sterrhini

Introduction

The genus *Idaea* Treitschke, 1825 is besides *Eupithecia* Curtis, 1825 (Larentiinae) and *Scopula* Schrank, 1802 (Sterrhinae) the third most species-rich genus within the family Geometridae (Rajaei *et al.* 2022). Today this genus contains globally 1,084 distributed species (Rajaei *et al.* 2022; Cheng *et al.* 2023). Until now 43 species of this genus have been catalogued for Iran (Rajaei *et al.* 2023), of which three are endemic to the country. During the investigation of material collected from Iran, a series of specimens turned out to belong to the species *Idaea admiranda* Hausmann, 2004. This species described from Turkey is only known based on several isolated records from Turkey and the western Caucasus (Hausmann 2004; Koçak & Kemal 2018; Koyuncu & Kutuk 2021; Tezcan *et al.* 2022). Furthermore, one specimen was identified as *Idaea subsericeata* (Haworth, 1809), a species with a West Palearctic distribution (Hausmann 2004). It is present in northern Africa and in Europe with a more southern, western, and central distribution (from Portugal to western Germany, in Great Britain and Ireland, from Italy to western Turkey) and also reported from the Middle East (Hausmann 2004; Aykal & Seven 2022; Seven 2023). Hausmann (2004) regarded the reports of this species from the Caucasus, Transcaucasus and northern Iran as doubtful as they most likely refer to misidentified specimens. Ustjuzhanin *et al.* (2022) confirmed *I. subsericeata* as a faunal element for the Northeastern Caucasus. Here we present new records of these two species for Iran based on the examination of external and internal morphological characters.

Material and methods

Examined specimens are deposited in the following collections: PCPS—Private collection of Peder Skou, Vester Skerninge, Denmark; SMNK—Staatliches Museum für Naturkunde Karlsruhe, Germany.

Morphological examination. Specimens were photographed externally using an Olympus E3 digital camera. For the genitalia dissection, standard techniques were used (Robinson 1976) and vesica was everted according to the protocol provided by Sihvonen (2001). Genitalia were embedded in Euparal as permanent slides and a Keyence VHX-5000 microscope was used for their photography.

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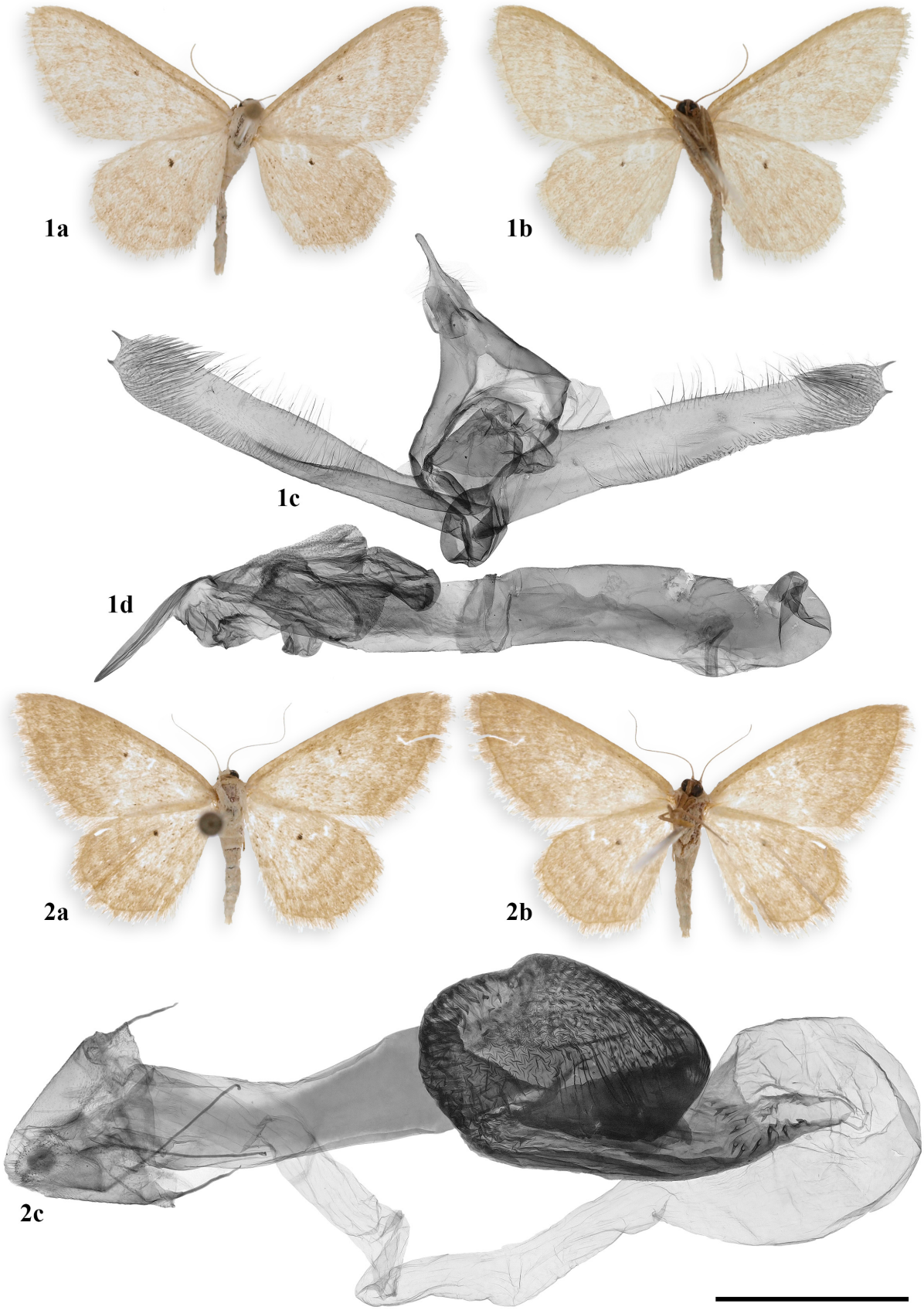

FIGURES 1–2. Wing pattern and genitalia structures of a male (1) and female (2) specimen of *Idaea admiranda* Hausmann, 2004. 1: Iran, Esfahan, g. prep. 1101/2021 D. Wanke; 2: Iran, Esfahan, g. prep. 1102/2021 D. Wanke. a=dorsal view; b=ventral view; 1c=male genitalia capsule genitalia; 1d=aedeagus; 2c= female genitalia; Scale bar for wing pattern 1 cm; scale bar for genitalia structures 1 mm.

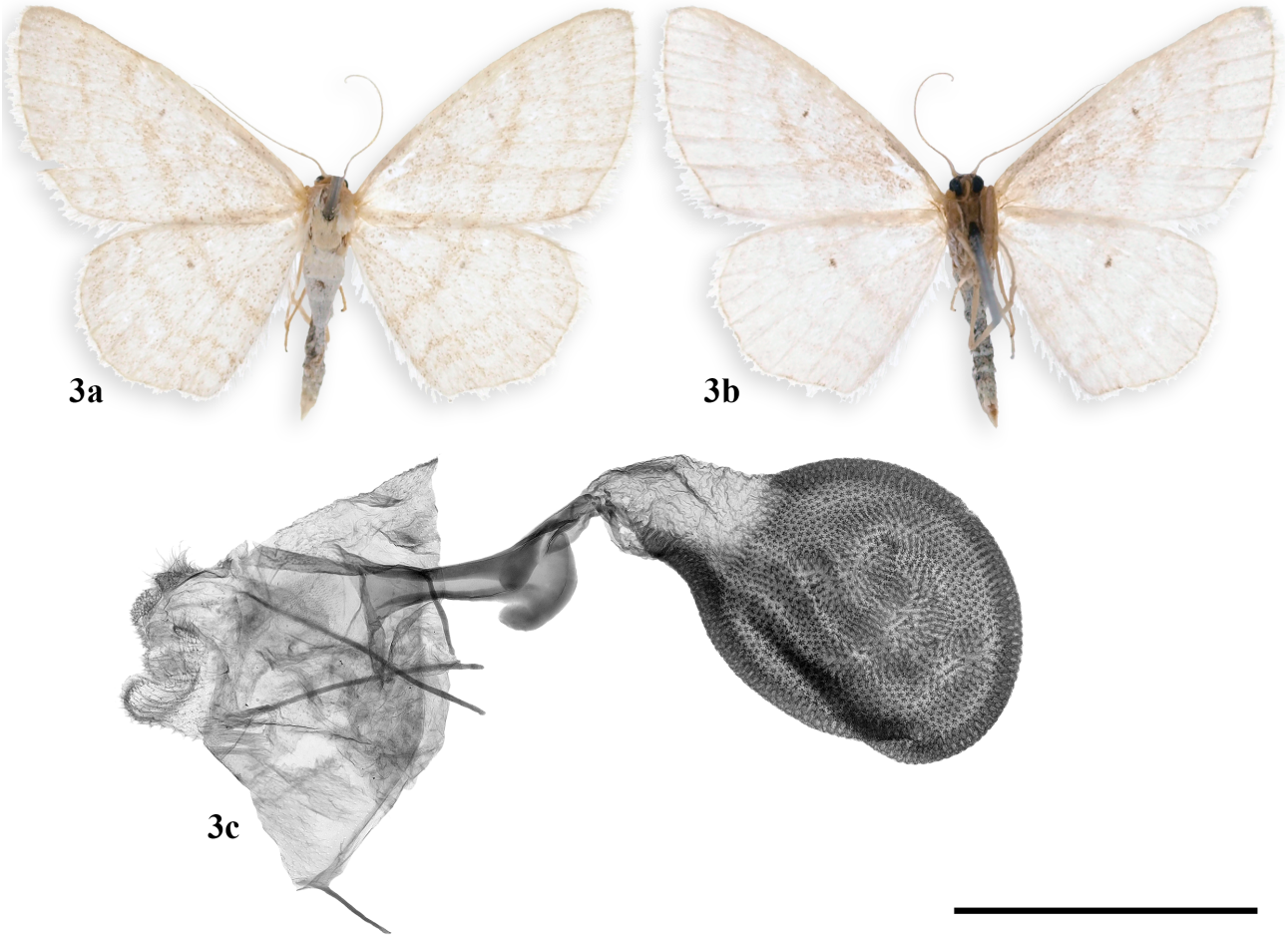

FIGURE 3. Wing pattern and genitalia structures of a female specimen of *Idaea subsericeata* (Haworth, 1809). (W–Iran, Kordestan g. prep. 1101/2021 D. Wanke; 2: Iran, Esfahan, g. prep. 1110/2021 D. Wanke). a=dorsal view; b=ventral view; c= female genitalia; Scale bar for wing pattern 1 cm; scale bar for genitalia structures 1 mm.

Results and Discussion

Idaea admiranda Hausmann, 2004

Material examined. 3 ♂, 1 ♀, Iran, prov. Esfahan, Zagros mts., Feridun Shar, Kamaran, val., 2770 m, N 32°45', E 49°59', 11.vii.2003, lux, leg. G. Ebert & R. Trusch, g.preps (♂) 0843/2020, 1096/2021, 1101/2021 D. Wanke (♀) 1102/2021 D. Wanke; 3 ♂, 1 ♀, Iran, prov. Chahar Mahal, Zagros mts. NW Samsami, 2800 mNN, N 32°09', E050°11', 13.vii.2003 (lux), leg. G. Ebert & R. Trusch, g. preps (♂) 0849/2020, 1104/2021 D. Wanke (♀) 1105/2021 D. Wanke; 1 ♂, W–Iran, Kordestan, Ariz, 27 km W Sanandaj, 10.vii.1975, 2200 m, leg. Ebert & Falkner, 1124/2021 D. Wanke; all in SMNK. 1 ♂, NW Iran, Provinz Lorestan, ca. 10 km SE Dorud, Oshtoran Kuh-Westmassiv, 1700–1800 m, 1.-3.vi.2001, leg. de Freina, g. prep. 1332/2024 D. Wanke; in PCPS.

Diagnosis. Based on external characters this species can easily be confused with *I. rufaria* (Hübner, 1799), *I. consanguinaria* (Lederer, 1853) and *I. ochrata* (Scopoli, 1763). As all of these species are present in Iran (Hausmann 2004; Rajaei *et al.* 2023), a diagnosis of *I. admiranda* is given here and compared against these three species.

Ground colour sandy yellow, discal spots present (sand, ochreos or light brown coloured, discal spots present in *I. rufaria*; similar in *I. consanguinaria*, but ground colour more leather coloured; light brown with an orange or reddish tinge, discal spots absent in *I. ochrata*) (figs 1–2; and Hausmann 2004: pages 63–64, 66–69, 75–76; plate 3). In male genitalia valva with two spines at the tip (with one spine at the tip in *I. rufaria*; without any spine in *I. consanguinaria*; with one hook at the tip on the ventral side in *I. ochrata*); aedeagus very large, cornutus about one third of the aedeagus length (short, cornutus about half the aedeagus length in *I. rufaria*; cornutus about two third of

the aedeagus length in *I. consanguinaria* and *I. ochrata*) (figs 1–2; and Hausmann 2004: pages 493, 494). In female genitalia ductus bursae long and broad, corpus bursae slightly twisted with spines and membranous broad process (ductus bursae similar, corpus bursae elongate with spines and membranous process without spines in *I. rufaria*; ductus bursae funnel shaped, corpus bursae globular with spines, with membranous process in *I. consanguinaria*; ductus bursae long and slender, corpus bursae globular, without membranous process in *I. ochrata*) (figs 1–2; and Hausmann 2004: pages 527, 528).

Note. As for Turkey and the Caucasus (see introduction), this species is only known from isolated records in Iran.

Idaea subsericeata (Haworth, 1809)

Material examined. 1 ♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 30.–2.vii.1975, 1950 m, leg. Ebert & Falkner, g. prep. 1110/2021 D. Wanke; in SMNK.

Diagnosis. Based on external characters this species can easily be confused with *I. litigiosaria* (Boisduval, 1840), *I. mutilata* (Staudinger, 1879), *I. ossiculata* (Lederer, 1870) and *I. pallidata* ([Denis & Schiffermüller], 1775) (Hausmann 2004). Among these only *I. ossiculata* is present in Iran while *I. pallidata* is known from the Caucasus and Transcaucasus (Hausmann 2004; Rajaei *et al.* 2023). A diagnosis is given here for *I. subsericeata* and compared against *I. ossiculata* and *I. pallidata*.

Ground color white, slightly glossy, discal spots and fringe dots tiny (white, less glossy, discal spots and fringe dots absent in *I. pallidata*; sandy coloured, discal spots and fringe dots small *I. ossiculata*) (fig. 3; and Hausmann 2004: pages 70–71, 172–173, 175–176; plate 3, 10). In female genitalia ductus bursae slender, membranous appendix and corpus bursae completely densely spinulose (ductus bursae broad, without membranous appendix, corpus bursae completely densely spinulose in *I. pallidata*; ductus bursae broad, without membranous appendix, corpus bursae not completely filled with spines in *I. ossiculata*) (fig. 3; and Hausmann 2004: pages 528, 535).

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References

Aykal, A. & Seven, E. (2022) The geometrid moths (Lepidoptera) of the ancient city Hasankeyf (Batman) and a new species for the Turkish fauna. *Trakya University Journal of Natural Sciences*, 23 (1), 81–94. https://doi.org/10.23902/trkjnat.1023345

Cheng, R., Xue, D.Y., Jiang, N. & Han, H.X. (2023) Review of the *Idaea proximaria* complex (Lepidoptera, Geometridae, Sterrhinae) with descriptions of four new species. *Zookeys*, 1169, 293–305. https://doi.org/10.3897/zookeys.1169.106815

Hausmann, A. (2004) *The Geometrid Moths of Europe. Vol. 2. Sterrhinae*. Apollo Books, Stenstrup, 600 pp. https://doi.org/10.1163/9789004322554

Koçak, A.Ö. & Kemal, M. (2018) Synonymous and distributional list of the species of the Lepidoptera of Turkey. *Centre for Entomological Studies Ankara Memoirs*, Cesa 8, 1–487.

Koyuncu, M.O. & Kutuk, M. (2021) Research on the Geometridae (Lepidoptera) fauna of Adiyaman, Malatya and Şanliurfa provinces. *Fresenius Environmental Bulletin*, 30 (6), 7309–7320.

Rajaei, H., Aarvik, L., Arnscheid, W.R., Baldizzone, G., Bartsch, D., Bengtsson, B.Å., Bidzilya, O., Buchner, P., Buchsbaum, U., Buszko, J., Dubatolov, V.V., Erlacher, S., Esfandiari, M., Freina, J.J. De, Gaedike, R., Gyulai, P., Hausmann, A., Haxaire, J., Hobern, D., Hofmann, A., Ignatev, N., Kaila, L., Kallies, A., Keil, T., Kiss, Á., Kitching, I.J., Kun, A., László, G.M., Leraut, G., Mally, R., Matov, A., Meineke, J.-U., Melichar, T., Mey, W., Mironov, V., Müller, B., Naderi, A., Nässig, W.A., Naumann, S., Nazari, V., Nieukerken, E.J. Van, Nuss, M., Pöll, N., Prozorov, A.M., Rabieh, M.M., Rákosy, L., Rindoš, M., Rota, J., Rougerie, R., Schintlmeister, A., Shirvani, A., Sihvonen, P., Simonsen, T.J., Sinev, S.Yu., Skou, P., Sobczyk, T., Sohn, J.-C., Tabell, J., Tarmann, G., Tokár, Z., Trusch, R., Varga, Z., Volynkin, A.V., Wanke, D., Yakovlev, R.V., Zahiri, R., Zehzad, P., Zeller, H.C., Zolotuhin, V.V. & Karsholt, O. (2023) Catalogue of the Lepidoptera of Iran. *In*: Rajaei, H. & Karsholt, O. (Eds.), Lepidoptera Iranica. *Integrative Systematics*, 6 (Special Issue), pp. 121–459.

https://doi.org/10.18476/2023.997558.7
Rajaei, H., Hausmann, A., Scoble, M., Wanke, D., Plotkin, D., Brehm, G., Murillo-Ramos, L. & Sihvonen, P. (2022) An online taxonomic facility of Geometridae (Lepidoptera), with an overview of global species richness and systematics. *Integrative Systematics*, 5 (2), 145–192.
https://doi.org/10.18476/2022.577933
Robinson, G.S. (1976) The preparation of slides of Lepidoptera genitalia with special reference to the Microlepidoptera. *Entomologist's Gazette*, 27, 127–132.
Seven, E. (2023) An extensive study on Macro-Heterocera (Lepidoptera) fauna of the Botan Valley National Park, Türkiye. *Middle East Journal of Science*, 9 (1), 1–15.
https://doi.org/10.51477/mejs.1027530
Sihvonen P. (2001) Everted vesicae of the *Timandra griseata* group: methodology and differential features (Geometridae, Sterrhinae). *Nota lepidopterologica*, 24 (3), 57–63.
Tezcan, S., Can, F. & Karsavuran, Y. (2022) Contributions to the Lepidoptera fauna of Turkey based on specimens present in the Lodos Entomological Museum, Turkey (LEMT) Part I: Bombycoidea, Cossoidea, Geometroidea, Zygaenoidea. *Munis Entomology & Zoology*, 17 (supplement), 1700–1708.
Ustjuzhanin, P.Y., Teimurov, A.A., Anikin, V.V., Matov, A.Y., Naydenov, A.E., Streltsov, A.N., & Yakovlev, R.V. (2022) Materials on the Lepidoptera fauna of the Dagestan Republic (Northeastern Caucasus, Russia): autumn aspect (Insecta: Lepidoptera). *SHILAP Revista De lepidopterología*, 50 (198), 213–228.
https://doi.org/10.57065/shilap.125