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Systematics and integrative taxonomic revision of the tribe Scopulini Duponchel, 1845 in Iran (Lepidoptera: Geometridae: Sterrhinae)

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Abstract

The Iranian taxa of the tribe Scopulini are taxonomically revised. The systematic positions of the genera *Cinglis* Guenée, 1858, *Glossotrophia* Prout, 1913, *Pseudocinglis* Hausmann, 1994 and *Scopuloides* Hausmann, 1994, with uncertain validity and/or position within the tribe Scopulini Duponchel, 1845 (Lepidoptera: Sterrhinae), are further elucidated by use of one mitochondrial and up to nine protein-coding nuclear gene regions. Available type specimens of the described species and more than 2,600 additional specimens were morphologically investigated. In addition, over 400 genitalia preparations were made and examined together with distribution data and DNA barcodes. As a result of the multi-gene analysis, the genera *Cinglis* **stat. rev.** and *Scopuloides* **stat. rev.** are re-validated at the genus level. The genus *Pseudocinglis* **syn. nov.** is regarded as a junior synonym of the genus *Cinglis* **stat. rev.** and *Glossotrophia* **syn. nov.** is regarded as a junior synonym of the genus *Scopula*. *Cinglis eurata* (Prout, 1913) **comb. nov.** and *Cinglis benigna* (Brandt, 1941) **comb. nov.** are combined with the genus *Cinglis*. Additionally, *Cinglis benigna amseli* (Wiltshire, 1967) **syn. nov.** is regarded as a synonym of *C. benigna*. *Scopula adulteraria* (Erschov, 1874) **stat. nov.** is raised from subspecies to species rank; *Scopula iranaria* Bytinski-Salz & Brandt, 1937 **syn. nov.** is synonymized with *S. flaccidaria* (Zeller, 1852); *S. transcaspica taftanica* Brandt, 1941 **syn. nov.** is synonymized with *S. transcaspica* Prout, 1935; *S. diffinaria asiatica* (Brandt, 1938) **syn. nov.** is synonymized with *S. diffinaria* (Prout, 1913) and *Glossotrophia bullata* Vojnits, 1986 **syn. nov.** is synonymized with *Scopula sacraria ariana* (Ebert, 1965). The female genitalia of *Scopula lactarioides* Brandt, 1941 are described and illustrated for the first time. In total, the presence of 33 species of Scopulini in Iran is confirmed. Wing patterns, male and female genitalia and diagnostic characters of most Iranian Scopulini species are depicted and their distribution ranges are mapped.

Key words: *Cinglis*, DNA barcoding, Middle East, new combinations, new synonyms, *Problepsis*, *Pseudocinglis*, *Scopula*, *Scopuloides*, *Somatina*, *Zygophyxia*

Introduction

The tribe Scopulini, with over 900 described species worldwide, represents the largest tribe within the subfamily Sterrhinae in Geometridae (Hausmann 2004; Sihvonen 2005a; Sihvonen *et al.* 2020). In total, 794 of these species belong to the genus *Scopula* Schrank, 1802, making this genus the second largest genus in Geometridae after *Eupithecia* Curtis, 1825 (Covell 1970; Hausmann 2004; Sihvonen *et al.* 2020; Rajaei *et al.* 2022). Species of the genus *Scopula* are found on all continents except Antarctica and inhabit different habitat types (Sihvonen 2001).

Despite the high diversity of the Scopulini tribe, only a minority (~3.6%) of the species have been reported for Iran (Hausmann 2004; Sihvonen 2005a; Rajaei *et al.* 2022). However, Iran harbors some taxa that are endemic to the country (e.g., some species of the genera *Cinglis* and *Scopuloides*), representing an important part of this extraordinary fauna and highlighting that the country is an important biodiversity hotspot for these taxa compared to other countries in the Middle East. Similar patterns have been demonstrated for other geometrid genera, e.g., *Phaselia* Guenée, 1858, *Nychiodes* Lederer, 1853 and *Gnopharmia* Staudinger, 1892 (Rajaei *et al.* 2012; Wanke *et al.* 2020; Werner *et al.* 2023).

In the most updated list of Iranian Lepidoptera, Rajaei *et al.* (2023a) listed 42 species under the tribe Scopulini, classified within four genera: *Zygophyxia* Prout, 1916, *Cinglis* Guenée, 1858, *Scopula* Schrank, 1802 and *Problepsis* Lederer, 1853.

Sihvonen (2005a) regarded the genera *Cinglis*, *Pseudocinglis* Hausmann, 1994, *Scopuloides* Hausmann, 1994, *Zygophyxia* and *Glossotrophia* Prout, 1913 as junior synonyms of *Scopula*, and listed seven valid genera for the tribe Scopulini.

Among these genera, the status of *Glossotrophia* had been re-examined in the past by several authors (e.g., Hausmann 2004; Sihvonen 2005a; Õunap 2010; Müller et al 2019). Hausmann (1993; 2004) validated it at genus level based on the number of spurs on the female hindtibia, the extremely long proboscis in most species, the association with Caryophyllaceae as larval host plants and imaginal nectar source, the dark terminal line around the apex of the forewing, the long basal process of sternum A8 and the shape of the fibula in the male genitalia. Nonetheless, Hausmann (2004) recommended a large-scale analysis of this genus and its relatives for clarification of its status. Conducting a cladistic analysis of the tribe Scopulini based on morphology and a global taxon sampling, Sihvonen (2005a) regarded *Glossotrophia* and numerous other small genera as junior synonyms of *Scopula*, as the suggested synapomorphies appeared to be homoplastic. This classification also avoided paraphyly in the genus *Scopula* (Sihvonen 2005a). Õunap (2010) followed the treatment of Hausmann (2004) and stated the importance of molecular phylogenetic studies to solve this question. Müller *et al.* (2019) listed *Glossotrophia* as

a subgenus of *Scopula* in the checklist of Geometrid moth of Europe, followed by Rajaei *et al.* (2022). In recent molecular phylogenetic studies on Sterrhinae moths by Sihvonen *et al.* (2020), material for *Glossotrophia*, *Cinglis*, *Pseudocinglis* and *Scopuloides* was not available. In order to better understand the systematics of these genera and to complement the morphological hypotheses, it is of great importance to include them in future molecular studies.

As the Scopulini genera *Cinglis*, *Glossotrophia*, *Pseudocinglis* and *Scopuloides* are represented in Iran, and as most Iranian species of this tribe, like its south-western Asiatic species need revision (Hausmann 2004), the present study has two aims: (1) to clarify the taxonomic status and systematic position of the genera *Glossotrophia*, *Cinglis*, *Pseudocinglis* and *Scopuloides* and (2) to conduct a taxonomic revision of the Iranian species of the Scopulini.

To achieve these goals, we (1) applied a multi-gene phylogenetic analysis, utilising mitochondrial and nuclear genes and (2) focused on morphological characters, combined with distribution data and DNA barcoding, to revise the species in the investigated region.

Material and Methods

Type material and additional specimens were borrowed from the following collections (acronyms are listed in Evenhuis 2007, as far as included):

IZBE—Institute of Zoology and Botany of the Academy of Sciences, Tartu, Estonia;
LSL—Linnean Society of London, United Kingdom;
MNCN—Museo Nacional de Ciencias Naturales, Madrid, Spain;
MNHU—Museum für Naturkunde der Humboldt-Universität, Berlin, Germany;
MSNT—Museo Regionale di Scienze Naturali, Torino, Italy;
NHMUK—Natural History Museum London, United Kingdom;
NHMV—Natural History Museum Vienna, Austria;
NHRS—Naturhistoriska Riksmuseet, Stockholm, Sweden;
NMSZ—National Museums of Scotland, Edinburgh, United Kingdom;
OUM—Oxford University Museum of Natural History, United Kingdom;
PCJM—Private collection of Jörg-Uwe Meineke, Kippenheim, Germany;
PCPS—Private collection of Peder Skou, vester Skerninge, Denmark;
SMNK—Staatliches Museum für Naturkunde Karlsruhe, Germany;
SMNS—Staatliches Museum für Naturkunde Stuttgart, Germany;
SNSB/ZSM—Zoologische Staatssammlung München, Germany;
TMB—Termeszettudomanyi Muzeum Allattara, Budapest, Hungary;
USNM—National Museum of Natural History, Smithsonian Institution, Washington DC, USA;
UZIU—Universitets Zoologiska Institut, Uppsala, Sweden;
ZFMK—Zoologisches Forschungsmuseum Alexander Koenig, Bonn, Germany;
ZISP—Zoological Institute, Russian Academy of Sciences, Saint-Petersburg, Russia;
ZMUC—Zoological Museum, University of Copenhagen, Denmark.

Morphological examination. Type specimens and original descriptions were examined for a critical review and understanding of the diagnostic characters of each species. Additionally, large series of additional specimens from different localities were investigated and identified. For the documentation of external characters, a Visionary Digital photography system (LK Imaging System, Dun. Inc.) equipped with a Canon EOS 5DSR as well as an Olympus E3 digital camera, were used. Preparation of genitalia was carried out following standard techniques (e.g., Robinson 1976). The vesica was everted according to Sihvonen (2001) and embedded in Euparal on a permanent slide. When necessary, genitalia structures were investigated using the methods proposed by Wanke & Rajaei (2018) and Wanke *et al.* (2019, 2021a). A Keyence VHX-5000 was used for genitalia photography.

Distribution Map preparation. Geographical coordinates were traced using 'Google Earth Pro' (vers. 7.3.1.4507 for Mac). Obscure localities were traced using Noori *et al.* (2023). Distribution patterns were plotted and prepared in QGIS (vers. 2.18.15 for Mac). For the preparation of the elevation profile in QGIS, Global Multi-resolution Terrain Elevation Data 2010 (GMTED2010) was used (downloaded from https://earthexplorer.usgs.gov).

Molecular techniques. DNA extraction and amplification of the barcode fragment (658 base-pairs of the 5' terminus) of the mitochondrial Cytochrome-C Oxidase I (COI) gene of *Scopula* species were carried out at the Canadian Centre for DNA barcoding (CCDB, Guelph) in the framework of the Lepidoptera Campaign of the International Barcode of Life program (iBOL; www.lepbarcoding.org), using either a special protocol for old museum specimens based on Next-Generation-Sequencing (Prosser *et al.* 2016; Hausmann *et al.* 2016a) or using standard protocols (e.g., Ivanova *et al.* 2006).

Extraction of genomic DNA from the species *Cinglis humifusaria* (Eversmann, 1837), *Pseudocinglis benigna* (Brandt, 1941), *Scopuloides fucata* (Püngeler, 1909), *Scopula sacraria* (Bang-Haas, 1910), *Scopula diffinaria* (Prout, 1913) and *Scopula chalcographata* (Brandt, 1938) was carried out at the molecular laboratory of the State Museum of Natural History Stuttgart. The whole abdomen or a leg from a single dry specimen were used following the manufacturer's protocol of the DNeasy Blood and Tissue kits (Qiagen, Hilden, Germany). DNA amplification was conducted following the protocols of Wahlberg & Wheat (2008) and Wahlberg *et al.* (2016). Genomic DNA of a single specimen of *Scopuloides fucata* was extracted at the molecular laboratory of the Finnish Museum of Natural History "Luomus", Helsinki) using the same kit. DNA amplification and sequencing were carried out following protocols proposed by Wahlberg & Wheat (2008) and Wahlberg *et al.* (2016).

We amplified one mitochondrial COI gene and, when possible, up to nine protein-coding nuclear gene regions: Ribosomal Protein S5 (RpS5), wingless (wgl), cytosolic malate dehydrogenase (MDH), glyceraldehydes-3-phosphate dehydrogenase (GAPDH), Elongation factor 1 alpha (EF-1alpha), Arginine Kinase (ArgK), Isocitrate dehydrogenase (IDH), sorting nexin-9-like (Nex9) and sarco/endoplasmic reticulum calcium ATPase (Ca-ATPase).

COI data analysis. All specimens used for COI analysis are given in Supplementary Table S1 with their taxon identification, sample ID and process ID numbers. Their sequences and metadata are accessible on BOLD in the public dataset DS-SCOPIRAN (doi: https://dx.doi.org/10.5883/DS-SCOPIRAN). For calculation of the within-group mean distances of the available 86 taxa, the software MEGA X (Kumar *et al.* 2018) (K2P model: Kimura 1980) was used. Distances are given in Supplementary Table S2.

Phylogenetic analysis. We ran maximum likelihood analyses with a dataset partitioned by codon position. Best-fitting substitution models were selected by ModelFinder (Kalyaanamoorthy *et al.* 2017). The analyses were conducted in RAxML-HPC2 V.8.2.12 (Stamatakis 2014) and implemented on the Web-server CIPRES Science Gateway (Miller *et al.* 2010) using the GTR+CAT option. Support for nodes was evaluated with 1000 rapid bootstrap (RBS) in RAxML (Stamatakis 2008). The final data set included 35 taxa, with up to ten gene markers per taxon. The length of the alignment included 6,800 sites. Trees were visualized and edited in FigTree v1.4.3 software (Rambaut 2012). The final trees were rooted with *Lissoblemma hamularia* (Snellen, 1872), following previous hypotheses proposed by Sihvonen *et al.* (2020). GenBank accession numbers of the specimens used in this study are provided in the Supplementary Table S3.

Results & Discussion

Systematics

Three genes from a single specimen of *Cinglis humifusaria*, seven genes from a single specimen of *Pseudocinglis benigna*, six genes from a single specimen of *Scopuloides fucata*, six genes from a single specimen of *Scopula* (*Glossotrophia*) *diffinaria*, five genes from a single specimen of *Scopula* (*Glossotrophia*) *sacraria* and two genes from a single specimen of *Scopula* (*Glossotrophia*) *chalcographata* were successfully amplified and sequenced (see Supplementary Table S2). According to the results of the multi-gene molecular phylogenetic analysis, the species of *Glossotrophia* clustered within the genus *Scopula*, supporting the synonymy proposed by Sihvonen (2005a) (Plate 1). The topology of the phylogenetic tree (Plate 1) shows that species of *Glossotrophia* group together and do not intermix with other *Scopula* species, as was the case in a previous morphological analysis (Sihvonen 2005a).

The phylogenetic results from our analysis of the other genera (*Cinglis*, *Pseudocinglis* and *Scopuloides*) could be converted into a formal classification in a number of ways. One of these options could include a treatment of these three genera as part of *Scopula*, as the RBS support for considering these as separate lineages was poor (Stamatakis 2008), supporting the hypothesis of Sihvonen (2003, 2005a), who treated all three as synonyms of *Scopula*. Furthermore, the common branch of *Cinglis*, *Pseudocinglis*, *Scopuloides* and *Scopula*, with an RBS value of 73, is not well supported either (Stamatakis 2008). An alternative classification could be to treat *Cinglis* as a valid genus, with *Pseudocinglis* and *Scopuloides* as its junior synonyms. However, on the basis of morphological

characters, *Cinglis* and *Pseudocinglis* have more in common than each of them has with *Scopuloides*, which allows a separation of these genera (e.g., Hausmann 1994).

The phylogenetic analysis allows the treatment of *Cinglis* **stat. rev.** as a valid genus, with *Pseudocinglis* **syn. nov.** as its junior synonym. This hypothesis is supported by morphology, as species of both genera share the following characters: wing venation; in the male genitalia: socii are connected by a sclerite; aedeagus bearing one cornutus; 8th sternite with concave anterior margin; in the female genitalia: sterigma with a circular sclerite around the ostium bursae; absence of a signum; presence of a lateral sclerite in the corpus bursae (Hausmann 2004).

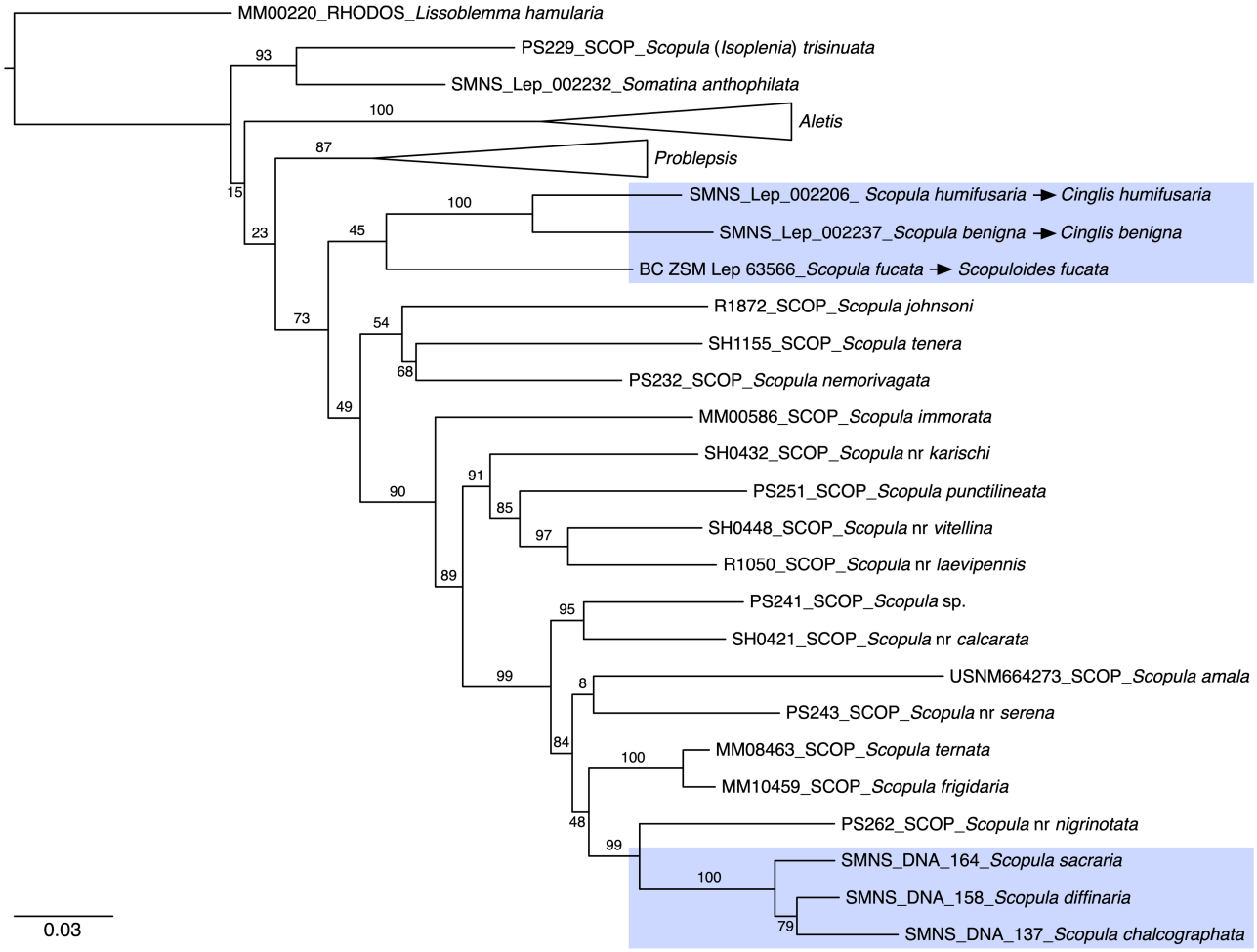


PLATE 1. Phylogenetic position of the focus taxa of this study (highlighted in blue): *Cinglis humifusaria* **stat. rev**. (*Cinglis* revived from synonymy under *Scopula*), *Cinglis benigna* **comb. nov**. (taxon *benigna* transferred from *Scopula* to *Cinglis*), *Scopuloides fucata* **stat. rev**. (*Scopuloides* revived from synonymy under *Scopula*), *Scopula sacraria*, *Scopula diffinaria* and *Scopula chalcographata* (data supports classification of these taxa in *Scopula*, not in *Glossotrophia*, and the latter is considered a junior synonym of *Scopula*) within the tribe Scopulini. The numbers above the branches are Rapid Bootstrap support (RBS) on the best scoring ML tree (Stamatakis 2008). Values ≥ 85 (%) indicate supported clades.

We consider *Scopuloides* **stat. rev.** as a valid genus since it groups as sister to *Cinglis*, but the morphological characters agree more with those of *Scopula* than with those of *Cinglis*. This genus was regarded as a synonym of *Scopula* based on morphological characters, as species of *Scopuloides* share many characters with *Scopula* such as wing venation and male and female genitalia (Hausmann 1994; Sihvonen 2005a). Furthermore, in the cladistic analysis by Sihvonen (2005a) all these genera were placed within *Scopula*, whereas in our tree they grouped as sister to *Scopula*. The present study focused on the genera that occur in Iran, but more molecular data and more taxa belonging to this global lineage are needed to fully resolve these difficult taxonomic questions within Scopulini.

A summarized morphological characterization of these genera is given hereunder, including an integrative taxonomic revision of the species distributed in Iran.

Taxonomy

Problepsis Lederer, 1853

Problepsis Lederer, 1853. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien, 2: 74. Type species: *Caloptera ocellata* Frivaldszky, 1845.

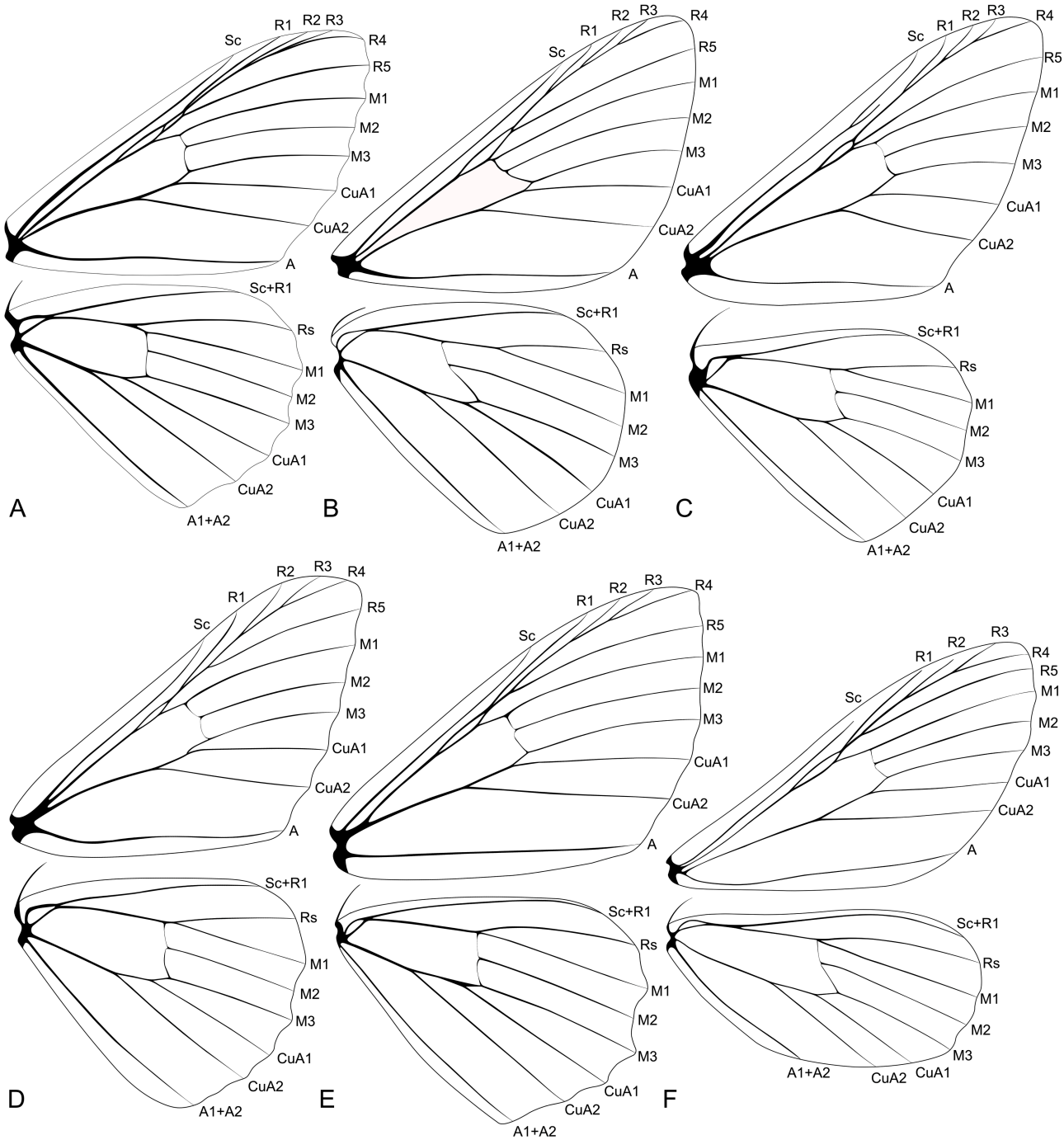


PLATE 2. Wing venation of Scopulini genera existent in Iran. A: *Problepsis wiltshirei*, **stat. rev.**, B: *Cinglis humifusaria* **stat. rev.**, C: *Cinglis benigna* **comb. nov.**, D: *Scopuloides origalis* **stat. rev.**, E: *Scopula ornata* and F: *Scopula relictata*.

Species within this genus are characterized by (after Hausmann 2004; Sihvonen 2005a; Feizpour *et al.* 2018; Wanke *et al.* 2021b): ocellate discal spots, variable in size on fore- and hindwing; spoon-shaped hind tibia and a hair pencil on the hindlegs of males.; venation with one or two areoles in the forewing; vein R1 and common stalk of R2–4 and R5 arising from the areole(s); hindwing with veins Rs and M1 separate, M3 and CuAl separate (see Plate 2A); male genitalia with fused socii and a smooth internal margin of the tegumen.

Only two species of this genus are reported in Iran: *Problepsis cinerea* (Butler, 1886) and *P. wiltshirei* (Prout, 1938). Those were dealt with in Wanke *et al.* (2021b) and we did not illustrate them again in the current paper.

Problepsis cinerea (Butler, 1886)

Argyria cinerea Butler, 1886, Proceedings of the Zoological Society of London 3, 387. Syntype (s) ([Pakistan], Campbellpore [near Rawal Pindee]) (in NHMUK).

Diagnosis. This species can be differentiated from *P. wiltshirei* by the large, prominent, rounded ocellus in the median area, which is small and light in *P. wiltshirei* (for further details see Wanke *et al.* 2021b).

Biology & Habitat. Most *Problepsis* species are known to feed on Oleaceae species (Stadie & Stadie 2016). Feizpour *et al.* (2018) suggested *Olea europaea cuspidata* as a potential natural host plant in southern Iran, as it is the only wild olive species found there. This species inhabits dry southern coastal plains and mountainous regions with higher humidity (Feizpour *et al.* 2018).

Distribution. This species is distributed from northern Oman and southern Iran in the west to eastern Afghanistan and Pakistan (Feizpour *et al.* 2018). In Iran it has only been recorded from one locality in Hormozgan province by Feizpour *et al.* (2018).

DNA-barcoding. Nearest species: *P. ocellata*, with a genetic distance of 1.8% (Wanke *et al.* 2021b).

Problepsis wiltshirei (Prout, 1938)

Somatina wiltshirei Prout, 1938. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde. Supplement zu Band 4, 220. 2 ♂ Syntypes (Iraq: Kurdistan, Rowanduz [Rawanduz Gorge], Berserini [Berserini Gorge]); 1 Syntype specimen [gender is not given in the original publication], [Iran]: Fars, Ardekan Talochosroe [Tall Khosrow, today in prov. Kohgiluyeh and Boyer-Ahmad]) (in NHMUK). Transferred to *Problepsis* by Wanke *et al.* (2021).

Remarks. This species was described in the genus *Somatina*, but was recently transferred to the genus *Problepsis* based on morphological and molecular data (see Wanke *et al.* 2021b).

Diagnosis. See diagnosis for *P. cinerea*.

Biology & Habitat. Possible host plants include *Fraxinus* sp. (Oleaceae) and *Acer* sp. (Sapindaceae) (Wiltshire 1943). The latter is atypical for this genus and needs further investigation (Wanke *et al.* 2021b).

Distribution. This species is distributed only in the Middle East (Iran, Iraq and Turkey) (Wanke *et al.* 2021b). It has been recorded from south-western Iran, from the provinces Kohgiluyeh-va-Boyer-Ahmad, Khuzestan, Esfahan and Fars (Wanke *et al.* 2021b).

DNA-barcoding. Nearest species: *P. ocellata* and *P. cinerea*, both with a genetic distance of 4.2% (Wanke *et al.* 2021b).

Cinglis Guenée, 1858 stat. rev.

Cinglis Guenée, 1858. Histoire naturelle des insectes. Spécies général des lépidoptères, 10: 114. Type species: *Fidonia humifusaria* Eversmann, 1837.

Pseudocinglis Hausmann, 1994 **syn. nov.** Nota Lepidopterologica 16: 203. Type species: *Glossotrophia eurata* Prout, 1913. Here regarded as synonym of *Cinglis* based on molecular and morphological examination.

Remarks. The genus was regarded as a synonym of *Scopula* by Sihvonen (2003, 2005a), but as a valid genus by other authors (e.g., Hausmann 2004; Lehmann & Zahiri 2011). The phylogenetic analysis in the present paper allows to classify *Cinglis* as a valid genus (see Systematics part and Plate 1). This result is further supported by the following morphological characters: venation with one areole in the forewing; vein R1–4 and vein R5 on a common stalk arising from the areole; hindwing with Rs and M1 stalked (see Plate 2B, C); male genitalia with socii connected by a sclerite; aedeagus bearing one cornutus; 8th sternite with a concave anterior margin (Hausmann 2004); female genitalia sterigma with a circular sclerite around the ostium bursae; signum absent, presence of a lateral sclerite (Hausmann 2004).

***Cinglis humifusaria* (Eversmann, 1837) stat. rev.**
(Plate 3, Figs 1–2; Plate 10, Fig. 1; Plate 21, Fig. 1; Map 1)

Fidonia humifusaria Eversmann, 1837. Bulletin de la Société impériale des naturalistes de Moscou, 10 (6): 57. Lectotype ♂, designated by Hausmann (2004) (southern European Russia: Lower Volga) (in ZISP).

Material examined: 8 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–23 mm (Hausmann 2004). Ground colour white, with broad, dark brown transversal lines (Plate 3, Figs 1–2). Due to its unique wing pattern, *Cinglis humifusaria* cannot be confused externally with other Scopulini in the Middle East and Central Asia. For additional diagnostic characters see generic part and Plate 3, Figs 1–2; Plate 10, Fig. 1; Plate 21, Fig. 1.

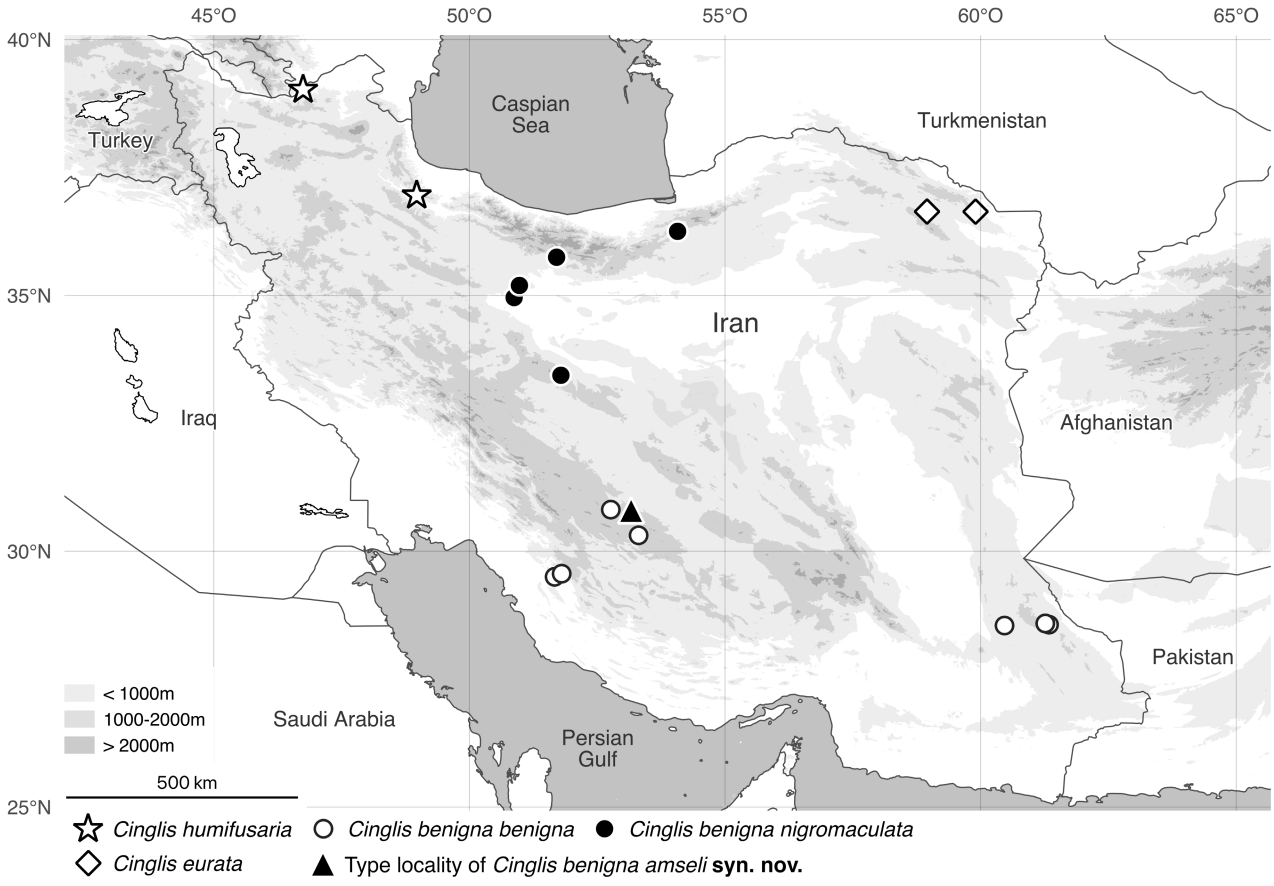
Phenology. A bivoltine species with a first generation from late April to mid-June and a second generation from mid-July to early August (Hausmann 2004). Available data and specimens from Iran indicate that this species is active from April to June (Viidalepp 1988; Lehmann & Zahiri 2011; current study).

Biology. Host plants unknown, but possibly feeding on *Artemisia* (Hausmann 2004).

Habitat. At altitudes from 0 m to 1000 m (Hausmann 2004). The available data and investigated specimens in Iran were collected at altitudes from 330 to 1053 m (Lehmann & Zahiri 2011; current study).

Distribution. Distributed in southern European Russia and from Turkey and Iran to the Central Asian mountains, as well as in the Iberian Peninsula and North Africa (Viidalepp 1996; Hausmann 2004). In north-western Iran, it has been reported from the provinces Azerbaijan-e Sharghi, Khorasan-e Shomali and Zanjan (Viidalepp 1988; Lehmann & Zahiri 2011; current study) (Map 1).

DNA-barcoding. Nearest species: *C. andalusaria* Wagner, 1935 with a genetic distance of 5.7 %. *Cinglis benigna* **comb. nov.** with a genetic distance of 10.8 % (see Supplementary Table S1).



MAP 1. Distribution patterns of the *Cinglis* species *C. humifusaria* **stat. rev.**, *C. benigna benigna* **comb. nov.**, *C. benigna amseli* **syn. nov.** of *C. benigna benigna* **comb. nov.**, *C. benigna nigromaculata* **comb. nov.** and *C. eurata* **comb. nov.** in Iran.

***Cinglis benigna* (Brandt, 1941) comb. nov.**
(Plate 3, Figs 3–8; Plate 10, Figs 2–5; Plate 21, Figs 2–4; Map 1)

Glossotrophia benigna Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft, 31 (3): 868. Syntypes ♂, ♀ (Iran: Fort Sengan) (in NHRS, examined).

Pseudocinglis benigna nigromaculata Hausmann, 1994. Nota Lepidopterologica, 16 (3/4): 209. Holotype (Iran: north) (in SMNK, examined). Valid at subspecific rank.

Scopula (*Eucidalia*) *amseli* Wiltshire, 1967. Beiträge zur naturkundlichen Forschung in Südwestdeutschland, 26: (3). Holotype (Iran: Fars, Quli Kush) (in NHMUK, examined). Transferred to the genus *Pseudocinglis* and downgraded to subspecific rank of *Pseudocinglis benigna* by Hausmann & László (1999). Here regarded as synonym of *C. benigna benigna* based on sympatric occurrence of these forms.

Type material examined. *Glossotrophia benigna*: Paratypes 1 ♂, 1 ♀, Iran, Baloutchistan, Straße Khach–Zahedan, Fort Sengan, 1800 m, 30.iv.1938, coll. Brandt, (♂) NHRS-LEPI 000010310, g. prep. 11053, (♀) NHRS-LEPI 000010311, g. prep. 11054; in NHRS.

Pseudocinglis benigna nigtomaculata: Holotype ♂, N-Iran, 70 km s. Teheran, 1300 m, 29.v.1969, leg. G. Ebert, g. prep. 3796 ZSM HM [Axel Hausmann]; Paratype ♀, same data, g. prep. 3797 ZSM HM [Axel Hausmann]; all in ZSM.

Scopula (*Eucidalia*) *amseli*: Holotype ♂, Iran, Fars, Quli Kush, 8.vi.1949, leg. E.P. Wiltshire, g. prep. E. P. Wiltshire 1127 [genitalia slide couldn't be traced in the genitalia slide collection of Wiltshire in NHMUK], NHMUK 014173546; in NHMUK.

Paratype 1 ♂, N.-Afghanistan, Polichomri, 700 m, 28.v.1956, leg. H. G. Amsel, g. prep. 2262/2020 H. Rajaei; Paratype 1 ♂, O.-Afghanistan, Gulbahar, 1700 m, 25.vi.1956, leg. H. G. Amsel, g. prep. 2263/2020 H. Rajaei; Paratypes 1 ♂, 1 ♀, O.-Afghanistan, Gulbahar, 1700 m, 21.v.1956, leg. H. G. Amsel, g. prep. WM. 131 [♂ & ♀ are embedded on the same slide]; in SMNK.

Additional material examined: *Cinglis benigna benigna* 10 ♂/♀, *Cinglis benigna nigromaculata* 14 ♂/♀ (see appendix).

Diagnosis. Wingspan 15–25 ♂♀ mm. Ground colour (Plate 3, Figs 3–8) sandy to brown. In Iran, *Cinglis benigna* can externally be confused only with *C. eurata* (see Plate 3, Figs 3–10). However, *C. benigna* shows a unique combination of characters in the male genitalia for differentiation from *C. eurata*. In male genitalia, 8th sternite without cerata, basally notched, more stongly notched in *C. benigna benigna*, more weakly notched in *C. benigna nigromaculata* (8th sternite with a short right ceras, basally notched in *C. eurata*) (see Plate 10, Figs 2–6). The female genitalia show no strong differences from other species of this genus; probably corpus bursae more strongly sclerotized than *C. eurata* (see Plate 21, Figs 2–5).

Taxonomic remarks. The holotype and paratypes of *Scopula amseli* are not conspecific. Although the genitalia slide of the holotype of *Cinglis benigna amseli* could not be traced at the NHMUK, the type locality in the southern Iranian province Fars suggests that *C. benigna amseli* **syn. nov.** is a synonym of the nominotypical subspecies. The paratypes are from northern and eastern Afghanistan. The paratypes appear to belong to *Cinglis eurata*, as they show the typical short right ceras in the 8th sternite of the male.

Phenology. Specimens of *Cinglis benigna benigna* were collected from April to June, while *Cinglis benigna nigromaculata* was collected from May to September.

Biology. Unknown.

Habitat. Investigated specimens of *C. benigna benigna* collected at altitudes from 1200 to 3000 m; *C. benigna nigromaculata* at altitudes from 800 to 1700 m.

Distribution. Endemic to Iran. The nominotypical subspecies *C. benigna benigna* is distributed in southern Iran, *C. benigna nigromaculata* in northern Iran (Map 1).

DNA-barcoding. Nearest species: *Scopula risa* Wiltshire, 1982 with a genetic distance of 8.8%. Genetic distance from other *Cinglis* species: *Cinglis humifusaria* with 10.8 % and *C. andalusaria* with 11.1 %. (see Supplementary Table S1).

***Cinglis eurata* (Prout, 1913) comb. nov.**
(Plate 3, Figs 9–10; Plate 10, Fig. 6; Plate 21, Fig. 5; Map 1)

Glossotrophia eurata Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 83. Holotype ([Turkmenistan]: Arwas, near Ashkhabad) (in MNHU).

Additional material examined: 9 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 15–23 mm. Ground colour (Plate 3, Figs 9–10) whitish-beige to brown. In Iran, *Cinglis eurata* can externally be confused only with *C. benigna* (see Plate 3, Figs 3–10). In male genitalia, 8th sternite with a short right ceras, basally notched (8th sternite without cerata, basally notched in *C. benigna*) (see Plate 10, Figs 2–6). The female genitalia show no strong differences from other species of this genus; probably corpus bursae more weakly sclerotized than in *C. benigna* (see Plate 21, Figs 2–5).

Phenology. Specimens from Iran collected in June.

Biology. Unknown.

Habitat. Investigated specimens collected at altitudes from 1210 to 1431 m.

Distribution. Species endemic to the Kopet Dagh mountains (Hausmann 1994). In Iran it is present in the northeastern provinces Khorazan-e Shomali and Khorazan-e Rhazavi (Viidalepp 1988) (see Map 1).

DNA-barcoding. No data available.

Remarks. The record from the province Semnan by Prout (1913) is possible but needs further confirmation, although confusion with *C. benigna nigromaculata* cannot be excluded.

Scopuloides Hausmann, 1994 stat. rev.

Scopuloides Hausmann, 1994. Nota Lepidopterologica, 16 (3/4): 196. Type species: *Acidalia fucata* Püngeler, 1909.

Remarks. This genus was regarded as a synonym of *Scopula* by Sihvonen (2003, 2005a), which is in concordance with its morphological characters: venation with one areole in the forewing venation; veins R1–5 on a common stalk arising from the areole; hindwing with veins Rs and M1 on a short stalk (see Plate 2D); male genitalia with socii short, strongly adjacent or crossed; sacculus broad; aedeagus with one cornutus; 8th sternite bend ventrally; left ceras long, right ceras short (Hausmann 1994); female genitalia with papillae anales with two lobes; lamella antevaginalis big (Hausmann 1994). The main criterion why this genus was considered different to *Scopula* is the number of spurs, which is not in accordance with *Scopula*.

The phylogenetic analysis in the present paper allows different classifications, but we decided to treat *Scopuloides* as valid genus (see Systematics part and Plate 1).

Scopuloides origalis (Brandt, 1941) stat. rev.

(Plate 3, Figs 11–16; Plate 10, Fig. 7; Plate 21, Fig. 6; Map 2)

Glossotrophia origalis Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft, 31 (3): 869. Holotype ♂ (Iran) (in NHRS, examined).

Scopula danieli Wiltshire, 1966. Zeitschrift der Wiener Entomologischen Gesellschaft, 51: 127. Holotype ♂ (Afghanistan: Nuristan) (Types in NHMUK and SMNK, examined). Transferred to *Scopuloides* and regarded as subspecies of *S. origalis* by Hausmann (1994).

Scopula origalis safida Wiltshire, 1966. Zeitschrift der Wiener Entomologischen Gesellschaft, 51: 128. Holotype ♂ (Afghanistan: Nuristan) (Types in NHMUK). Originally described as subspecies by Wiltshire (1966). Transferred to *Scopuloides* by Hausmann (1994).

Scopula origalis vantshica Viidalepp, 1988. Fauna pyadenits gor Srednei Azii: 54. Holotype ♂ (Tadjikistan: Nuristan). Transferred to *Scopuloides* and regarded as subspecies of *S. origalis* by Hausmann (1994).

Type material examined. *Glossotrophia origalis* Holotype ♂, Iran, Laristan, Straße Bender-Abbas-Saidabad, Sardze Umgebung, ca. 200 m, Mitte November 1937, coll Brandt, NHRS-LEPI 000010185; Paratype ♂, same data, NHRS-LEPI 000010185, g. prep. 10878; all in NHRS.

Scopula danieli: Allotype ♀, Afghanistan, Bashgultal, Nuristan, 1100 m, 14.iv.[19]53, NHMUK 010317466, g. prep. NHMUK 010317466; in NHMUK.

Scopula danieli: Paratypes 1 ♀, Afghanistan, Sarobi, 1100 m, 28.vi.1956, leg. H. G. Amsel, g. prep. 2265/2020 H. Rajaei; 1 ♀, same data, but 3.vii,1956, g. prep. 2264/2020 H. Rajaei; all in SMNK.

Additional material examined: 22 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 16–20 mm. Ground colour (Plate 3, Figs 11–16) whitish-beige to brown. *Scopuloides origalis* can externally be confused with small specimens of the *Scopula transcaspica* (see Plate 3, Figs 11–16; Plate 6, Figs 1–6) (genitalia characters are therefore compared with *S. transcaspica*). In male genitalia, socii strongly shortened (broad in *S. transcaspica*); 8th sternite with a long left ceras, apically curved, right ceras short (sternite with both cerata long, left sometimes shortened in *S. transcaspica*) (Plate 10, Fig. 7; Plate 15, Figs 2–3). In female genitalia, lamella antevaginalis as flat trapezoidal sclerite (as flat sclerite, shape variable, rather wider than long in *S. transcaspica*) (Plate 21, Fig. 6; Plate 23, Figs 5–6).

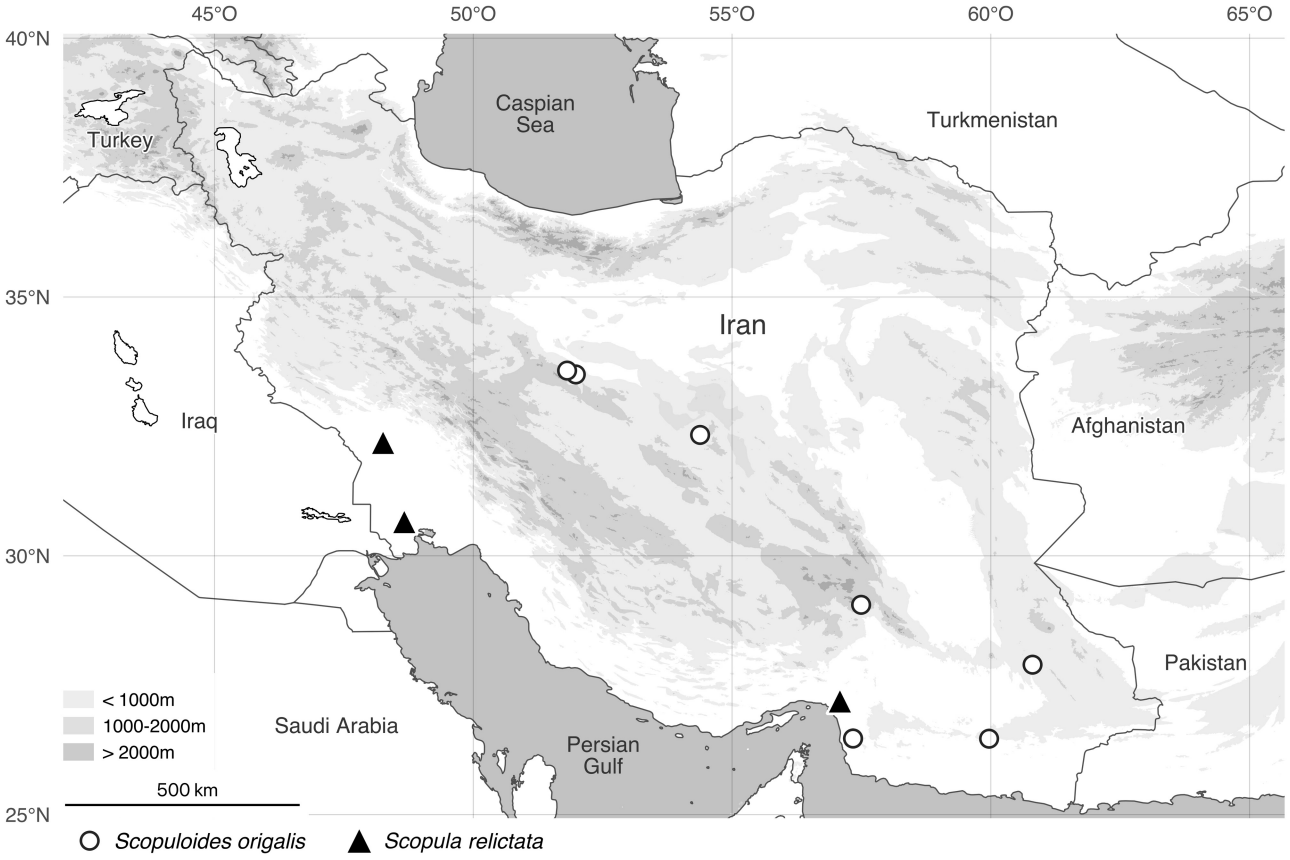
Phenology. Investigated specimens were collected from April to mid-November.

Biology. Unknown.

Habitat. Investigated specimens collected at altitudes from 200 m to 1700 m.

Distribution. Distributed in Tadjikistan, Afghanistan and Iran (Viidalepp 1988; Hausmann 1994). In Iran it is found from central to south-eastern of Iran (see Map 2).

DNA-barcoding. Nearest species: *Scopuloides fucata* **stat. rev.** at a distance of 6.6 % (see Supplementary Table S1).



MAP 2. Distribution patterns of *Scopuloides origalis* **stat. rev.** and *Scopula relictata* in Iran.

Scopula Schrank, 1802

Scopula Schrank, 1802. Fauna boica, 2 (2): 162. Type species: *Phalaena paludata* Linnaeus, 1767 (junior synonym of *Phalaena ornata* Scopoli, 1763).

Glossotrophia Prout, 1913. Systematische Bearbeitung der Schmetterlinge von Europa 3 (24): 21. Type species *Acidalia confinaria* Herrich-Schäffer, 1847. Here regarded as synonym to *Scopula* based on the phylogenetic results (see Fig. 1).

Remarks. Species within this genus are characterized by (after Hausmann 2004; Sihvonen 2005a): venation with one areole in the forewing; veins R1 and R2–5 on a common stalk, arising from the areole; hindwing with veins Rs and M1 usually separate (see Plate 2E, F); male genitalia with posterolateral appendices on the 8th sternite absent,

sacculus and valvula of valva separated, juxta urceolate (see Sihvonen 2005a); female genitalia with signum spinous (see Sihvonen 2005a).

Scopula conscensa (Swinhoe, 1885)

(Plate 3, Figs 17–19; Plate 11, Figs 1–2; Plate 21, Fig. 7)

Eupithecia conscensa Swinhoe, 1885. Proceedings of the Zoological Society of London, 1885 (4): 863. Syntypes ([India], Poona) (in NHMUK, examined).

Type material examined. *Eupithecia conscensa*: Syntype, [India], Poona, NHMUK 014173526; in NHMUK.

Additional material examined: 2 ♂/♀ (see appendix).

Taxonomic note. This species was transferred from *Zygophyxia* to *Scopula* by Sihvonen (2005a). Hausmann *et al.* (2020) noted, for *Scopula ochrea* (Hausmann, 2006) a genetic distance of about 10% (DNA barcode, COI) to the nearest *Scopula* species, questioning the synonymy done by Sihvonen (2005a). Species earlier combined to the genus *Zygophyxia* need investigation based on a large integrative taxonomic revision.

In Iran, two species formerly combined with *Zygophyxia*, namely *Scopula conscensa* (Swinhoe, 1885) and *Scopula relictata* (Walker, 1866) occur, showing great morphological differences among themselves and with the other *Scopula* species studied.

Diagnosis. Wingspan ♂ 18 mm, ♀ 14.8 mm (Plate 3, Figs 17–19). Ground colour whitish-beige to brown, wings pointed towards the apex. *Scopula conscensa* can be confused externally with *S. relictata* (see Plate 3, Figs 20–23), but both species have a unique combination of characters on their male and female genitalia.

In the male genitalia, socii fused, short (similar in *S. relictata*). Lateral processi of anellus short, broad and rounded (long, tapered, needle-like in *S. relictata*). Aedeagus curved, vesica with one short cornutus (broad, slightly curved, apical half spined in *S. relictata*) (see Plate 11, Figs 1–3). 8th sternite not available on the genitalia preparation slide.

In the female genitalia, lamella antevaginalis triangular (rectangular, apically concave *S. relictata*). Corpus bursae globular, strongly spinulose (long, pear-shaped, without signum in *S. relictata*) (see Plate 21, Figs 7–9).

Phenology. The Investigated specimen was collected in February (n=1); other specimens without collection date on the label.

Biology & Habitat. Unknown.

Distribution. Distributed in India and Sri Lanka. No specimens from Iran were available (see Remarks).

DNA-barcoding. No data available.

Remarks. This species was reported by Brandt (1941) from southern Iran (Hormozgan province). We did not find any specimen of this species confirming its occurence in Iran. Most probably the report of Brandt is a misidentification with *Zygophyxia relictata*, which occurs in this province.

Scopula relictata (Walker, 1866)

(Plate 3, Figs 20–23; Plate 11, Fig. 3; Plate 21, Figs 8–9; Map 2)

Acidalia relictata Walker, 1866. List of the specimens of lepidopterous insects in the collection of the British Museum, 35: 1629. Syntypes ♂ (Hindostan [India]) (in OUM).

Lycauges relictata demissus Swinhoe, 1887. Proceedings of the Zoological Society of London, 1886 (4): 456. Syntypes (India, central) (NHMUK). Synonym of *Scopula relictata*.

Sterrha ooptera Turner, 1922. Transactions of the Royal Society of South Australia, 46: 267. Holotype ♀ (Australia, Queensland, Gayndah). Synonym of *Scopula relictata*.

Type material examined. *Lycauges relictata demissus*: Syntype 1 ♂♀, [India], Mhow, NHMUK 014173576; in NHMUK.

Additional material examined: 7 ♂/♀ (see appendix).

Taxonomic note. Combination of this species with the genus *Scopula* questionable, see taxonomic note of *Scopula conscensa*.

Diagnosis. Wingspan ♂♀ 16–19 mm. Ground colour beige to brown with some grey tinge, wings pointed

towards the apex (Plate 3, Figs 20–23). *Scopula relictata* can be confused externally with *S. conscensa* (see Plate 3, Figs 17–23), but both species have a unique combination of characters on their male and female genitalia.

In the male genitalia socii fused, short. Fibula long, tapered needle-like. Lateral process of anellus long, tapered needle-like (short, broad rounded in *S. conscensa*). Aedeagus broad, slightly curved, apical half spined (curved, vesica with one short cornutus in *S. conscensa*) (see Plate 11, Figs 1–3). 8th sternite basally narrowing, apically notched.

In the female genitalia lamella antevaginalis rectangular, apically concave (triangular in *S. conscensa*). Corpus bursae long, pear-shaped, without signum (globular, strongly spinulose in *S. conscensa*) (see Plate 21, Figs 7–9).

Phenology. The investigated specimens from Iran were collected in March. Investigated specimens outside Iran were collected from March to October.

Biology & Habitat. Unknown.

Distribution. Distributed in Bahrain, Oman, Iran, India, Sri Lanka, and Australia. In Iran it is only known from the southwestern and southern provinces (see Map 2). Reported by Wiltshire (1980) for South Iran without more detailed information. Here we confirm the presence of this species in Iran.

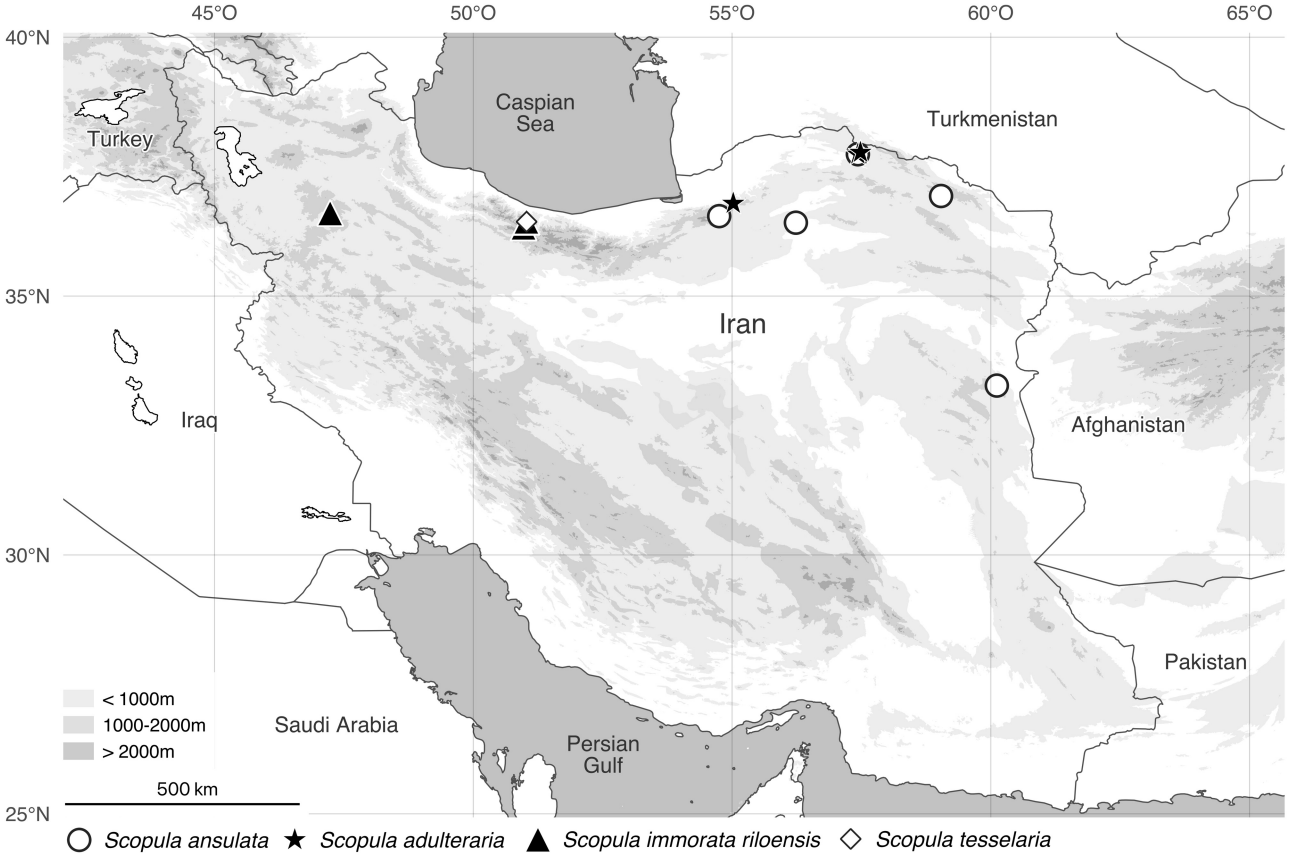
DNA-barcoding. Nearest species: *S. scalercii* with 7.1 % (see Supplementary Table S1).

Scopula ansulata (Lederer, 1871)

(Plate 4, Figs 1–4; Plate 12, Fig. 1; Plate 22, Fig. 1; Map 3)

Acidalia ansulata Lederer, 1871. Horae Societatis Entomologicae Rossicae, variis sermonibus in Rossia usitatis editae, 8, 19. Syntypes 2 ♂ 1 ♀ ([Iran]: Hadschyabad) (in MNHU, examined).

Type material examined. Syntypes [labeled with origin], 1 ♂, 1 ♀, Iran, [Hadschyabad], ex coll. Staudinger; in MNHU.



MAP 3. Distribution patterns of the *Scopula* species *S. ansulata, S. adulteraria, S. immorata riloensis* and *S. tesselaria* in Iran.

Additional material examined: 55 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 24–28 mm. Due to its unique wing pattern, *Scopula ansulata* cannot be confused with any other *Scopula* species in Iran. Ground colour (Plate 4, Figs 1–4) ivory to beige, with some grey-brown highlights; transverse lines well pronounced and characteristic curved (wings reddish brown in *S. adulteraria*) (see Plate 4, Figs 1–6). The male genitalia (Plate 12, Fig. 1) and the female genitalia (Plate 22, Fig. 1), show no diagnostic characters for differentiation from the sister species *S. adulteraria*.

Phenology. Investigated specimens in Iran were collected from April to July.

Biology. Unknown.

Habitat. Investigated specimens in Iran from 1000 m to 2900 m.

Distribution. This species is distributed from Iran and Central Asia (Turkmenistan, Afghanistan, Uzbekistan, Kazakhstan and Tadjikistan) to northwestern China (Viidalepp 1996, Sihvonen 2005b). In Iran it is distributed in the northeastern parts (see Map 3). It has also been reported in the literature for the provinces Golestan, Khorasan-e Shomali and Semnan.

DNA-barcoding. No data available.

Scopula adulteraria (Erschov, 1874) bona sp.

(Plate 4, Figs 5–6; Plate 12, Fig. 2; Plate 22, Fig. 2; Map 3)

Acidalia adulteraria Erschov, 1874. In Fedchenko, Puteshestvie v Turkestan, 2, 60. Syntypes ♂, ♀ (Turkestan: Kisilkum) (in MNHU, examined).

Type material examined. 1 ♂, 1 ♀ [Uzbekistan], Margilan, ex coll. Staudinger; in MNHU.

Additional material examined: 87 ♂/♀ (see appendix).

Remarks. Originally described as a species, and regarded as a bona species by several authors (e.g., Viidalepp 1996), it has been regarded as subspecies of *Scopula ansulata* by other authors (Scoble 1999; Sihvonen 2005a, 2005b; Scoble & Hausmann 2007). However, external differences as well as the sympatric occurrence of *Scopula ansulata* and *S. adulteraria* convinced us to raise this taxon to species rank.

Diagnosis. Wingspan ♂♀ 23–30 mm. Due to its unique wing pattern, *Scopula adulteraria* cannot be confused with any other *Scopula* species in Iran. Ground colour (Plate 4, Figs 5–6) reddish brown; transverse lines well pronounced and characteristic curved (wings ivory to beige, with some grey-brown highlights in *S. ansulata*) (see Plate 4, Figs 1–6).

The male genitalia (Plate 12, Fig. 2) and the female genitalia (Plate 22, Fig. 2), show no diagnostic characters for differentiation with the sister species *S. ansulata*.

Phenology. Investigated specimens in Iran were collected from March to May.

Biology. Unknown.

Habitat. Investigated specimens in Iran collected at altitudes from 50 m to 1240 m.

Distribution. This species is distributed from Iran to Central Asia (Uzbekistan, Kazakhstan and Tadjikistan) (Viidalepp 1996). In Iran it is only known for the province Khorasan-e Shomali (see Map 3).

DNA-barcoding. Nearest species: *S. rufomixtaria* (De Graslin, 1863) with 7.3 % (see Supplementary Table S1); this may change when data for *S. ansulata* is added to the dataset. However, no data for *S. ansulata* was available.

Scopula immorata (Linnaeus, 1758)

(Plate 4, Figs 7–9; Plate 12, Fig. 3; Plate 22, Fig. 3; Map 3)

Phalaena Geometra immorata Linnaeus, 1758. Caroli Linnaei...Systema naturae per regna tria naturae: secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis (Ed. 10) 1: 528 (Europe). Syntypes (Europe) (in LSL).

Scopula immorata duercki Sheljuzhko, 1955: Mitteilungen der Münchner Entomologischen Gesellschaft. 44/45: 289 (Spain, Castilla: Sierra de Gredos). Holotype ♂ (ZSM). Valid at subspecific rank.

Acidalia immorata L var. *riloensis* Züllich, 1936. Zeitschrift der Wiener Entomologischen Gesellschaft, 21: 55. (Bulgaria: Rilo Mts.) (deposition unknown). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena contaminata* Scopoli, 1763

(Slovenja: Carniolia); *Phalaena graminata* Hufnagel, 1767 (Germany: Berlin); *Phalaena festucaria* Brahm, 1791 (western Germany: near Mainz); *Phalaena fuscata* Fabricius, 1794 (Denmark: Seelandia); *Geometra immoraria* (according to Hausmann (2004: 256): incorrect subsequent spelling); *Acidalia serenata* Turati, 1905 (type locality not given).

For the list of unavailable names see Hausmann (2004).

Material examined: 9 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–28 mm. In Iran, *Scopula immorata* can externally be confused with *S. tessellaria*, therefore its characters are compared against this species. Wings chequered, ground colour (Plate 4, Figs 7–9) white to grey, with brown transverse lines; lines diffuse and wavy; bright ground-coloured areas blurred (similar but transverse lines darker and bright ground-coloured areas sharply defined in *S. tessellaria*) (see Plate 4, fig 7–11). The male genitalia with a broad and short aedeagus, its tip with lateral spines, vesica with terminal cornutus (similar but aedeagus tip with one lateral spine in *S. tessellaria*). 8th sternite with short left ceras and long right ceras (both cerata short in *S. tessellaria*) (see Plate 12, Fig.3; Plate 13, Fig.1). In the female genitalia lamella antevaginalis large, rounded (small, rounded in *S. tessellaria*). Ductus bursae broad (long and slender in *S. tessellaria*). Signum small, three times as long as wide, with lateral spines (small, five times as long as wide, with lateral spines in *S. tessellaria*) (see Plate 22, fig 3–4).

Phenology. Bivoltine species, with a first generation from mid-May to early July and a second generation from late July to late August (Hausmann 2004). Investigated specimens in Iran were collected in July.

Biology. Polyphagous, larvae feed on withered leaves of plants from different families e.g., Lamiaceae, Asteraceae, Ericaceae, Polygonaceae and Plantaginaceae (Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. From 0 m to 2400 m in Europe, in Turkey and Iran to 3000 m (Hausmann 2004). Investigated specimens in Iran were collected from 19 m to 3200 m.

Distribution. This species is distributed from western Europe (Spain) to Russia, as well as in Turkey, the Caucasus, Transcaucasus, Kazahkhstan and Mongolia (Viidalepp 1996; Hausmann 2004; Makhov 2023). In Iran, this species is represented by the subspecies *S. immorata riloensis*, which is distributed in northern parts of the country (see Map 3).

DNA-barcoding. Nearest species: *S. tessellaria* with 1.8 % (see Supplementary Table S1).

Scopula tessellaria (Boisduval, 1840)

(Plate 4, Figs 10–11; Plate 13, Fig. 1; Plate 22, Fig. 4; Map 3)

Strenia tessellaria Boisduval, 1840. Genera et index methodicus Europæorum lepidopterum: 228 (northern Italy). Syntype(s) (ZFMK).

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena pellicea* Fourcroy, 1785 (France: Paris); *Eupisteria puluerulentaria* Sélys-Longchamps, 1844 (southern Italy: Caserta); *Acidalia tabianaria* Turati, 1905 (Italy, Parma Prov.: Tabiano; Salso Maggiore); *Scopula tessellaria proutiana* Sheljuzhko, 1955 (Kirghizstan, Semiretshje: river Maloje).

For the list of unavailable names, see Hausmann (2004).

Material examined: 6 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–28 mm. In Iran, *Scopula tessellaria* can externally be confused only with *S. immorata*, therefore its characters are compared against this species. Wings chequered, ground colour (Plate 4, Figs 10–11) white to grey, with dark brown transverse lines; lines diffuse and wavy; bright ground-coloured areas sharply defined (similar but transverse lines brighter, bright ground-coloured areas blurred in *S. immorata*) (see Plate 4, Figs 7–11). In the male genitalia aedeagus broad and short, tip with one lateral spine, vesica with terminal cornutus (similar but aedeagus tip with lateral spines in *S. immorata*). 8th sternite with both cerata short (with short left and long right ceras in *S. immorata*) (see Plate 12, Fig. 3; Plate 13, Fig. 1).

In the female genitalia lamella antevaginalis small (big, rounded in *S. immorata*). Ductus bursae long and slender (broad in *S. immorata*). Signum small, five times as long as wide, with lateral spines (small, three times as long as wide, with lateral spines in *S. immorata*) (see Plate 22, fig 3–4).

Phenology. Univoltine species, from late May to early July (Hausmann 2004). Investigated specimens in Iran were collected in July.

Biology. Larva on plant species of different families, e.g., Asteraceae, Ericaceae, Fabaceae and Ranunculaceae (Hausmann 2004).

Habitat. From 0 m to 1800 m in Europe and to 3000 m in Central Asia (Hausmann 2004). Investigated specimens in Iran were collected from 19 m to 2200 m.

Distribution. Distributed from Spain to the Urals, but rare and with local distribution in western, southern and eastern Europe (Hausmann 2004). Also distributed in Turkey, the Caucasus, Transcaucasus, Kazakhstan and southwestern China (Viidalepp 1996; Hausmann 2004; Sihvonen 2005b). In Iran it is only known from the province Mazandaran (Map 3).

Remarks. Schwingenschuss (1939) reported the presence of this species in the north Iranian provinces Mazandaran and Tehran. Hausmann (2004) stated that this awaits confirmation. Here we confirm the presence of this species in northern Iran.

DNA-barcoding. Nearest species: *S. immorata* with 1.8 % (see Supplementary Table S1).

Scopula nigropunctata (Hufnagel, 1767)

(Plate 5, Figs 1–2; Plate 13, Fig. 2; Plate 22, Fig. 5; Map 4)

Phalaena nigropunctata Hufnagel, 1767. Berlinisches Magazin, 4 (5): 526. Syntype(s) lost (Germany, Berlin).

Acidalia subcandidata Walker, 1862. List of the specimens of lepidopterous insects in the collection of the British Museum, 26: 1607. Holotype ♂ (eastern China: Shanghai) (NHMUK). Valid at subspecific rank.

Craspedia imbella Warren, 1901: Novitates zoologicae, 8: 22. Syntypes 3 ♀ (Japan) (NHMUK). Valid at subspecific rank.

Scopula nigropunctata chosensis Bryk, 1949: Arkiv för zoologi, 41A (1): 164. Holotype ♂ (Korea: Shuotsu) (NHRS). Valid at subspecific rank.

Scopula nigropunctata subimbella Inoue, 1958: Tinea, 4 (2): 243. Holotype ♂ (Japan: Hokkaido. Kushiro, Shibecha) (NHMUK). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena repandata*: sensu Scopoli, 1763 (north-western Slovenja: Carniolia) (according to Hausmann (2004: 269): misidentification, synonymy uncertain); *Geometra strigilata*: sensu Denis & Schiffermüller, 1775 (Austria: Vienna) (according to Hausmann (2004: 269): misidentification); *Phalaena tristriaria* Fabricius, 1794 (Italy); *Phalaena Geometra nemorata* Borkhausen, 1794 (Europe, probably Germany); *Geometra strigilaria* Hübner, 1799 (according to Hausmann (2004: 269): incorrect subsequent spelling of the misidentified *strigilata*: sensu Denis & Schiffermüller, 1775; *Phalaena inspersata* Schrank, 1802 (Germany, Bavaria: Ingolstadt); *Calothysanis exemptaria* Hübner, 1823 (Austria: Vienna) (according to Hausmann (2004: 269): unnecessary replacement name for *strigilaria*); *Acidalia prataria* Boisduval, 1840 (according to Hausmann (2004: 269): unnecessary replacement name for misidentified *strigilaria* Hübner); *Acidalia prataria* var. *catenaria* Bruand, 1846 (France: Doubs, Besancon).

For the list of unavailable names, see Hausmann (2004).

Material examined: 4 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂ 25–29 mm (Hausmann 2004). In Iran, *S. nigropunctata* can externally be confused only with *S. flaccidaria*, therefore its characters are compared against this species. Ground colour (Plate 5, Figs 1–2) beige, hindwings not pointed out (beige, hindwings pointed out in *S. flaccidaria*) (see Plate 5, Figs 1–2; Plate 8, Figs 3–6).

In the male genitalia 8th sternite very broad, square-like, basally straight, with thin cerata, left short, right long (not strongly broadened, basally convex, both cerata long in *S. flaccidaria*) (see Plate 13, Fig. 2; Plate 18, Figs 1–2).

In the female genitalia lamella antevaginalis big with irregular folds (ring-shaped, antrum with tulip shaped sclerite in *S. flaccidaria*) (see Plate 22, Fig. 5; Plate 25, Figs 5–6).

Phenology. Univoltine species, flying from mid-June to early August (Hausmann 2004). Investigated specimens in Iran were collected from August to October.

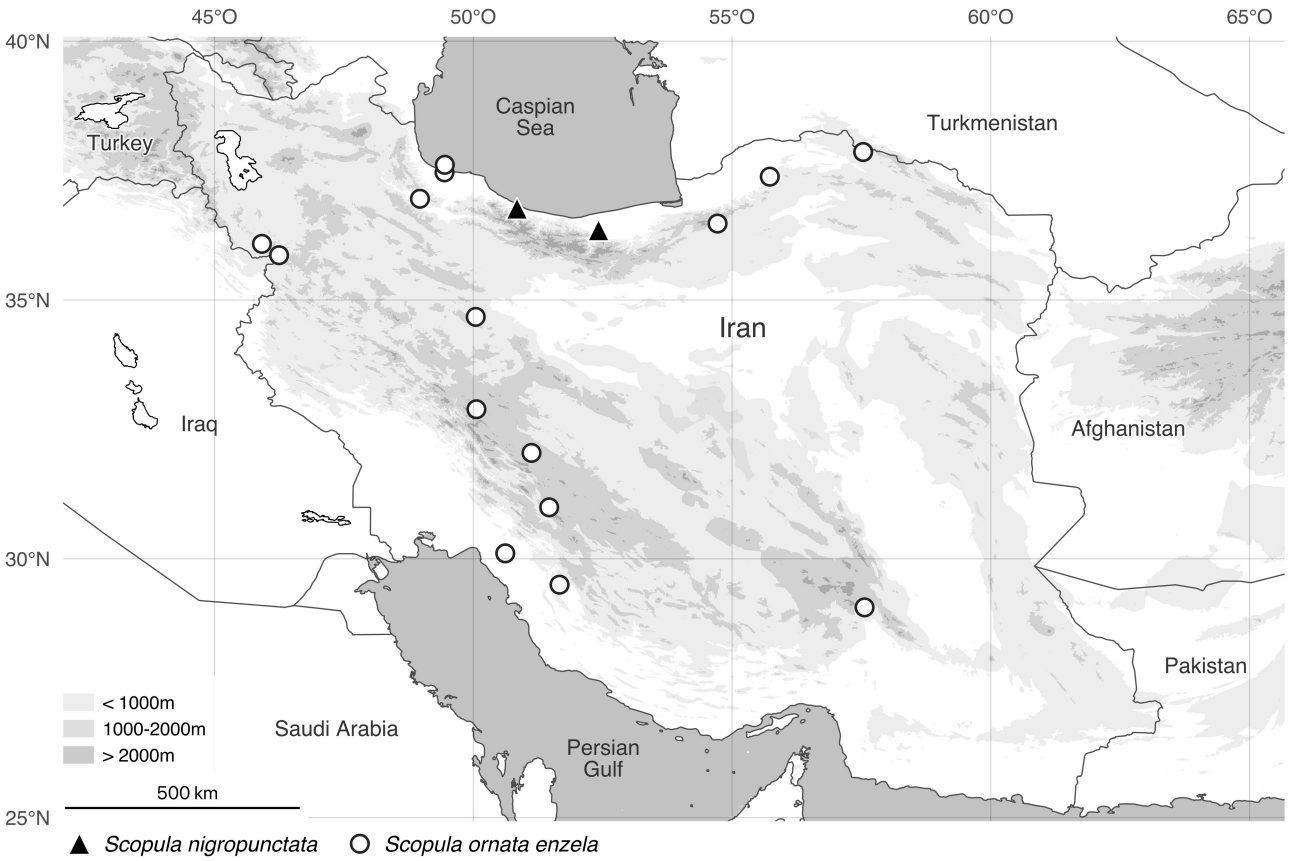
Biology. Larva polyphagous on a wide range of plant species of different families (see Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. From 0 m to 1800 m in Europe and to 2200 m in Turkey and Transcaucasus (Hausmann 2004). Investigated specimens in Iran were collected in 250 m.

Distribution. Widely distributed from Portugal to the Urals, Mongolia, and throughout the Far East of Asia, including Korea and Japan (Hausmann 2004; Sihvonen 2005b; Choi & Kim 2016; Makhov 2023). Also distributed in Turkey, the Caucasus, Transcaucasus and Iran (Viidalepp 1996; Hausmann 2004). In Iran distributed in the

northern parts (see Map 4). Reported in the literature also for the provinces Gilan, Golestan, Mazandaran (Lederer 1871; Prout 1912–1915; Prout 1921; Wiltshire 1966; Viidalepp 1996).

DNA-barcoding. Nearest species: *S. incanata* with 7.1 % (see Supplementary Table S1).



MAP 4. Distribution patterns of the *Scopula* species *S. nigropunctata* and *S. ornata enzela* in Iran.

Scopula caesaria (Walker, 1861)

(Plate 5, Figs 3–7; Plate 13, Fig. 3; Plate 22, Figs 6–7).

Acidalia caesaria Walker, 1861. List of the specimens of lepidopterous insects in the collection of the British Museum 22: 750. Syntypes 5 ♂ (Ceylon [Sri Lanka]) (in NHMUK, examined).

Scopula caesaria walkeros Wiltshire, [1981], The Journal of Oman Studies, Special Report, 2: 193. Holotype ♂ (northern Oman; Mu'askar al Murtafa'a) (NMSZ).

Synonymies (for more details on nomenclature see Scoble 1999): *Acidalia faeculentaria* Mabille, 1880 (Madagascar); *Acidalia obturbata* Walker, 1861 (Ceylon [Sri Lanka]); *Acidalia perfectaria* Walker, 1861 (type locality not given); *Craspedia rufimixtaria* Warren, 1900 (Tenimber [Tanimbar] Islands: Selaru).

Type material examined. Paratype ♀, Ceylon, NHMUK 014173570, g. prep. NHMUK 012821272; in NHMUK.

Additional material examined: 4 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 17–22 mm. *Scopula caesaria* has a unique wing pattern and externally cannot be confused with any other *Scopula* species in Iran. Ground colour (Plate 5, Figs 3–7) beige to yellow, with red transverse lines.

In the male genitalia (Plate 13, Fig. 3), fibula curved, tapering. Aedeagus basally thin, broadening to the tip, vesica with rear small cornutus. 8th sternite hat-shaped, cerata absent. In the female genitalia (Plate 22, Figs 6–7) lamella antevaginalis weakly developed, centrally notched. Ductus bursae short. Signum large, numerous spines around the corpus bursae.

Phenology. Investigated specimens were collected in April (North Oman), June (South Yemen), October (Oman) and December (South Africa).

Biology. Unknown.

Habitat. Investigated specimens were collected at altitudes from 1350 m to 1400 m (South Africa), at 1500 m (South Yemen).

Distribution. Investigated specimens in this study from Ceylon (Sri Lanka), Africa, Yemen and Oman. Reported for southern Iran by Wiltshire (1980).

Remarks. While the occurrence of this species in southern Iran has been reported by Wiltshire (1980), no specimens were found for for Iran in this study. Therefore, the presence of this species in Iran awaits further confirmation.

DNA-barcoding. Nearest species: *S. immorata* with 9.1 % (see Supplementary Table S1).

Scopula ornata (Scopoli, 1763)

(Plate 5, Figs 8–9; Plate 14, Fig. 1; Plate 23, Fig. 1; Map 4)

Phalaena ornata Scopoli, 1763: Entomologica Carniolica exhibens insecta Carnioliae indigena et distributa in ordines, genera, species, varietates methodo Linnaeana 9: 219. Syntype(s) lost (north-western Slovenja, Carniolia 'Mts.').

Acidalia ornata subornata Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 79. Syntype(s) (Japan: Oiwake, Yokohama) (NHMUK). Valid at subspecific rank.

Scopula ornata enzela Prout, 1935. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4 (Supplememt): 46. Syntype(s) (Iran, Enzeli) (NHMUK, examined). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena instilata* Hufnagel, 1767 (Germany: Berlin); *Phalaena Geometra paludata* Linnaeus, 1767 (Portugal); *Phalaena nivearia* Fabricius, 1775 (England); *Phalaena institata* Rottemburg, 1777 (Europe); *Phalaena Geometra interrupta* Goeze, 178 (France: Paris); *Phalaena intersecta* Fourcroy, 1785 (France: Paris); *Geometra ornataria* Hübner, 1799 (according to Hausmann (2004: 275): incorrect subsequent spelling); *Pyralis paludalis* Schrank, 1802 (according to Hausmann (2004: 275): emendation of *paludata*); *Scopula cinis* Inoue, 1946 (Japan: Nagano Prefecture, Yunomata).

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Scopula ornata enzela* Type 1 ♂, N.W. Persia [Iran], Enzeli, sea level, NHMUK 014173555, g. prep. 12265; **in NHMUK.**

Additional material examined: 20 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 20–27 mm. In Iran, *Scopula ornata* can externally be confused with, *S. orientalis*, *S. decorata, S. subtilata* and in rare cases maybe *S. transcaspica*, therefore characters are compared against these species only. Ground colour (Plate 5, Figs 8–9) white (similar in *S. orientalis*; creamy white in *S. decorata* and *S. subtilata*; variable in *S. transcaspica*). Forewing apex white (similar in *S. orientalis*; spotted in *S. decorata*, *S. subtilata* and *S. transcaspica*). Dotted lines of the terminal area greyish-blue (similar in *S. subtilata* and *S. transcaspica*; grayish-brown in *S. orientalis*; dark grayish-brown in *S. decorata*). Double spots along postmedial line brown (similar in *S. decorata* and *S. subtilata*; grayish-brown in *S. orientalis*; absent in *S. transcaspica*) (see Plate 5, Figs 8–15; Plate 6, Figs 1–6).

In the male genitalia socii slender (broad, rounded in *S. orientalis*; long, crossed in *S. decorata*; crossed in *S. subtilata*; broad in *S. transcaspica*). Vesica without cornutus (similar in *S. orientalis*; with one small cornutus in *S. decorata*; with one straight cornutus in *S. subtilata*; with one cornutus in *S. transcaspica*). 8th sternite longish, posteriorly broad, both cerata long and thin (sternite stout, both cerata broad, stout and strongly curved in *S. orientalis*; sternite laterally concave, right ceras long and curved, left ceras short in *S. decorata*; sternite laterally concave, both cerata medium sized in *S. subtilata*; sternite laterally concave, both cerata long, left sometimes shortened in *S. transcaspica*) (see Plate 14, Figs 1–3; Plate 15, Figs 1–3).

In the female genitalia lamella antevaginalis, anterior margin smooth, central fold V-shaped (unspectacular sclerotized in *S. orientalis*; as flat rectangular sclerite, slightly longer than wide in *S. decorata*; as flat rectangular sclerite, laterally concave in the basal half in *S. subtilata*; as flat sclerite, shape variable, rather wider than long in *S. transcaspica*). Signum elongated and narrow, consisting of small spinules (as long sclerite in *S. orientalis*; absent in *S. decorata*, *S. subtilata* and *S. transcaspica*) (see Plate 23, Figs 1–6; Plate 24, Fig. 1).

Phenology. Depending on the conditions, bi- or trivoltine species (Hausmann 2004). First generation from early May to early July, second generation from mid-July to late August or mid-September (Hausmann 2004). Investigated specimens in Iran were collected from May to September.

Biology. Larva polyphagous feeding on a wide range of plant species from different families (see Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. In Europe found at altitudes from 0 m to 1600 m, while in Morocco, Turkey and the central Asian mountains to 2000 m (Hausmann 2004). Investigated specimens from Iran were collected at altitudes from 0 m to 2800 m.

Distribution. Widely distributed from northern Africa to the Urals, Kazakhstan, Mongolia, as well as in northwestern China, Korea and Japan (Hausmann 2004; Sihvonen 2005b; Choi & Kim 2016; Makhov 2023). Also distributed In Turkey, the Caucasus, Transcaucasus and Central Asia and Iran (Viidalepp 1996; Hausmann 2004). In Iran this species is represented by the subspecies *S. ornata enzela* and distributed in the northern parts of Iran and along the Zagros in the western parts to southern Iran (Map 4). Reported in the literature also for the provinces Azerbaijan-e Shaghi, Fars, Gilan, Golestan, Khorasan-e Razavi, Mazandaran and Sistan-o Balouchistan (Bienert 1869; Christoph 1873; Prout 1921; Brandt 1939; Sutton 1963; Barou 1967; Viidalepp 1996; Hausmann 2004, Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. transcaspica* with 9.2 % (see Supplementary Table S1).

Scopula orientalis (Alphéraky, 1876)

(Plate 5, Figs 10–11; Plate 14, Fig. 2; Plate 23, Fig. 2; Map 5)

Acidalia decorata var. *orientalis* Alphéraky, 1876. Trudy Russkago entomologicheskago obshchestva, 8: 197. Lectotype ♂, designated by Hausmann (2004) (southwestern European Russia, Taganrog) (in ZISP).
For the list of unavailable names, see Hausmann (2004).

Material examined: 5 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 24–29 mm (Hausmann 2004). In Iran, *Scopula orientalis* can externally be confused with *S. ornata*, *S. decorata, S. subtilata* and in rare cases maybe *S. transcaspica* in Iran. Therefore, characters are compared against these species only. Ground colour (Plate 5, Figs 10–11) white (similar in *S. ornata*; creamy white in *S. decorata* and *S. subtilata*; variable in *S. transcaspica*). Forewing apex white (similar in *S. ornata*; spotted in *S. decorata*, *S. subtilata* and *S. transcaspica*). Dotted lines of the terminal area grayish-brown (greyish-blue in *S. ornata*, *S. subtilata* and *S. transcaspica*; dark grayish-brown in *S. decorata*). Double spots along postmedial line grayish-brown (brown in *S. ornata*, *S. decorata* and *S. subtilata*; absent in *S. transcaspica*) (see Plate 5, Figs 8–15; Plate 6, Figs 1–6).

In the male genitalia socii broad, rounded (slender in *S. ornata*; long, crossed in *S. decorata*; crossed in *S. subtilata*; broad in *S. transcaspica*). Vesica without cornutus (similar in *S. ornata*; with one small cornutus in *S. decorata*; with one straight cornutus in *S. subtilata*; with one cornutus in *S. transcaspica*). 8th sternite stout, both cerata broad, stout and strongly curved (sternite longish, posteriorly broad, both cerata long and thin in *S. ornata*; sternite laterally concave, right ceras long and curved, left ceras short in *S. decorata*; sternite laterally concave, both cerata medium sized in *S. subtilata*; sternite laterally concave, both cerata long, left sometimes shortened in *S. transcaspica*) (see Plate 14, Figs 1–3; Plate 15, Figs 1–3).

In the female genitalia lamella antevaginalis, unspectacular sclerotized (anterior margin smooth, central fold V-shaped in *S. ornata*; as flat rectangular sclerite, slightly longer than wide in *S. decorata*; as flat rectangular sclerite, laterally concave in the basal half in *S. subtilata*; as flat sclerite, shape variable, rather wider than long in *S. transcaspica*). Signum as long sclerite (elongated and narrow, consisting of small spinules in *S. ornata*; absent in *S. decorata*, *S. subtilata* and *S. transcaspica*) (see Plate 23, Figs 1–6; Plate 24, Fig. 1).

Phenology. Univoltine species, flying from mid-May to early July (Hausmann 2004). Investigated specimens in Iran were collected from June to July.

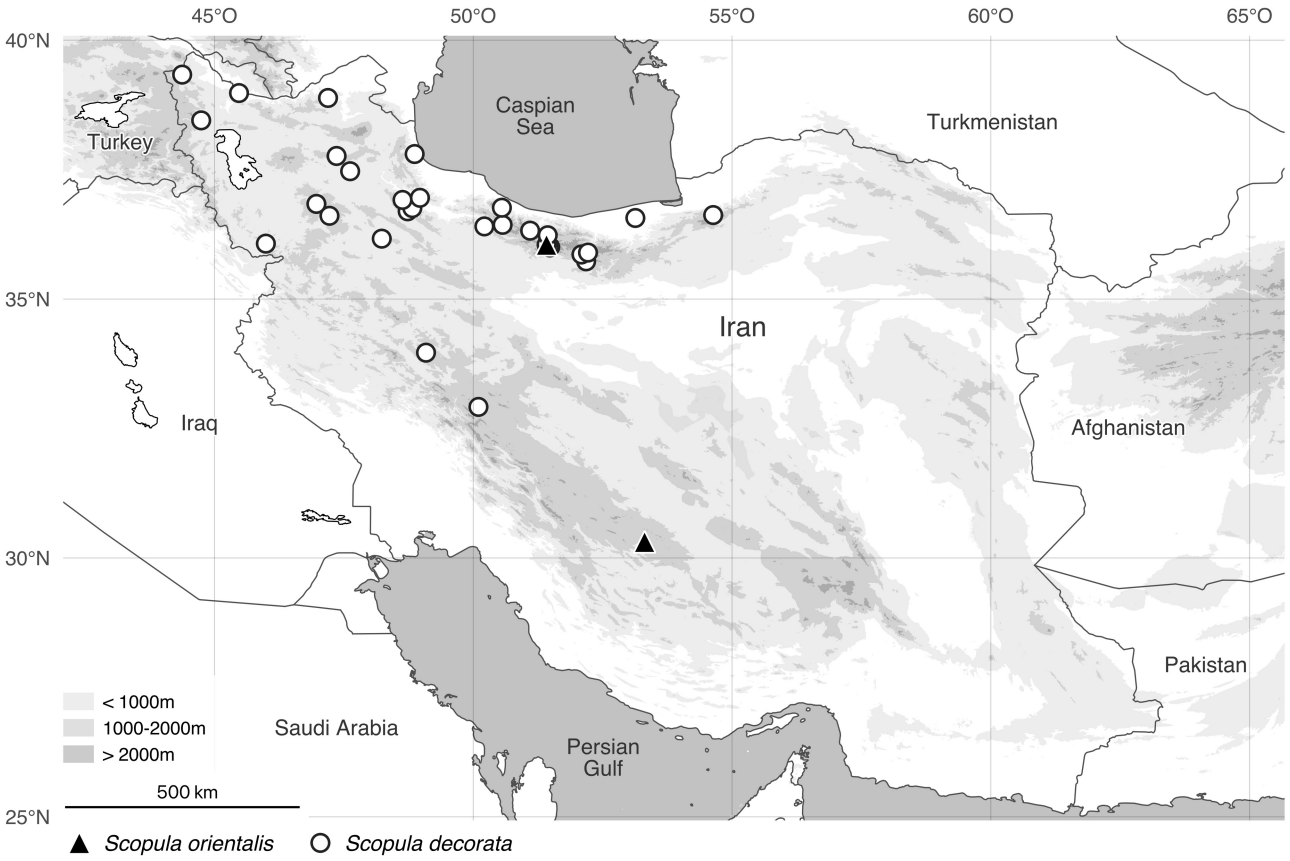
Biology. Unknown.

Habitat. In Europe from 200 m to 1100 m, in Turkey to 1800 m (Hausmann 2004). Investigated specimens in Iran were collected from 2000 m to 3200 m.

Distribution. In Europe with isolated populations in Macedonia and Bulgaria; Ukraine and south European Russia; southern Urals (Hausmann 2004). Distributed in Turkey, the Caucasus and Transcaucasus, Iran and Central Asia (Viidalepp 1996; Hausmann 2004). In Iran distributed in northern and southern parts (Map 5). Reported in the

literature also for the provinces Fars, Mazandaran and Tehran (Prout 1912–1916; Brandt 1939; Schwingenschuss 1939; Wehrli 1939–1954; Sutton 1963; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. transcaspica* with 9.2 % (see Supplementary Table S1).



MAP 5. Distribution patterns of the *Scopula* species *S. orientalis* and *S. decorata* in Iran.

Scopula decorata (Denis & Schiffermüller, 1775)

(Plate 5, Figs 12–13; Plate 14, Fig. 3; Plate 23, Fig. 3; Map 5)

Geometra decorata Denis & Schiffermüller, 1775. Systematisches Verzeichniß der Schmetterlinge der Wienergegend / herausgegeben von einigen Lehrern am k. k. Theresianum: 117. Syntype(s) lost (Austria, Vienna distr.).

Geometra violata Thunberg, 1784. Diss. entomol. sistens insecta Suecica 1: 14. Lectotype ♂ (Sweden: Uppland) (UZIU). Valid at subspecific rank.

Idaea decorata congruata Zeller, 1847. Isis 1847 (7): 508. Syntypes (Sicily: Syracus) (MNHU, NHMUK). Valid at subspecific rank.

Acidalia violata var. *armeniaca* Thierry-Mieg, 1916. Misc. ent. 23: 52. Syntype(s) ♂ (Armenia: Kirghiz) (MNHN). Valid at subspecific rank.

Scopula decorata eurhythma Prout, 1935. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4 (Supplememt): 47. Holotype ♂ (China, Shantung Promontory: Wei-hai-wei) (NHMUK). Valid at subspecific rank.

Scopula decorata przewalskii Viidalepp, 1975. Nasekom. Mongol. 3 (6): 446. Holotype ♂ (Mongolia, central Aimak: 125 km S Ulan Bator). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena cinerata* Fabricius, 1787 (Germany); *Phalaena Geometra caerulata* Gmelin, 1790 (Sweden); *Geometra decoraria* Hübner, 1799 (according to Hausmann (2004: 280): incorrect subsequent spelling); *Idaea congruaria* Heydenreich, 1851 according to Hausmann (2004: 280): incorrect subsequent spelling); *Acidalia ornata* var.? *aequata* Staudinger, 1879 (northern Turkey, Pontus: Amasia); *Acidalia decorata* var. *leukiberica* Wehrli, 1927 (Spain. Castilia: Escorial); *Acidalia decorata* var. *rebeli* Drenowski, 1930 (Bulgaria: Alibotusch-Bereng); *Scopula decorata* f. *drenowskii* Sterneck, 1941 (Bulgaria: Alibotusch).

For the list of unavailable names, see Hausmann (2004).

Material examined: 105 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 20–29 mm. In Iran, *Scopula decorata* can externally be confused with *S. ornata*, *S. orientalis, S. subtilata* and in rare cases maybe with *S. transcaspica*. Therefore, characters are compared against these species only. Ground colour (Plate 5, Figs 12–13) creamy white (similar in *S. subtilata*; white in *S. ornata* and *S. orientalis*; variable in *S. transcaspica*). Forewing apex spotted (similar in *S. subtilata* and *S. transcaspica*; white in *S. ornata* and *S. orientalis*). Dotted lines of the terminal area, dark grayish-brown (greyish-blue in *S. ornata*, *S. subtilata* and *S. transcaspica*; grayish-brown in *S. orientalis*). Double spots along postmedial line brown (similar in *S. ornata* and *S. subtilata*; grayish-brown in *S. orientalis*; absent in *S. transcaspica*) (see Plate 5, Figs 8–15; Plate 6, Figs 1–6).

In the male genitalia socii long, crossed (slender in *S. ornata*; broad, rounded in *S. orientalis*; crossed in *S. subtilata*; broad in *S. transcaspica*). Vesica with one small cornutus (without cornutus in *S. ornata* and *S. orientalis*; with one straight cornutus in *S. subtilata*; with one cornutus in *S. transcaspica*). 8th sternite laterally concave, right ceras long and curved, left ceras short (sternite longish, posteriorly broad, both cerata long and thin in *S. ornata*; sternite stout, both cerata broad, stout and strongly curved in *S. orientalis*; sternite laterally concave, both cerata medium sized in *S. subtilata*; sternite laterally concave, both cerata long, left sometimes shortened in *S. transcaspica*) (see Plate 14, Figs 1–3; Plate 15, Figs 1–3).

In the female genitalia lamella antevaginalis as flat rectangular sclerite, slightly longer than wide (anterior margin smooth, central fold V-shaped in *S. ornata*; unspectacular sclerotized in *S. orientalis*; as flat rectangular sclerite, laterally concave in the basal half in *S. subtilata*; as flat sclerite, shape variable, rather wider than long in *S. transcaspica*). Signum absent (similar in *S. subtilata* and *S. transcaspica*; elongated and narrow, consisting of small spinules in *S. ornata*; as long sclerite in *S. orientalis*) (see Plate 23, Figs 1–6; Plate 24, Fig. 1).

Phenology. Bivoltine species from early May to early September, with a third generation under good conditions (Hausmann 2004). Investigated specimens in Iran were collected from May to August.

Biology. Larva feeding mainly on *Thymus*, *Melissa*, but also reared on *Origanum vulgare* (Sobczyk & Gelbrecht 2004; Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. In Europe at altitudes from 0 m to 1600 m, to 2300 m in Morocco, to 3100 m in Turkey and Iran (Hausmann 2004). Investigated specimens in Iran were collected from 100 m to 3000 m.

Distribution. Widely distributed from northern Africa, and Portugal to the Urals, Kazhakhstan, Mongolia and the Far East of Asia, inculding Japan (Hausmann 2004; Makhov 2023). In Turkey, the Caucasus, Transcaucasus and the central Asian mountains, as well as in western and eastern China, northern Mongolia and Dahuria (Viidalepp 1996; Hausmann 2004; Sihvonen 2005b). In Iran distributed in the north-western parts (see Map 5). Reported in the literature also for the provinces Fars, Golestan, Semnan and Tehran (Christoph 1873; Lederer 1871; Lehmann & Zahiri 2011; Hausmann 2004).

DNA-barcoding. Nearest species: *S. incanata* with 7.4 % (see Supplementary Table S1).

Scopula subtilata (Christoph, 1867)

(Plate 5, Figs 14–15; Plate 15, Fig. 1; Plate 23, Fig. 4)

Acidalia subtilata Christoph, 1867. Stettiner Entomologische Zeitung, 28 (4–6): 236. Lectotype ♂ ([Russia]: Krasnoarmeysk, Sarepta [Volgograd]) (ZISP). Lectotype designated by Hausmann (2004).

Material examined: 3 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–27 mm (Hausmann 2004). In Iran, *Scopula subtilata* can externally be confused with, *S. ornata*, *S. orientalis, S. decorata* and in rare cases maybe *S. transcaspica*. Therefore, characters are compared against these species only. Ground colour (Plate 5, Figs 14–15) creamy white (similar in *S. decorata*; white in *S. ornata* and *S. orientalis*; variable in *S. transcaspica*). Forewing apex spotted (similar in *S. decorata* and *S. transcaspica*; white in *S. ornata* and *S. orientalis*). Dotted lines of the terminal area greyish-blue (similar in *S. ornata* and *S. transcaspica*; grayish-brown in *S. orientalis*; dark grayish-brown in *S. decorata*). Double spots along postmedial line brown (similar in *S. ornata* and *S. decorata*; grayish-brown in *S. orientalis*; absent in *S. transcaspica*) (see Plate 5, Figs 8–15; Plate 6, Figs 1–6).

In the male genitalia socii crossed (slender in *S. ornata*; broad, rounded in *S. orientalis*; long, crossed in *S. decorata*; broad in *S. transcaspica*). Vesica with one straight cornutus (without cornutus in *S. ornata* and *S. orientalis*;

with one small cornutus in *S. decorata*; with one cornutus in *S. transcaspica*). 8th sternite laterally concave, both cerata medium sized (sternite longish, posteriorly broad, both cerata long and thin in *S. ornata*; sternite stout, both cerata broad, stout and strongly curved in *S. orientalis*; sternite laterally concave, right ceras long and curved, left ceras short in *S. decorata*; sternite laterally concave, both cerata long, left sometimes shortened in *S. transcaspica*) (see Plate 14, Figs 1–3; Plate 15, Figs 1–3).

In the female genitalia lamella antevaginalis as flat rectangular sclerite, laterally concave in the basal half (anterior margin smooth, central fold V-shaped in *S. ornata*; unspectacular sclerotized in *S. orientalis*; as flat rectangular sclerite, slightly longer than wide in *S. decorata*; as flat sclerite, shape variable, rather wider than long in *S. transcaspica*). Signum absent (similar in *S. decorata* and *S. transcaspica*; elongated and narrow, consisting of small spinules in *S. ornata*; as long sclerite in *S. orientalis*) (see Plate 23, Figs 1–6; Plate 24, Fig. 1).

Phenology. Bivoltine species with a first generation from late May to late June and a second generation from August to September (Hausmann 2004).

Biology. Unknown.

Habitat. At altitudes from 0 to 300 m (Hausmann 2004).

Distribution. Distributed from southern Urals, southern European Russia and eastern Ukraine, northeastern Kazakhstan, Siberia and Turkmenia (Viidalepp 1996; Hausmann 2004). Reported to be present in northern Iran (see Remarks) (Viidalepp 1988; Hausmann 2004).

DNA-barcoding. Nearest species: *S. transcaspica* with 7.3 % (see Supplementary Table S1).

Remarks. The occurrence in province Khorasan-e Shomali has been reported by Viidalepp (1988). A possible confusion with *S. decorata* can´t be ruled out. The distribution of this species in Iran is awaiting further confirmation.

Scopula transcaspica Prout, 1935

(Plate 6, Figs 1–6; Plate 15, Figs 2–3; Plate 23, Figs 5–6; Map 6)

Scopula submutata transcaspica Prout, 1935. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde. Supplement zu Band 4: 40. Syntypes 2 ♀ (NHMUK) ([Turkmenistan]: Ashkhabad). Raised from subspecies to species rank by Hausmann & Lászlò (1999).

Scopula submutata taftanica Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft, 31 (3): 867. Syntype(s) (Iran: Kouh i Taftan) (NHRS examined). Regarded as subspecies of *S. transcaspica* by Hausmann (2004). Here regarded as synonym based on morphological examination and sympatric occurrence of these forms.

Type material examined. *Scopula submutata transcaspica* 1 ♀, Aschabad [Ashkhabad], NHMUK 014173554, g. prep. NHMUK 010317468; **in NHMUK.**

Scopula submutata taftanica Holotype ♂, Iran, Balouchistan, Kouh i Taftan (Khach), 2500 m, 22.v.1938, coll. Brandt, NHRS-LEPI 000010274, g. prep. 11021; Paratype [labelled as Allotype] ♀, same data, but 6.vi.1938, coll. Brandt, NHRS-LEPI 000010275, g. prep. 11022.

Additional material examined: 239 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–27 mm. In Iran, *Scopula transcaspica* can externally be confused with *S. ornata*, *S. orientalis, S. decorata, S. subtilata* and also *Scopuloides origalis*, therefore characters are compared against these species only. Ground colour (Plate 6, Figs 1–6) variable from greyish- or creamy-white to yellowish-brown (similar in white in *S. ornata* and *S. orientalis*; creamy white in *S. decorata* and *S. subtilata*). Forewing apex spotted (similar in *Scopuloides origalis*; in *S. decorata* and *S. subtilata*; white in *S. ornata* and *S. orientalis*). Dotted lines of the terminal area greyish-blue (similar in *S. ornata*, *S. subtilata* and *Scopuloides origalis*; grayish-brown in *S. orientalis*; dark grayish-brown in *S. decorata*). Double spots along postmedial line absent (similar in *Scopuloides origalis*; brown in *S. ornata*, *S. decorata* and *S. subtilata*; grayish-brown in *S. orientalis*) (see Plate 3, Figs 11–16; Plate 5, Figs 8–15; Plate 6, Figs 1–6).

In the male genitalia socii broad (slender in *S. ornata*; broad, rounded in *S. orientalis*; long, crossed in *S. decorata*; crossed in *S. subtilata*, strongly shortened in *Scopuloides origalis*). Vesica with one cornutus (without cornutus in *S. ornata* and *S. orientalis*; with one small cornutus in *S. decorata*; with one straight cornutus in *S. subtilata*; with one small and thin cornutus in *Scopuloides origalis*). 8th sternite laterally concave, both cerata long, left sometimes shortened (sternite longish, posteriorly broad, both cerata long and thin in *S. ornata*; sternite stout, both cerata broad, stout and strongly curved in *S. orientalis*; sternite laterally concave, right ceras long and curved,

left ceras short in *S. decorata*; sternite laterally concave, both cerata medium sized in *S. subtilata*; sternite with a long left ceras, apically curved, right cera short in *Scopuloides origalis*) (see Plate 10, Fig. 7; Plate 14, Figs 1–3; Plate 15, Figs 1–3).

In the female genitalia lamella antevaginalis as flat sclerite, shape variable, rather wider than long (anterior margin smooth, central fold V-shaped in *S. ornata*; unspectacular sclerotized in *S. orientalis*; as flat rectangular sclerite, slightly longer than wide in *S. decorata*; as flat rectangular sclerite, laterally concave in the basal half in *S. subtilata*; as flat trapezoidal sclerite in *Scopuloides origalis*). Signum absent (similar in *S. decorata*, *S. subtilata* and *Scopuloides origalis*; elongated and narrow, consisting of small spinules in *S. ornata*; as long sclerite in *S. orientalis*) (see Plate 21, Fig. 6; Plate 23, Figs 1–6; Plate 24, Fig. 1).

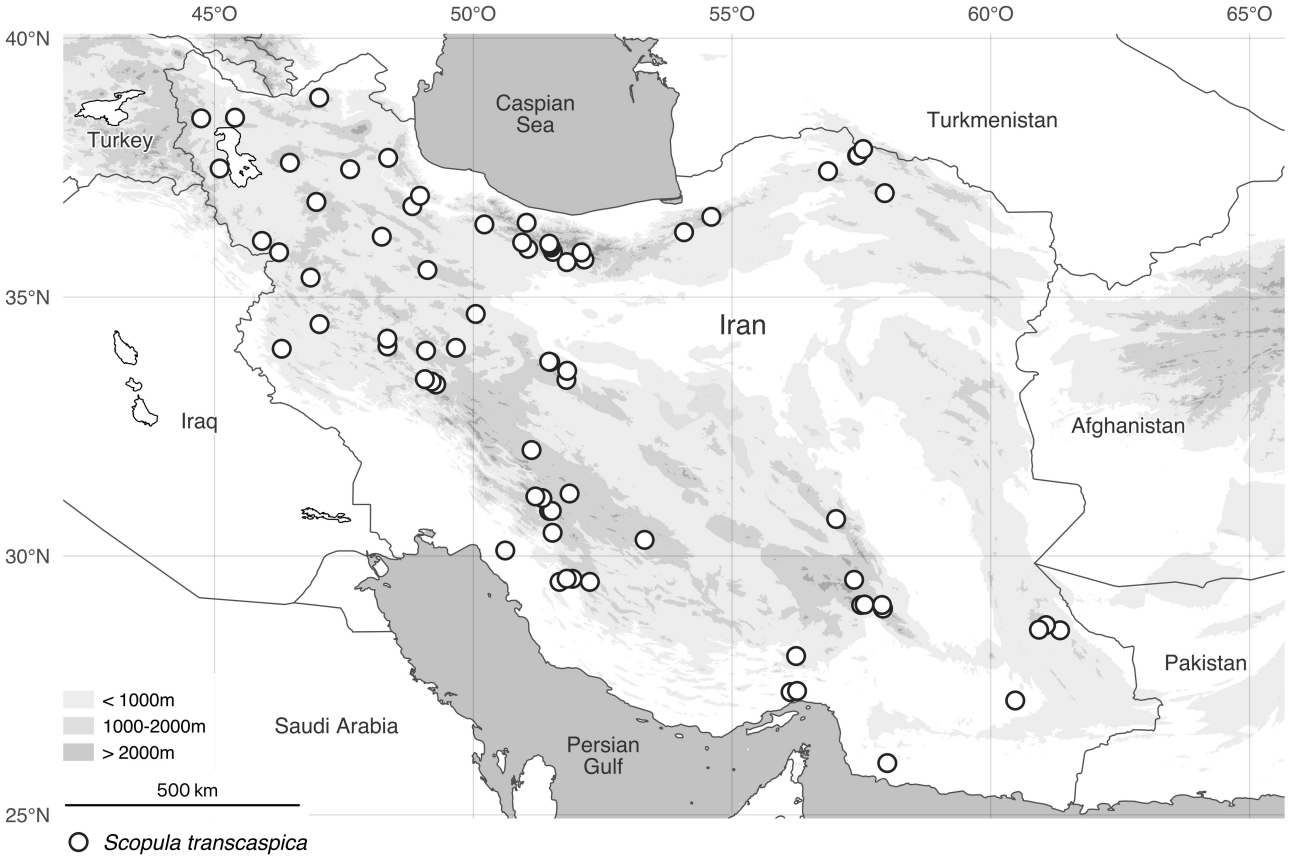
Phenology. Investigated specimens in Iran were collected from March to August.

Biology. Unknown, but most likely feeding on similar plants (*Thymus vulgaris*, *Dorycnium*) than its sister species *S. submutata* (Hausmann 2004).

Habitat. Investigated specimens in Iran were collected from 19 m to 3000 m.

Distribution. Distributed from Turkey to Transcaucasus to Turkmenia, Iran, Afghanistan and Pakistan (Viidalepp 1996; Hausmann 2004). Widely distributed in Iran, in the northern, western and southern parts (Map 6). Reported in the literature also for the provinces Azerbaijan-e Sharghi, Fars, Golestan, Hormozgan, Khorasan-e Razavi, Khorasan-e Shomali, Mazandaran, Semnan, Sistan-o-Baluchestan and Tehran (Christoph 1876–1877; Lederer 1871; Schwingenschuss 1939; Brandt 1939; Brandt 1941; Sutton 1963; Wiltshire 1966; Viidalepp 1988; Wieser *et al.* 2002; Hausmann 2004; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. vigilata* Prout, 1913 with 5.5 % (see Supplementary Table S1).



MAP 6. Distribution pattern of *Scopula transcaspica* in Iran.

Scopula rubiginata (Hufnagel, 1767)

(Plate 6, Figs 7–8; Plate 16, Fig. 1; Plate 24, Fig. 2)

Scopula rubiginata Hufnagel, 1767. Berlinisches Magazin, 4 (6): 610. Syntype(s) lost (Germany, Berlin). *Geometra rubricata* Denis & Schiffermüller, 1775. Systematisches Verzeichniß der Schmetterlinge der Wienergegend: 110. Syntype(s) lost. (Austria: Vienna).

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Geometra vittata* Thunberg, 1784 (Sweden, Uppland: Uppsala); *Phalaena domialla* Fourcroy, 1785 (France: Paris); *Phalaena Geometra variata* Villers, 1789 (France, Bresse near Lyon); *Geometra rubricaria* Hübner, 1799 (according to Hausmann (2004: 292): incorrect subsequent spelling); *Idaea subangularia* Herrich-Schäffer, 1839 (Germany).

For the list of unavailable names, see Hausmann (2004).

Material examined: 5 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 16–22 mm (Hausmann 2004). In Iran *Scopula rubiginata* can externally be confused only with *S. turbulentaria*, therefore characters are compared against this species. Ground colour (Plate 6, Figs 7–8) ariable, from light brown to orange brown (variable beige or light ocher to darker ocher in *S. turbulentaria*) (see Plate 6, Figs 7–14). In the male genitalia this species can be confused with *S. turbulentaria* (see Plate 16, Figs 1–2). In the female genitalia triangular sclerite attached to antrum (without triangular sclerite in *S. turbulentaria*) (see Plate 24, Figs 2–3).

Phenology. Bivoltine species with overlapping generations from mid-May to mid-September (Hausmann 2004).

Biology. Larva oligophagous on a wide range of plant species of different families (e.g., Fabaceae, Lamiaceae, Ericaceae, Asteraceae) (see Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. In Europe at altitudes from 0 to 1000 m and outside of Europe to 2200 m (Hausmann 2004).

Distribution. Widely distributed from Morocco, and Portugal to the Urals (Hausmann 2004). Distrubuted in Turkey, the Caucasus, Transcaucasus, the central Asian mountains and Mongolia (Viidalepp 1996; Hausmann 2004; Makhov 2023). In Iran reputedly reported from the province Azerbaijan-e Sharghi by Lehmann & Zahiri (2011).

DNA-barcoding. Nearest species: *S. halimodendrata* (Erschoff, 1874) with 5.5 % (see Supplementary Table S1).

Remarks. The occurrence in province Azerbaijan-e Sharghi has been reported by Lehmann & Zahiri (2011). However, it is possible that there is confusion with *Scopula turbulentaria steinbacheri* and the distribution of this species in Iran requires further confirmation.

Scopula turbulentaria (Staudinger, 1870)

(Plate 6, Figs 9–14; Plate 16, Fig. 2; Plate 24, Fig. 3; Map 7)

Acidalia turbidaria var. *turbulentaria* Staudinger, 1870. Horae Societatis Entomologicae Rossicae, variis sermonibus in Rossia usitatis editae, 7: 151. Syntypes 1 ♂ 2 ♀ (Greece, Attika).

Scopula turbidaria steinbacheri Prout, 1935. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4 (Supplememt): 36. Syntype(s) 15 (Iran, Elburs Mts., Mazanderan, Sabatku, Darekeroudbar) (NHMUK, examined). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Craspedia collata* Warren, 1901 (Lebanon: Beirut); *Craspedia habenata* Warren, 1901(Lebanon: Beirut); *Acidalia immutata* var. *syriacata* Neuburger, 1904 (Lebanon); *Acidalia turbidaria syriturcica* Wehrli, 1934 (ZFMK).

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Scopula turbidaria steinbacheri* Syntype 1 ♂, Iran, Darekeroudbar, Sabatku, Mazandaran, Elburs Mts., 21.v.1931, F. Steinbacher, NHMUK 014173562; Syntype 1 ♂, same data, but 17.v.1931, NHMUK 014173563, g. prep. NHMUK 010317469; Syntype 1 ♂, same data, but 23.vii.1931, NHMUK 014173564, g. prep. NHMUK 010317470; all in NHMUK.

Additional material examined: 28 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–23 mm. In Iran *Scopula turbulentaria* can externally be confused only with *S. rubiginata*, therefore characters are compared against this species. Ground colour (Plate 6, Figs 9–14) variable beige or light ocher to darker ocher (variable, from light brown to orange brown in *S. rubiginata*) (see Plate 6, Figs 7–14). In the male genitalia this species can be confused with *S. rubiginata* (see Plate 16, Figs 1–2). In the female genitalia without triangular sclerite (with triangular sclerite attached to antrum in *S. rubiginata*) (see Plate 24, Figs 2–3).

Phenology. Bi- or trivoltine in Europe (Hausmann 2004). In the Levant, bivoltine, with the first generation from late April to early July and a second generation from late October to later November (Hausmann *et al.* 2020). Investigated specimens in Iran were collected from March to October.

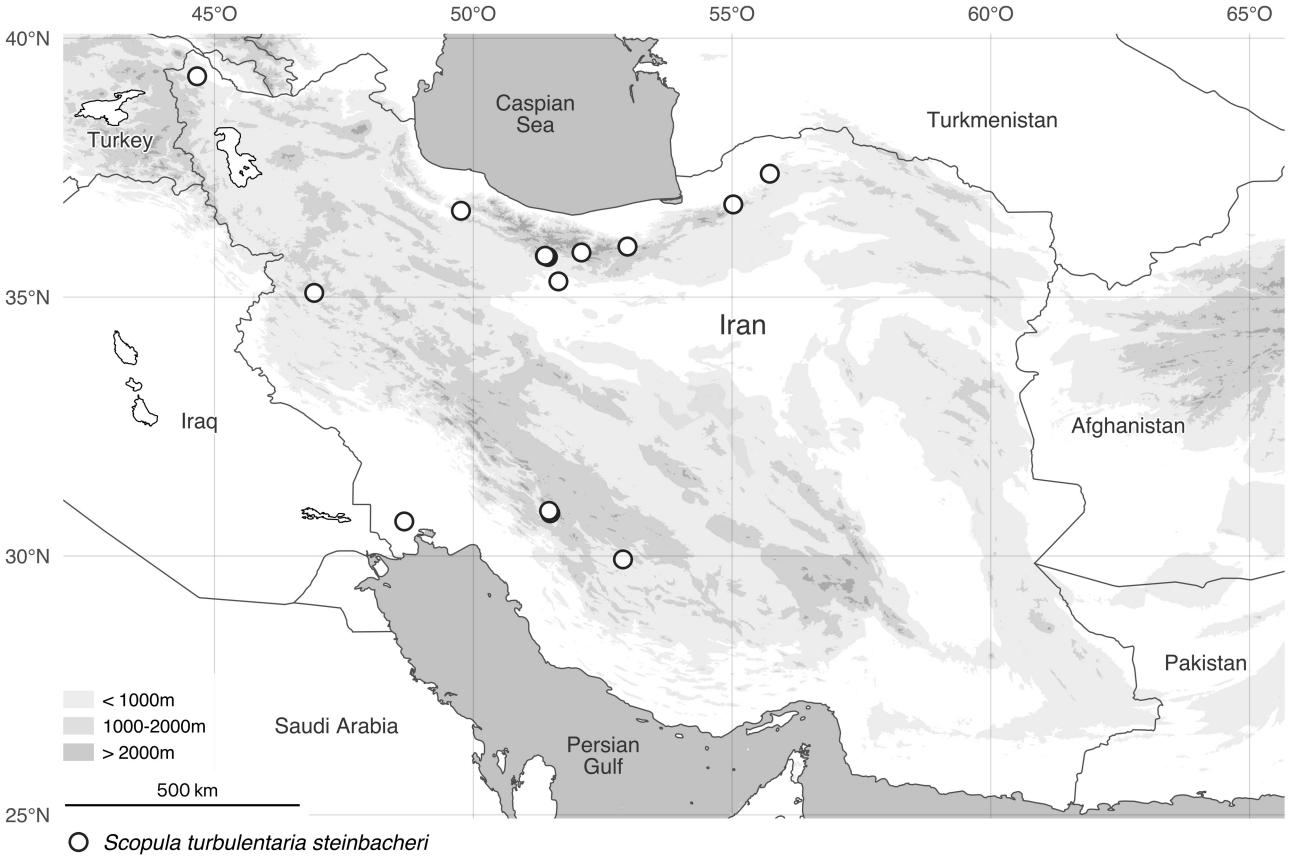
Biology. Food plants in Iran unknown. In Europe known to be a pest species on tobacco in southern Italy and

reared on *Plantago lanceolata* (Sannino & Espinosa 1999). Pupation takes place in the ground (Hausmann 2004). In the Levant possibly polyphagous (Hausmann *et al.* 2020).

Habitat. In Levant from -400 m to 1000 m (Hausmann *et al.* 2020). Investigated specimens in Iran were collected from 510 m to 2800 m.

Distribution. In Europe with East-Mediterranean distribution (Hausmann 2004). In Tunisia, Turkey and southern Transcaucasus and central and northern parts of Israel (Hausmann 2004; Hausmann *et al.* 2020). In Iran this species is represented by the subspecies *S. turbulentaria steinbacheri* distributed in the northern, western and southern parts (Map 7). Reported in the literature also for the provinces Azerbaijan-e Sharghi, Mazandaran and Tehran (Prout & Wehrli 1932–1953; Schwingenschuss 1939; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. halimodendrata* with 5.2 % (see Supplementary Table S1).



MAP 7. Distribution pattern of *Scopula turbulentaria steinbacheri* in Iran.

Scopula imitaria (Hübner, 1799)

(Plate 6, Figs 15–16; Plate 16, Fig. 3; Plate 24, Fig. 4)

Geometra imitaria Hübner, 1799. Sammlung europäischer Schmetterlinge 5, Geometrae (1). Syntype(s) lost (Europe).

Acidalia syriacaria Culot, 1918: Noctuelles et Géomètres d'Europe 3: pl. 12, Fig. 246. Syntype(s) (Syria) (ZFMK). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena fimbriata* Fourcroy, 1785 (France: Paris).

For the list of unavailable names, see Hausmann (2004).

Material examined: 4 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–26 mm (Hausmann 2004). *Scopula imitaria* externally cannot be confused with any other Iranian *Scopula* species (see Remarks). Ground colour (Plate 6, Figs 15–16) variable, from beige, orange to light brown. Transversal lines well pronounced. In the male genitalia (Plate 16, Fig. 3) 8th sternite basally protruding, cerata variable in length. In the female genitalia (Plate 24, Fig. 4) antrum with trapezoid sclerite. Lamella antevaginalis strongly sclerotized. Signum long and narrow.

Phenology. Generally, bivoltine species, with a first generation from mid-May to early July and a second generation from early August to mid-September (Hausmann 2004). Depending on where the populations occur, with a different number of generations, e.g., tri- or plurivoltine in the Levant (Hausmann 2004, Hausmann *et al.* 2020).

Biology. Larva polyphagous on a wide range of plant species of different families (e.g., Ranunculaceae, Oleaceae, Fabaceae, Asteraceae) (see Hausmann 2004).

Habitat. Found at altitudes from 0 m to 1000 m, to 1400 m in southern Europe and Morocco and to 1500 m in the Levant (Hausmann 2004; Hausmann *et al.* 2020).

Distribution. A sub-mediterranean distribution from northern Africa, Portugal to Crimea, including the British Isles (Hausmann 2004). In Turkey, Cyprus and the Levant (Hausmann 2004; Hausmann *et al.* 2020). Although reported for the Caucasus, northern Transcaucasus and northern Iran, confirmation is still needed (Viidalepp 1996; Hausmann 2004). If this species occurs in Iran, it would be represented by the subspecies *Scopula imitaria syriacaria,* but we cannot confirm its occurrence in Iran (see Remarks).

DNA-barcoding. Nearest species: *S. flaccidaria* with 5.3 % (see Supplementary Table S1).

Remarks. Although Viidalepp (1996) reported this species as an element of the Iranian fauna, we were unable to trace any specimens during our investigation. It is possible that this species does not occur in Iran, and the report may be a confusion with *Timandra comae*.

Scopula beckeraria (Lederer, 1853)

(Plate 7, Figs 1–6; Plate 16, Fig. 4; Plate 24, Fig. 5; Map 8)

Acidalia beckeraria Lederer, 1853. Verhandlungen der Zoologisch-Botanischen Gesellschaft in Wien 3: 258 (174). Syntypes 1 ♂ 2 ♀ (Sarepta), 2 (Elizabethpol) (MNHU).

Acidalia beckeraria assimilaria Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 62. Holotype ♀ (Central Asia, Ferghana: Alai Mts.) (MNHU). Valid at subspecific rank.

Acidalia beckeraria amataria Wehrli, 1927. In Bang-Haas Horae macrolep. Reg. pal. 1: 92. Syntypes 2♂ (central Russia: Sajan Mts., Tunkinsk Weissgebirge SW Irkutsk) (ZFMK). Valid at subspecific rank.

Acidalia rebeli Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 62. Lectotype ♂ (Croatia, Dalmatia, Zadar) (NHMV). Lectotype desiganted by Hausmann (2004). Valid at subspecific rank.

Scopula beckeraria hermonicola Hausmann, 1997. Entomofauna 18 (1): 6. Holotype ♂ (Northern Israel: Sede Nehamya) (ZSM, examined). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Scopula pseudoafghana* Ebert, 1965 (Afghanistan: Bamian).

For the list of unavailable names, see Hausmann (2004).

Material examined: 474 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 20–28 mm. In Iran *S. beckeraria* can be confused externally with *S. hoerhammeri*, and rarely also with *S. marginepunctata*. Therefore, characters are compared against these two species only. Ground colour (Plate 7, Figs 1–6) beige to darker yellowish-brown (yellowish-brown *S. hoerhammeri*; dirty grey white *S. marginepunctata*). Postmedial line well pronounced, medial line diffuse (similar in *S. hoerhammeri*; diffuse in *S. marginepunctata*) (see Plate 7, Figs 1–8, 11–15).

In the male genitalia 8th sternite basally convex, laterally concave, cerata medium sized (sternite basally convex, right ceras long, left ceras short in *S. hoerhammeri*; sternite basally shallow, cerata absent in *S. marginepunctata*) (see Plate 16, Figs 4–5; Plate 17, Fig. 2).

In the female genitalia antrum with sub-rectangular sclerite, apically notched (with sub-triangular sclerite, basally notched in *S. hoerhammeri*; with triangular or half-moon shaped sclerite in *S. marginepunctata*). Lamella antevaginalis strongly sclerotized, with transverse fold (strongly sclerotized, oval in *S. hoerhammeri*; with transverse fold in *S. marginepunctata*) (see Plate 24, Figs 5–6; Plate 25, Fig. 2).

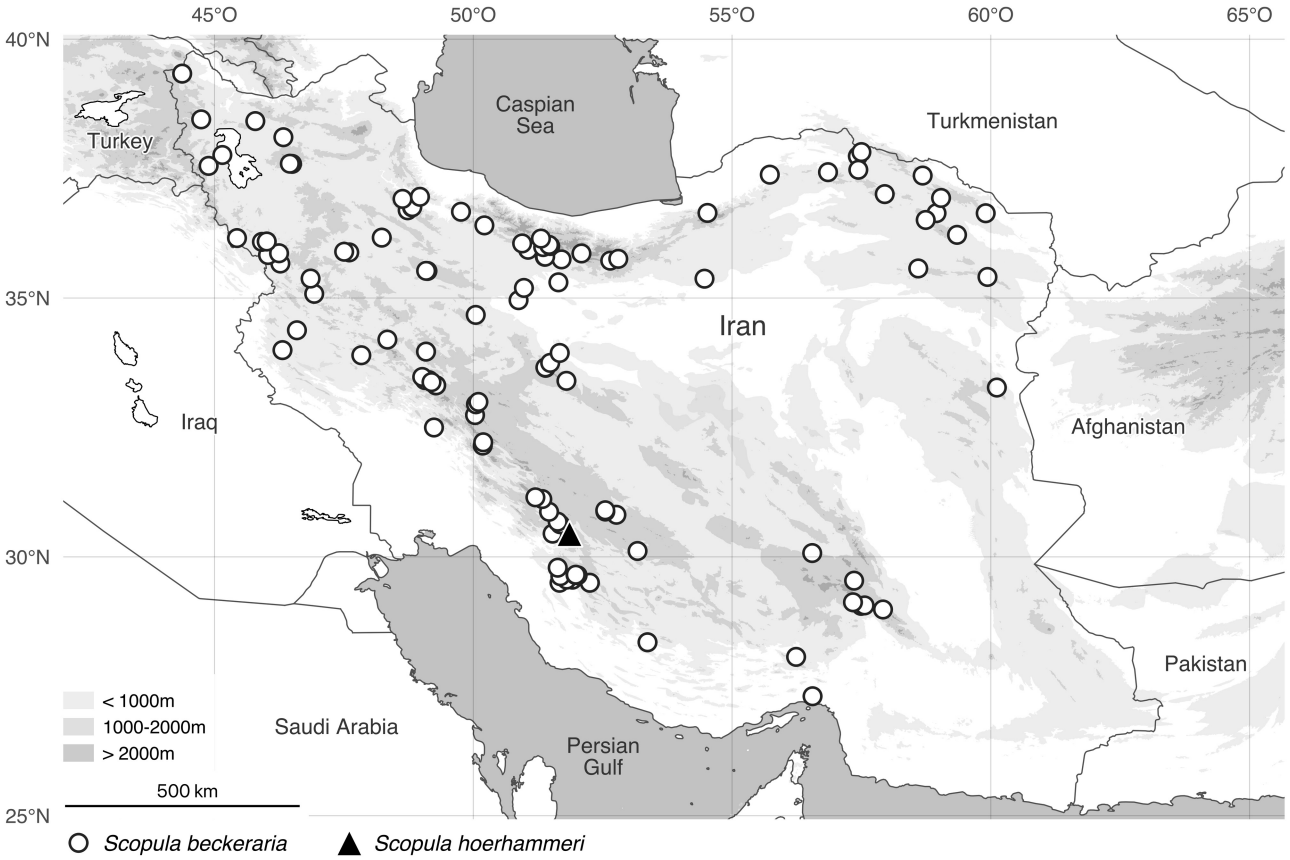
Phenology. Usually bivoltine, in Europe with a first generation from mid-May to early July and a second generation from late July to early September (Hausmann 2004). Rarely trivoltine from early April to mid-October (Hausmann 2004). Wiltshire (1943) reported two generations, one in spring and one in autumn and a mid-summer flight in the Iranian province Fars. Investigated specimens in Iran were collected from March to October.

Biology. Data for host plants rare. Larva on *Taraxacum officinale* (Hausmann 2004).

Habitat. From 0 m to 200 m in European Russia, to 1500 m in Israel and to 3500 m in Central Asia (Hausmann 2004, Hausmann *et al.* 2020). Investigated specimens in Iran were collected from 250 m to 3000 m.

Distribution. In Europe distributed in Macedonia, Greece, Bulgaria, southern European Russia and southern Urals (Hausmann 2004). Distributed in Turkey, Levant, Transcaucasus, northwestern India, the central Asian mountains and north western China (Viidalepp 1996; Hausmann 2004; Sihvonen 2005b; Hausmann *et al.* 2020; Makhov 2023). Widely distributed also in Iran, in the northern, western and southern parts (Map 8). Reported in the literature also for the provinces Ardabil, Fars, Kermanshah, Khorasan-e Razavi, Khorasan-e Shomali, Khuzestan, Mazandaran, Semnan and Tehran (Christoph 1873; Romanoff 1885; Schwingenschuss 1939; Brandt 1939; Brandt 1941; Wiltshire 1941; Sutton 1963; Wiltshire 1966; Barou 1967; Kalali 1976; Viidalepp 1988; Viidalepp 1996; Hausmann 2004; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. harteni* Hausmann, 2009 with 4.6 % (see Supplementary Table S1).



MAP 8. Distribution patterns of the *Scopula* species *S. beckeraria* and *S. hoerhammeri* in Iran.

Scopula hoerhammeri Brandt, 1941

(Plate 7, Figs 7–8; Plate 16, Fig. 5; Plate 24, Fig. 6; Map 8)

Scopula hoerhammeri Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft, 31 (3): 867. Syntypes ♂, ♀ (Iran, Fars, Barm-i-Firus) (in NHRS, examined).

Type material examined. Paratype 1 ♂, Iran, Fars, Straße, Ardekan–Talochosroe [Ardakan–Talle Khosrow], Comé [Komehr], 3750 m, 4.vii.1937, coll. Brandt, NHRS-LEPI 000010272, g. prep. 11019; Paratype 1 ♀, same data, but 3700 m, NHRS-LEPI 000010273, g. prep. 11020; in NHRS.

Diagnosis. Wingspan ♂ 28 mm, ♀ 26 mm. In Iran *Scopula hoerhammeri* can be confused externally with *S. beckeraria*, and rarely also with *S. marginepunctata*, therefore here it is compared against these two species only. Ground colour (Plate 7, Figs 7–8) yellowish-brown (beige to darker yellowish-brown in *S. beckeraria*; dirty grey white *S. marginepunctata*). Postmedial line well pronounced, medial line diffuse (similar in *S. beckeraria*; diffuse in *S. marginepunctata*) (see Plate 7, Figs 1–8, 11–15).

In the male genitalia 8th sternite basally convex, right ceras long, left ceras short (sternite basally convex, laterally concave, cerata medium sized in *S. beckeraria*; sternite basally shallow, cerata absent in *S. marginepunctata*) (see Plate 16, Figs 4–5; Plate 17, Fig. 2).

In the female genitalia antrum with sub-triangular sclerite, basally notched (with sub-rectangular sclerite, apically notched in *S. beckeraria*; with triangular or half-moon shaped sclerite in *S. marginepunctata*). Lamella antevaginalis strongly sclerotized, oval (strongly sclerotized, with transverse fold in *S. beckeraria*; with transverse fold in *S. marginepunctata*) (see Plate 24, Figs 5–6; Plate 25, Fig. 2).

Phenology. Investigated specimens in Iran were collected in July.

Biology. Unknown.

Habitat. Investigated specimens were collected at altitudes from 3700 m to 3750 m.

Distribution. Endemic species to southern Iran (Fars province) (see Map 8).

DNA-barcoding. No data available.

Scopula incanata (Linnaeus, 1758)

(Plate 7, Figs 9–10; Plate 17, Fig. 1; Plate 25, Fig. 1; Map 9)

Phalaena Geometra incanata Linnaeus, 1758. Caroli Linnaei...Systema naturae per regna tria naturae: secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis (Ed. 10) 1: 528 (Europe). Syntypes (Europe) (LSL).

Acidalia incanata ibericata Reisser, 1935. Entomologische Rundschau, 53 (5): 78. Syntypes ca. 50 ♂, 8 ♀ (central Spain: Sierra de Gredos) (in MNCN, NHMUK, NHMV, SMNK, ZSM). Valid at subspecific rank.

Acidalia incanata albida Silbernagel, 1944. Zeitschrift der Wiender entomologischen Gesellschaft, 29: 154. Syntypes ♂♀ (Macedonia: Istok). Valid at subspecific rank.

Scopula incanata rubeni Viidalepp, 1979. Uchen. Zap. Tartu gos. Univ. 12 (483): 85. Holotype ♂ (Russia: Tuva: Kyzyl) (IZBE). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena variegata* Scopoli, 1763 (north-western Slovenia: Carniolia); *Phalaena mediata* Fabricius, 1776 (Germany) (ZMUC); *Phalaena Geometra planata* Villers, 1789 (southern France); *Arrhostia incanaria* Hübner, 1825 (according to Hausmann (2004: 307): emendation, partly misidentified); *Idaea mutata* Treitschke, 1828 (Austria: Styria; Croatia; Hungary); *Acidalia mutataria* Duponchel, 1830 (according to Hausmann (2004: 307): emendation); *Acidalia adjunctaria* Boisduval, 1840 (Italy: Lombardian Alps); *Dosithea demutaria* Bruand, 1846 (France, Doubs: Besancon).

For the list of unavailable names, see Hausmann (2004).

Material examined: 12 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 24–30 mm (Hausmann 2004). Ground colour (Plate 7, Figs 9–10) light grey to darker grey, transversal lines diffuse. In Iran *Scopula incanata* can externally be confused only with *S. marginepunctata*. Therefore, here these two species are diagnosed based on their genitalia characters. In the male genitalia 8th sternite basally convex, cerata medium sized (sternite basally shallow, cerata absent in *S. marginepunctata*) (see Plate 17, Figs 1–2).

In the female genitalia antrum with triangular or pentagonal sclerite (with triangular or half-moon shaped sclerite in *S. marginepunctata*). Lamella antevaginalis strongly sclerotized, oval (with transverse fold in *S. marginepunctata*) (see Plate 25, Figs 1–2).

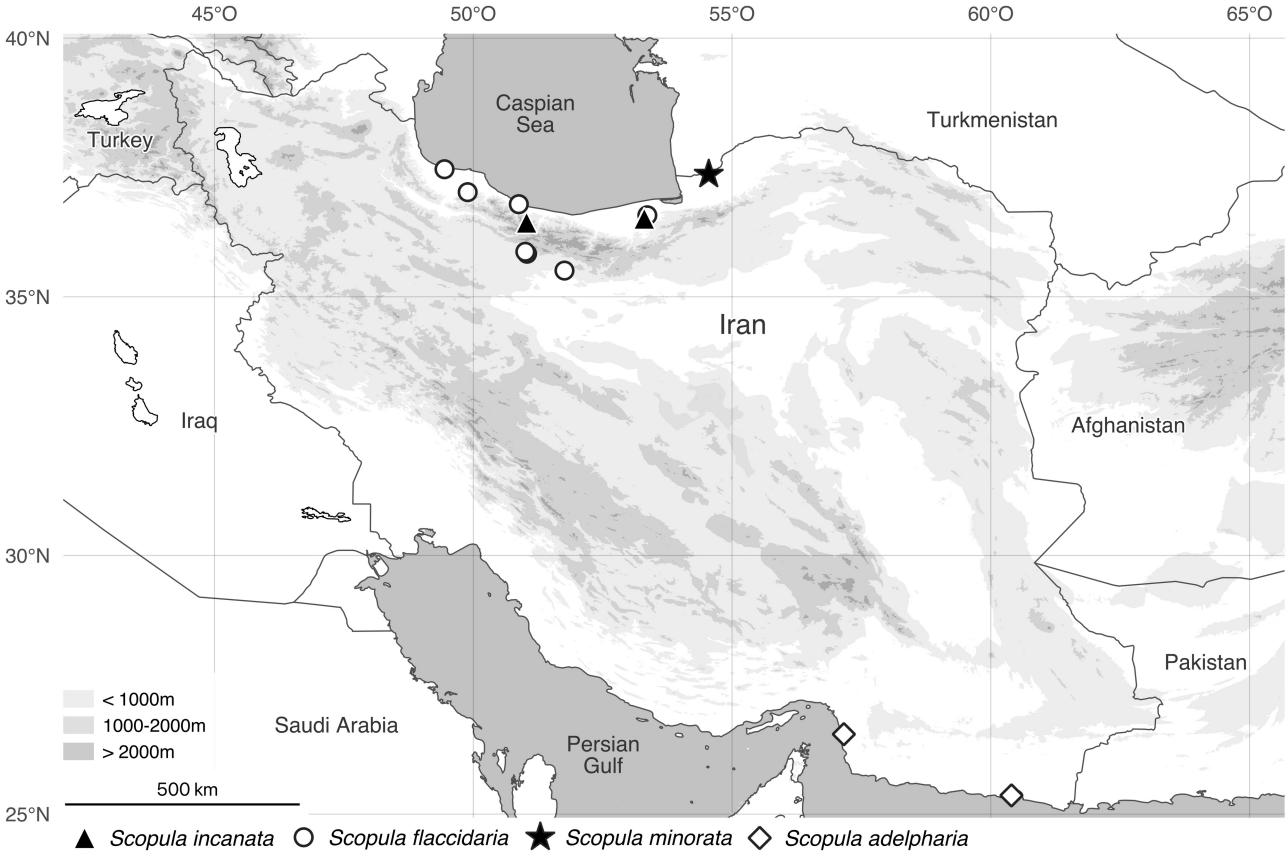
Phenology. In central Europe generally bivoltine species, from early-May to mid-September, depending on good conditions trivoltine (Hausmann 2004). Investigated specimens in Iran were collected from March to August.

Biology. Larva polyphagous on a wide range of plant species of different families (e.g., Polygonaceae, Rosaceae, Fabaceae) (see Hausmann 2004).

Habitat. From 0 m to 1400 m, to 2000 m in southern Alps and to 2300 m in southern Europe (Hausmann 2004). Investigated specimens in Iran were collected from 19 m to 2700 m.

Distribution. Widely distributed in Europe (Hausmann 2004). Also distributed in Turkey, the Caucasus, Transcaucasus, Siberia, northern Kazakhstan and Mongolia (Hausmann 2004; Makhov 2023). Report for northern Iran was still pending (Viidalepp 1996; Hausmann 2004) but here we can confirm the occurrence of this species for the northern parts of Iran (see Map 9). Reported in the literature also for the province Tehran (Schwingenschuss 1939).

DNA-barcoding. Nearest species: *S. scalercii* with 6.1 % (see Supplementary Table S1).



MAP 9. Distribution patterns of the *Scopula* species *S. incanata, S. flaccidaria, S. minorata* and *S. adelpharia* in Iran.

Scopula marginepunctata (Goeze, 1781)

(Plate 7, Figs 11–15; Plate 17, Fig. 2; Plate 25, Fig. 2; Map 10)

Phalaena Geometra marginepunctata Goeze, 1781. Entomologische beyträge zu des ritter Linné 12. ausgabe des natursystems 3 (3): 385. Syntype(s) (Europe).

Scopula marginepunctata terrigena Prout, 1935. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4 (Supplememt): 39. Syntype(s) 26 (Iran, Elburs Mts., Mazanderan, Sabatku, Darekeroudbar) (NHMUK, examined). Valid at subspecific rank.

Scopula marginepunctata argillacea Reisser, 1933. EOS 9: 240. Syntype(s) (Morocco: Rif mountains). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena Geometra coniugata* Borkhausen, 1794 (Europe, probably Germany); *Phalaena aniculosata* Rambur, 1829 (southern France: Montpellier); *Acidalia puellaria* Boisduval, 1840 (Switzerland, 'Helvetia') 1825; *Acidalia promutata* Guenée, 1858 (Europe); *Acidalia apertaria* Walker, 1863 (no type locality stated); *Acidalia pastoraria* Joannis, 1891 (Turkey: 'Cesaree'); *Acidalia marginepunctata* var. *madoniata* Fuchs, 1901 (Sicily); *Acidalia marginepunctata* var. *britonaria* Oberthür, 1917 (France, Bretagne: Cancale); *Acidalia marginepunctata* var. *subatrata* Wagner, 1919 (Italy, Friuli: Udine, Cividale distr., Attimis); *Acidalia marginepunctata* 'f.' *insubrica* Vorbrodt, 1930 (Switzerland: Mixos);

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Scopula marginepunctata terrigena* Type ♂, Iran, Darekeroudbar, Sabatku, Mazandaran, Elburs Mts., 22.v.1931, F. Steinbacher, NHMUK 014173548; in NHMUK.

Additional material examined: 516 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 23–27 mm. Ground colour (Plate 7, Figs 11–15) dirty grey white. In Iran *Scopula marginepunctata* can externally be confused only with *S. incanata*. Therefore, these two species are diagnosed based on genitalia characters here.

In the male genitalia 8th sternite basally shallow, cerata absent (sternite basally convex, cerata medium sized in *S. incanata*) (see Plate 17, Figs 1–2).

In the female genitalia antrum with triangular or half-moon shaped sclerite (with triangular or pentagonal sclerite in *S. incanata*). Lamella antevaginalis with transverse fold (strongly sclerotized, oval in *S. incanata*) (see Plate 25, Figs 1–2).

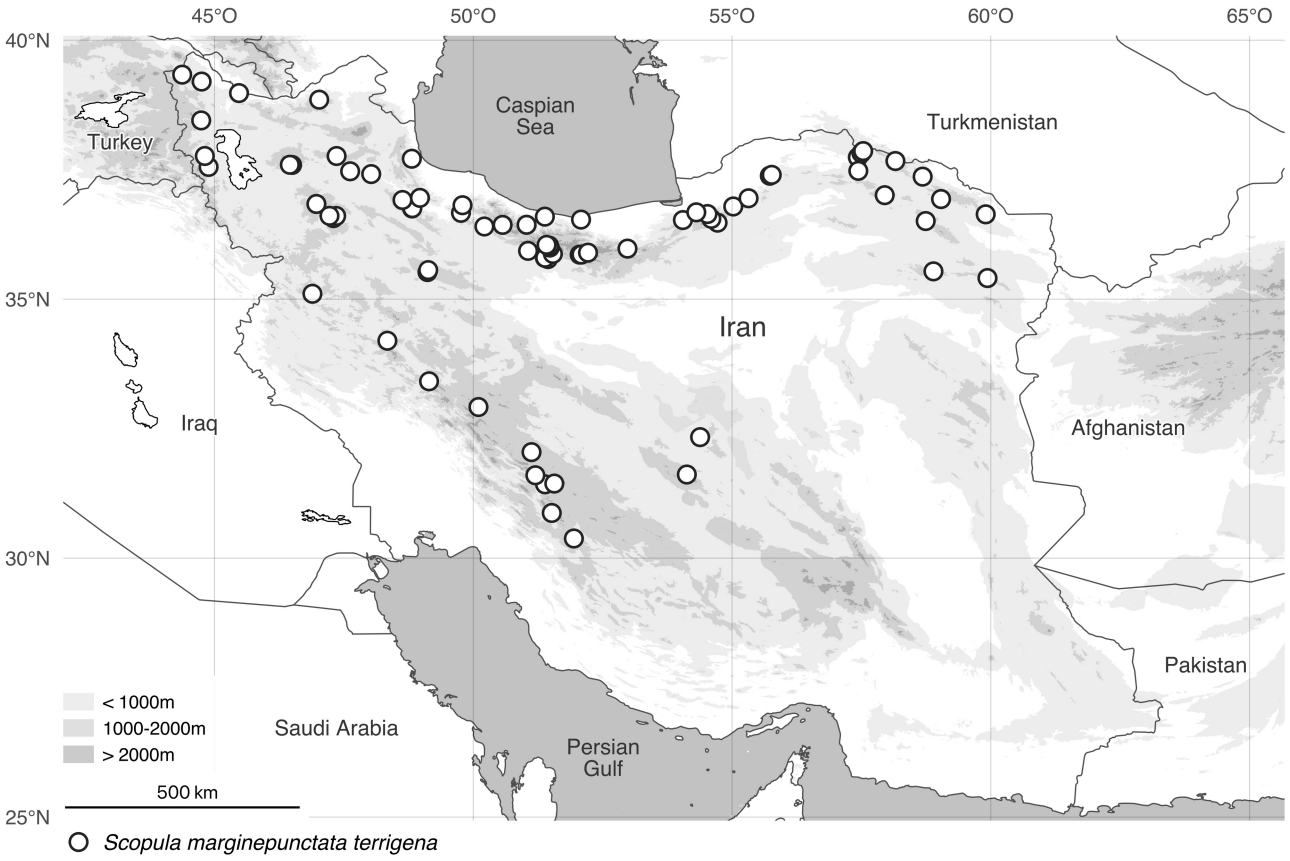
Phenology. Depending on the conditions from uni-, bi-, tri or plurivoltine species (Hausmann 2004, Hausmann *et al.* 2020). Investigated specimens in Iran were collected from April to October.

Biology. Larva polyphagous on a wide range of plant species of different families (e.g., Lamiaceae, Crassulaceae, Rosaceae, Fabaceae) (see Hausmann 2004).

Habitat. At altitudes from 0 m to 800 m north of the Alps, to 1700 m south of the Alps, to 2000 m in southern Europe and to 2700 m in Morocco and Central Asia (Hausmann 2004). In Israel to 1500 m (Hausmann *et al.* 2020). Investigated specimens in Iran were collected from 19 m to 3000 m.

Distribution. Widely distributed from northern Africa, and Portugal to the Urals, as well as in Middle East, Central Asia and Mongolia (Viidalepp 1996; Hausmann 2004; Hausmann *et al.* 2020). In Iran this species is represented by the subspecies *S. marginepunctata terrigena* and is widely distributed from in the northern, western and central parts of the country (see Map 10). Reported in the literature also for the provinces Ardabil, Azerbaijan-e Sharghi, Gilan, Mazandaran and Tehran (Schwingenschuss 1939; Wiltshire 1966; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S. nigropunctata* with 7.7 % (see Supplementary Table S1).



MAP 10. Distribution pattern of *Scopula marginepunctata terrigena* in Iran.

Scopula luridata (Zeller, 1847)

(Plate 7, Figs 16–17; Plate 17, Fig. 3; Plate 25, Fig. 3)

Idaea luridata Zeller, 1847. Isis, 1847 (1): 20. Syntype(s) (Greece, Rhodos) (NHMUK).

Acidalia distracta Butler, 1881. Proceedings of the Zoological Society of London 1881 (3): 616. Syntypes 3 (Pakistan: Karachi) (NHMUK, examined). Valid at subspecific rank.

Scopula luridata var. *sternecki* Prout, 1934. Lepidopterorum catalogus, 63: 198. No separate types (Corea). Replacement name for *chinensis* Sterneck, 1931. Valid at subspecific rank.

Acidalia distracta Butler, 1881: Proceedings of the Zoological Society of London, 1881 (3): 616. Syntypes (Pakistan: Karachi) (NHMUK). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Acidalia luridaria* Herrich-Schäffer, 1852 (according to Hausmann (2004: 312): emendation); *Acidalia luridaria* [syn.] *formosaria* Herrich-Schäffer, 1852 (Crete) (according to Hausmann (2004: 312): introduced in synonymy); *Acidalia coenosaria* Lederer, 1855 (Lebanon: Beirut; Cyprus); *Acidalia coenosaria chinensis* Sterneck 1931 (Corea); *Acidalia absconditaria* Butler, 1883 (India: Mhow); *Acidalia fulminataria* Turati, 1927 (Libya, Cyrenaica: Ain Mara).

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Scopula luridata luridata* Syntype, 1 ♂/♀, [Greece], Rhod.[os], Febr.[uary], [18]42, NHMUK 014173561; in NHMUK.

Scopula luridata distracta Syntype 1 ♂/♀, Pakistan, Karachi, Febr.[uary], [18]79, NHMUK 014173549; in NHMUK.

Additional material examined: 8 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–24 mm (Hausmann 2004). Ground colour (Plate 7, Figs 16–17) sandy, with variable and diffuse wing pattern. In Iran, *Scopula luridata* can externally be confused with *S. transcaspica* and species of the subgenus *Glossotrophia*. Therefore, here we compare te genitalia characters of *Scopula luridata* against the genitalia of this species *S. transcaspica* and species of the subgenus *Glossotrophia*.

In the male genitalia 8th sternite basally protruding, cerata long (sternite basally slightly convex, both cerata long, left sometimes shortened in *S. transcaspica*; sternite basally stem-like elongated in *Glossotrophia*) (see Plate 15, Figs 2–3; Plate 17, Fig. 3; Plate 19, Figs 2–4; Plate 20, Figs 1–7).

In the female genitalia lamella antevaginalis with strongly sclerotized u-shaped (as flat sclerite, shape variable, rather wider than long *S. transcaspica*; with a large squared sclerite, variable in shape in *Glossotrophia*). Antrum with small transverse sclerite (without sclerite in *S. transcaspica*; with long sclerite variable in shape in *Glossotrophia*) (see Plate 23, Figs 5–6; Plate 25, Fig. 3; Plate 26, Fig. 6; Plate 27, Figs 1–7).

Phenology. Tri- or plurivoltine species with generations from late April to late November in Europe and generations in all months of the year in Levant and Arabia (Hausmann 2004; Hausmann *et al.* 2020).

Biology. Larva polyphagous on a wide range of plant species of different families often on Solanaceae (e.g., Caryophyllaceae, Liliaceae, Rosaceae) (see Hausmann 2004).

Habitat. Restricted to lowlands in Europe, and found in southwestern Asia at altitudes from 0 m to 2300 m, from -400 m to 1000 m in Israel, to 1200 m in Jordan and in the southern Arabian Peninsula from 1800 to 3100 m (Hausmann 2004; Hausmann *et al.* 2020).

Distribution. Distributed in southern Greece, southern Turkey, Cyprus, Levant, Libya and Egypt, Arabian Peninsula, Iran to western India, Yemen, Ethiopia and Somalia (Hausmann 2004). Also, in northwestern China and Korea **(**Sihvonen 2005b; Choi & Kim 2016). In Iran this species is represented by the subspecies *S. luridata distracta* (Prout 1912–1915; Brandt 1941; Hausmann 2004).

DNA-barcoding. Nearest species: *S. omana* Wiltshire, 1977 with 2.5 % (see Supplementary Table S1).

Remarks. No specimens from Iran were available for this study, though, the presence of this species in Iran has been reported by several authors (Prout 1912–1915; Brandt 1941; Hausmann 2004).

Scopula immutata (Linnaeus, 1758)

(Plate 8, Figs 1–2; Plate 17, Fig. 4; Plate 25, Fig. 4)

Phalaena Geometra immutata Linnaeus, 1758: Caroli Linnaei...Systema naturae per regna tria naturae: secundum classes, ordines, genera, species, cum characteribus, differentiis, synonymis, locis (Ed. 10) 1: 528 (Europe). Syntypes (Europe) (LSL).

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Phalaena Geometra pallidata*: sensu Borkhausen, 1794 (according to Hausmann (2004: 316): misidentification); *Arrhostia immutaria* Hübner, 1825 (according to Hausmann (2004: 317): incorrect subsequent spelling and partly misidentification); *Acidalia caespitaria* Boisduval, 1840; *Acidalia myrtillata* Dadd, 1911 (Germany: Berlin, Spandau Forest).

For the list of unavailable names, see Hausmann (2004).

Material examined: 2 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–25 mm (Hausmann 2004). Due to its unique wing pattern, *Scopula immutata* cannot be confused externally with any other *Scopula* species in Iran. Ground colour (Plate 8, Figs 1–2) white to pale yellow.

In the male genitalia (Plate 17, Fig. 4) 8th sternite basally convex, cerata curved variable in size, often right ceras shortened.

In the female genitalia (Plate 25, Fig. 4) antrum with small circular sclerite. Lamella antevaginalis weakly sclerotized. Signum long and narrow.

Phenology. Uni- or bivoltine species depending on the region (Hausmann 2004).

Biology. Larva polyphagous on a wide range of plant species of different families (e.g., Primulaceae, Asteraceae, Lamiaceae, Rosaceae) (see Hausmann 2004; Beljaev 2016; Makhov 2023).

Habitat. Generally, at altitudes from 0 m to 700 m, occasionally to 900 m in southern Europe and rarely to 1850 m (Hausmann 2004).

Distribution. Widely distributed in Europe, from France to the Urals, and in the Caucasus, Kazakhstan, Siberia and Mongolia to Far East of Asia (Viidalepp 1996; Hausmann 2004; Makhov 2023). Reported for Siaret [Ziarat] in the Iranian province Golestan by Bienert (1869), but its occurrence in Iran has not been confirmed by Hausmann (2004). Here we also cannot confirm the occurrence of this species in Iran.

Remarks. Bienert (1869) reported this species as an element for the Iranian fauna. Though during our investigation no specimens from Iran could be traced. It can be assumed that this species does not occur in Iran.

DNA-barcoding. Nearest species: *S. hackeri* Hausmann, 1999 with 6.1 % (see Supplementary Table S1).

Scopula flaccidaria (Zeller, 1852)

(Plate 8, Figs 3–6; Plate 18, Figs 1–2; Plate 25, Figs 5–6; Map 9)

Geometra (*Acidalia*) *flaccidaria* Zeller, 1852. Stettiner entomologische Zeitung, 13 (6): 184. Syntypes (Turkey: Bursa ('Brussa')) (NHMUK, examined).

Scopula iranaria Bytinski-Salz & Brandt, 1937. The entomologist's record and journal of variation, 49: (11). Holotype ♂ (Iran, Keredj) (ZFMK, examined). Here regarded as synonym based on morphological examination and sympatric occurrence of these forms.

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Scopula iranaria* Cotype ♂, Iran, Keredj, 1400 m, 1933, leg. F. Brandt, Dr. H. Bytinski-Salz, g. prep. 2299/2020 H. Rajaei; in ZFMK.

Paratypes 1 ♂, 1 ♀, Iran, Elbursgebirge, Keredj, 1400 m, 12.v.1936, coll. Brandt, (♂) NHRS-LEPI 000010317, g. prep. 11060, (♀) NHRS-LEPI 000010318, g. prep. 11061; in NHRS.

Additional material examined: 14 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–24mm. In Iran *Scopula flaccidaria* can externally be confused only with *S. nigropunctata* in Iran, therefore it is compared here against this species. Ground colour (Plate 8, Figs 3–6) beige, hindwings pointed out (beige, hindwings not pointed out in *S. nigropunctata*) (see Plate 5, Figs 1–2; Plate 8, Figs 3–6).

In the male genitalia 8th sternite not strongly broadened, basally convex, both cerata long (very broad, square-like, basally straight, with thin cerata, left short, right long in *S. nigropunctata*) (see Plate 13, Fig. 2; Plate 18, Figs 1–2).

In the female genitalia lamella antevaginalis ring-shaped, antrum with tulip shaped sclerite (big with irregular folds in *S. nigropunctata*) (see Plate 22, Fig. 5; Plate 25, Figs 5–6).

Phenology. Generally, bivoltine, probably trivoltine, with a first generation from mid-May to mid-June and a second generation from mid-July to late August, the potential third generation from early to late September (Hausmann 2004). Investigated specimens in Iran were collected from March to September.

Biology. Larvae feed on *Polygonum*, *Plantago* and *Taraxacum officinale* (Hausmann 2004).

Habitat. In Europe at altitudes from 0 m to 300 m, in Turkey to 1200 m (Hausmann 2004). Investigated specimens in Iran were collected from 0 m to 1300 m.

Distribution. In Europe from eastern Austria to Ukraine and southern European Russia (Hausmann 2004). In Turkey, the Caucasus, Transcaucasus, Cyprus, Israel, northern Iraq and Central Asia (Wiltshire 1948; Wiltshire 1957; Viidalepp 1996; Hausmann 2004; Makhov 2023). In Iran distributed in the northern parts (Map 9). Reported in the literature also for the provinces Khorasan-e Shomali and Mazandaran (Schwingenschuss 1939; Prout 1912–1915; Sutton 1963; Wiltshire 1966; Viidalepp 1988; Hausmann 2004).

DNA-barcoding. Nearest species: *S. albidaria* (Staudinger, 1901) with 4.8 % (see Supplementary Table S1).

Scopula minorata (Boisduval, 1833)

(Plate 8, Figs 7–9; Plate 18, Fig. 3; Plate 26, Fig. 1; Map 9)

Geometra minorata Boisduval, 1833: Nouvelles annales du Muséum d'histoire naturelle Paris 2: 263. Syntype(s) (Mauritius).

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Acidalia ochroleucaria* Herrich-Schäffer, 1847 (southern Europe); *Acidalia inustaria* Herrich-Schäffer, 1847 (central Italy); *Acidalia colonaria* Herrich-Schäffer, 1852 (locality not stated); *Acidalia accessaria* Herrich-Schäffer, 1852 (locality not stated); *Acidalia mauritiata* Guenée, 1858 (Mauritius) (according to Hausmann (2004: 332): unnecessary replacement name for *minorata*); *Acidalia luculata* Guenée, 1858 (Reunion: Bourbon island); *Acidalia recessaria* Guenée, 1858 (Europe) (according to Hausmann (2004: 332): unnecessary replacement name for *accessaria*); *Acidalia ochroleucata* Guenée, 1858 (southern Europe, Cyprus); *Acidalia consentanea* Walker, 1861 (South Africa: Cape); *Acidalia hypochra* Meyrick, 1888 (Australia: Queensland, Duaringa; New South Wales, Sydney; South Australia, Mt. Lofty) (according to Hausmann (2004: 332): synonymy uncertain); *Cleta ochroleucata* var. *inustata* Gumppenberg, 1890; *Acidalia corcularia* Rebel, 1894 (Canary Islands); *Acidalia holobapharia* Mabille, 1900 (Madagascar: Diego Suarez); *Emmiltis* (*Craspedia*) *mombasae* Warren, 1904 (Kenya: Mombassa); *Acidalia tremula* Bastelberger, 1909 (Mozambique); *Acidalia turbidaria cheimerinaria* Rebel, 1928 (Cyprus: Limassol); *Ptychopoda medioumbraria* Turati, 1930(Libya, Tripolitania: Sidi Messri); *Acidalia* (*Ustocidalia*) *turbulentaria tripolitana* Sterneck 1933 (Libya: Tripoli); *Scopula ochroleucaria* ab. loc. *serrans* Prout, 1935 (Jordan: Ghor el Safieh); *Acidalia dresnayi* D. Lucas, 1937 (Morocco: Rabat).

For the list of unavailable names, see Hausmann (2004).

Material examined: 7 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 14–20 mm (Hausmann 2004). Ground colour yellowish-beige (Plate 8, Figs 7–9). *Scopula minorata* can externally be confused with *S. adelpharia* and *S. lactarioides*, but the genitalia of these three species are characteristic and can be used for species identification.

In the male genitalia 8th sternite with left ceras long, right ceras short (right ceras long, left ceras short and curved in *S. adelpharia*; both cerata long in *S. lactarioides*) (see Plate 18, Figs 3–4; Plate 19, Fig. 1).

In the female genitalia antrum with an oval sclerite, apically notched (with half-moon-shaped sclerite in *S. adelpharia*; with small rounded sclerite in *S. lactarioides*). Signum oval (weakly developed, elongated and narrow in *S. adelpharia*; absent *S. lactarioides*) (see Plate 26, Figs 1–2, 5).

Phenology. Plurivoltine species, generally active in all months of the year (Hausmann 2004). Investigated specimens in Iran were collected from March to May.

Biology. Larva polyphagous on a wide range of plant species of different families (e.g., Apocynaceae, Petuniaceae, Fabaceae) (see Hausmann 2004).

Habitat. At altitudes from 0 m to 200 m, rarely to 700 m (Hausmann 2004). Investigated specimen in Iran was collected in 17 m.

Distribution. Distributed along the Mediterranean coasts in Europe, Africa, Madagascar, Levant, Turkey, Afghanistan and Pakistan (Hausmann 2004). In Iran distributed in the northern province Golestan and the southern province Hormozgan (Map 9). Reported in the literature also for the provinces Khorassan-e Shomali and Qazvin (Wiltshire 1980; Hausmann 2004; Wieser & Stangelmaier 2005).

DNA-barcoding. Nearest species: *S. imitaria* with 8.0 % (see Supplementary Table S1).

Scopula adelpharia (Püngeler, 1894)

(Plate 8, Figs 10–13; Plate 18, Fig. 4; Plate 26, Fig. 2; Map 9)

Acidalia adelpharia Püngeler, 1894. Stettiner entomologische Zeitung, 55 (1–3): 76. Syntypes 2 ♂, 3 ♀ (Palestine: Jericho).

Scopula adelpharia pharaonis Sterneck, 1933. Zeitschrift des Österreichischen Entomologischen Vereins, 18: 9. Holotype (Egypt: Cairo). Valid at subspecific rank.

Material examined: 6 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 14–16 mm. Ground colour yellowish-beige (Plate 8, Figs 10–13). In Iran, *Scopula adelpharia* can externally be confused only with *S. minorata* and *S. lactarioides*, but the genitalia of these three species are characteristic and can be used for species identification.

In the male genitalia 8th sternite with right ceras long, left ceras short and curved (left ceras long, right ceras short in *S. minorata*; both cerata long in *S. lactarioides)* (see Plate 18, Figs 3–4; Plate 19, Fig. 1).

In the female genitalia antrum with half-moon-shaped sclerite (with an oval sclerite, apically notched in *S. minorata*; with small rounded sclerite in in *S. lactarioides*). Signum weakly developed, elongated and narrow (oval in *S. minorata*; absent *S. lactarioides*) (see Plate 26, Figs 1–2, 5).

Phenology. Plurivoltine species, generally active in all months of the year (Hausmann *et al.* 2020). Investigated specimens in Iran were collected in March.

Biology. Polyphagous, larva feeding on species of different families (e.g., Fabaceae, Asteraceae, Rosaceae) (Wiltshire 1990, Hausmann *et al.* 2020).

Habitat. In Israel from -400 m to 1100 m (Hausmann *et al.* 2020). Investigated specimens in Iran were collected in 50 m.

Distribution. Distributed in the Levant, the Arabian Peninsula, Sokotra, Sudan, Ethiopia, Djibouti, Mali and Tanzania (Hausmann *et al.* 2020). In Iran distributed in the southeastern parts (see Map 9) and has been reported in the literature also for southern Iran (Prout 1912–1915; Wiltshire 1980)

DNA-barcoding. Nearest species: *S. rhodinaria* (Rebel, 1907) with 8.0 % (see Supplementary Table S1).

Scopula albiceraria (Herrich-Schäffer, 1847)

(Plate 8, Figs 14–15; Plate 18, Fig. 5; Plate 26, Fig. 3)

Acidalia albiceraria Herrich-Schäffer, 1847. Systematische Bearbeitung der Schmetterlinge von Europa, 3 (24): 23 (non binominal). Syntypes (south-eastern European Russia, Krasnoarmeysk ('Sarepta'); erroneous locality southern Europe in original description).

Acidalia albiceraria vitellinaria Eversmann, 1851. Bulletin de la Société impériale des naturalistes de Moscou, 24 (2): 641. Syntypes ([Russia]: eastern Siberia). Valid at subspecific rank.

Synonymies (for more details on nomenclature see Scoble 1999): *Acidalia sulphuraria* Freyer, 1847 ([Russia]: Sarepta [Krasnoarmeysk]).

For the list of unavailable names, see Hausmann (2004).

Material examined: 2 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–24 mm (Hausmann 2004). Ground colour creamy yellowish- to reddish-white, strongly pronounced transversal lines and dark suffusion in the medial area. (Plate 8, Figs 14–15). *Scopula albiceraria*, if present in Iran (see Remarks), can externally be confused only with *S. immistaria*. A diagnosis can be made with certainty based on the genitalia characters.

In the male genitalia 8th sternite basally notched, laterally concave, cerata short, broad (basally notched, broad, cerata medium sized and thin in *S. immistaria*) (see Plate 18, Figs 5–6).

In the female genitalia antrum with small v-shaped sclerite (with very small notched sclerite in *S. immistaria*) (see Plate 26, Figs 3–4).

Phenology. Bivoltine species, flying from early June to late August (Hausmann 2004).

Biology. Unknown.

Habitat. In Europe at altitudes from 0 m to 300 m, and Asia from 500 m to 1700 m (Hausmann 2004). Investigated specimens from Mongolia were collected from 774 m to 2900 m.

Distribution. Southeastern Russia, Urals, Mongolia (Hausmann 2004). Turkmenia, Kazakhstan and southern Siberia (Viidalepp 1996; Hausmann 2004; Makhov 2023). The occurrence in the Caucasus, Transcaucasus questionable (Hausmann 2004).

Remarks. Prout (1912–1915) reported this species as an element for the Iranian fauna. Though during our investigation no specimens from Iran could be traced. It can be assumed that this species does not occur in Iran, and the report is probably due to confusion with *S. immistaria*.

DNA-barcoding. Nearest species: *S. latelineata* (Graeser, 1892) with 1.8 % (see Supplementary Table S1).

Scopula immistaria (Herrich-Schäffer, 1852)

(Plate 8, Figs 16–17; Plate 18, Fig. 6; Plate 26, Fig. 4; Map 11)

Acidalia immistaria Herrich-Schäffer, 1847: Systematische Bearbeitung der Schmetterlinge von Europa, 6 (55): 68 (non binominal). Syntypes (Azerbaijan, Kirowabad (Elisabethpor)) (MNHU).

Scopula immistaria beshkovi Gelbrecht & Hausmann, 1997. Linzer biologische Beiträge, 29 (2): 984. Holotype ♂ (Bulgaria: Pobitide Kamani near Varna) (ZSM). Valid at subspecific rank.
For the list of unavailable names, see Hausmann (2004).

Material examined: 165 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–28 mm. Ground colour creamy white, with finely drawn transversal lines (Plate 8, Figs 16–17). In Iran *Scopula immistaria* can externally be easily confused with *S. albiceraria*, if the latter species is present in Iran (see Remarks of *S. albiceraria*). A diagnosis is certain based on the genitalia characters.

In the male genitalia 8th sternite basally notched, broad, cerata medium sized and thin (basally notched, laterally concave, cerata short, broad in *S. albiceraria*) (see Plate 18, Figs 5–6).

In the female genitalia antrum with very small notched sclerite (with small v-shaped sclerite in *S. albiceraria*) (see Plate 26, Figs 3–4).

Phenology. Bivoltine species, with generations from mid-May to early September, overlapping in July (Hausmann 2004). Univoltine in high altitudes (Hausmann 2004). Investigated specimens in Iran were collected from May to August.

Biology. Possibly monophagous on *Silene* (Caryophyllaceae) (Hausmann 2004).

Habitat. At altitudes from 700 m to 2800 m (Hausmann 2004). Investigated specimens in Iran were collected from 510 m to 3000 m.

Distribution. In Europe in southern Russia, eastern Ukraine (Hausmann 2004). Also in Turkey, the Caucasus, Transcaucasus, northern Iraq and Turkmenia (Viidalepp 1996; Hausmann 2004). In Iran distributed in northern and western parts, with isolated populations in south-eastern province Kerman (Map 11) (Hausmann 2004). Reported in the literature also for the provinces Fars, Golestan, Kerman, Mazandaran and Tehran (Lederer 1871; Prout 1912–1915; Schwingenschuss 1939; Brandt 1939; Viidalepp 1996; Hausmann 2004; Lehmann & Zahiri 2011).

DNA-barcoding. Nearest species: *S.* with 4.3 % (see Supplementary Table S1).

Scopula lactarioides Brandt, 1941

(Plate 8, Figs 18–19; Plate 19, Fig. 1; Plate 26, Fig. 5; Map 11)

Scopula lactarioides Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft, 31 (3): 867. Syntypes ♂, ♀ (Iran, Bender Tchahbahar) (in NHRS, examined).

Type material examined. Paratype 1 ♂, Iran, Baloutchistan, Bender Tchahbahar, 24.ii.1938, coll. Brandt, NHRS 000010314, g. prep. 11057; in NHRS.

Additional material examined: 1 ♀ (see appendix).

Description of the female genitalia. Papillae anales rounded, simple; apophyses anteriores 2/3 of apophyses posteriores; antrum with small rounded sclerite; signum absent (Plate 26, Fig. 5).

Diagnosis. Wingspan ♂ 16.8 mm, ♀ 16.6 mm. Ground colour beige (Plate 8, Figs 18–19). It can externally be confused with *S. minorata* and *S. adelpharia*, but the genitalia of these three species are characteristic and can be used for species identification.

In the male genitalia 8th sternite with both cerata long (left ceras long, right ceras short in *S. minorata*; right ceras long, left ceras short and curved in *S. adelpharia*) (see Plate 18, Figs 3–4; Plate 19, Fig. 1).

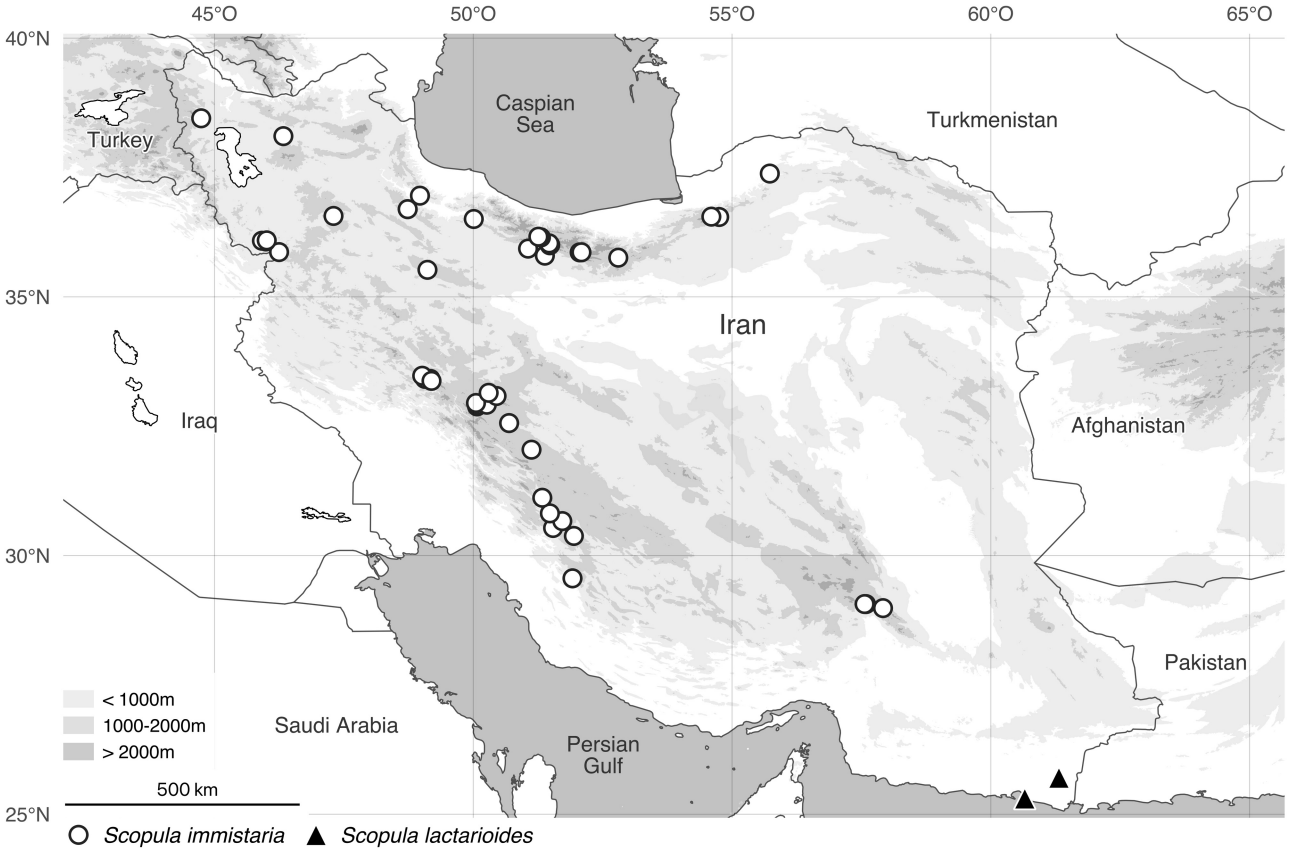
In the female genitalia antrum with small rounded sclerite (with an oval sclerite, apically notched in *S. minorata*; with half-moon-shaped sclerite in *S. adelpharia*). Signum absent (oval in *S. minorata*; weakly developed, elongated and narrow in *S. adelpharia*) (see Plate 26, Figs 1–2, 5).

Phenology. Specimens from Iran were collected end of February and end of March.

Biology & Habitat. Unknown.

Distribution. Endemic species to southeastern Iran (Sistan-o-Baluchestan province) (Map 11). Reported in the literature also for the provinces Bushehr, Hormozgan, Kerman, and Sistan-o-Baluchestan (Brandt 1941; Reisser 1958; Lehmann *et al.* 2009).

DNA-barcoding. No data available.



MAP 11. Distribution patterns of the *Scopula* species *S. immistaria* and *S. lactarioides* in Iran.

Scopula diffinaria (Prout, 1913)

(Plate 9, Figs 1–6; Plate 19, Figs 2–3; Plate 26, Fig. 6; Plate 27, Fig. 1; Map 12)

Glossotrophia diffinaria Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 83. Syntype(s) (Asia minor) (NHMUK, examined).

Glossotrophia asiatica Brandt, 1938. Entomologische Rundschau, 55 (49): 574. Syntypes 6 ♂, ♀ (Iran, Fort Mian-Kotal) (NHRS, examined). Here regarded as synonym based on morphological examination and no clear geographical delimitation to the nominate subspecies.

Type material examined. *Glossotrophia asiatica* Paratypes 1 ♂, 1 ♀, Iran, Fars, Straße, Ardekan–Talochosroe [Ardakan–Talle Khosrow], Comé [Komehr], 2600 m, 5.viii.1937, coll. Brandt, (♂) NHRS-LEPI 000010178, g. prep. 10872, (♀) NHRS-LEPI 000010179, g. prep. 10873; in NHRS.

Additional material examined: 68 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 22–29 mm. In Iran, *Scopula diffinaria* can externally be confused with *S. orbeorum*, *S. chalcographata* and *S. sacraria*, therefore here we compare *S. diffinaria* only with these three species. Largest species of the subgenus *Glossotrophia* in Iran (size range similar but ground colour paler in *S. orbeorum*; *S. chalcographata* and *S. sacraria* smaller) (see Plate 9, Figs 1–12).

In the male genitalia 8th sternite, with polymorphic cerata, cerata short or right ceras long and slender, left ceras short or both cerata long (sternite, with both cerata of medium size in *S. orbeorum*; sternite, with right ceras of medium size, left ceras short in *S. chalcographata*; sternite basally strongly elongated, both cerata long and narrow in *S. sacraria*) (see Plate 19, Figs 2–4; Plate 20, Figs 1–2).

In the female genitalia lamella antevaginalis with a large squared sclerite (similar in *S. orbeorum* and *S. sacraria*; with a large sub-rectangular sclerite in *S. chalcographata*). Antrum with long sclerite, posteriorly notched (similar in *S. orbeorum*; long sclerite, posteriorly strongly notched in *S. chalcographata*; with long and narrow sclerite, posteriorly notched in *S. sacraria*) (see Plate 26, Fig. 6; Plate 27, Figs 1–5).

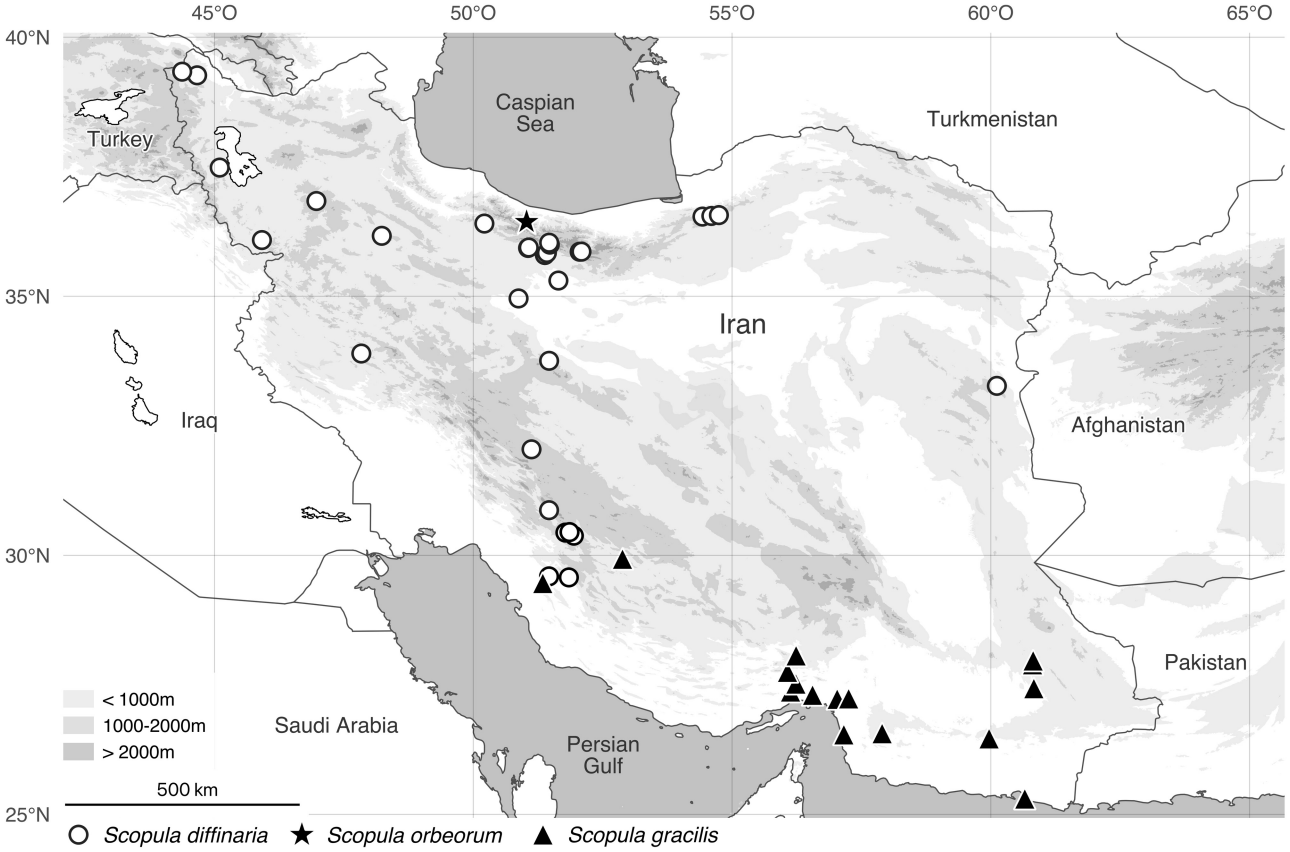
Phenology. Bivoltine species flying from May to September, second generation sometimes incomplete (Hausmann 2004). Investigated specimens in Iran were collected from March to October.

Biology. Larval host plants unknown. Adults feed on various Caryophyllaceae, *Linum catharticum* (Linaceae), and probably on *Polygonum* (Polygonaceae) (Hausmann & Dötterl 2004).

Habitat. At altitudes from 700 m to 1800 m (Hausmann 2004). Investigated specimens in Iran were collected from 700 m to 2800 m.

Distribution. Distributed from Turkey to Transcaucasus and northern Iraq (Viidalepp 1996; Hausmann 2004). In Iran distributed in the northern and western parts to the south Iranian province Fars (Map 12). Reported in the literature also for the province Tehran (Schwingenschuss 1939; Wiltshire 1966; Hausmann 2004).

DNA-barcoding. Nearest species: *S. alba* (Hausmann 1993) with 2.0 % (see Supplementary Table S1).



MAP 12. Distribution patterns of the *Scopula* species *S. diffinaria, S. orbeorum* and *S. gracilis* in Iran.

Scopula orbeorum (Hausmann, 1996)

(Plate 9, Figs 7–8; Plate 19, Fig. 4; Plate 27, Fig. 2; Map 12)

Glossotrophia orbeorum Hausmann, 1996. Spixiana Supplement, 22: 3. Holotype ♂ (Persia [Iran], Elburs Mts., Tacht i Suleiman, Särdaab Tal) (SNSB, examined).

Type material examined. Holotype ♂, Persia sept. [Iran], Elburs mts.c.s., Tacht i Suleiman, Särdab-Tal (Vanderban), 25-2700cm, 14.-18.vii.[19]37, E. Pfeiffer & W. Forster leg., München, g. prep. ZSM 1970; Paratype 1 ♀, same data as holotype, g. prep. ZSM 4248; all in ZSM.

Diagnosis. Wingspan ♂ 25 mm, ♀ 26.5 mm. In Iran, *Scopula orbeorum* can externally be confused with *S. diffinaria*, *S. chalcographata* and *S. sacraria*, therefore here we compare *S. orbeorum* only with these three species. Largest species of the subgenus *Glossotrophia* in Iran (size range similar but ground colour more colourful in *S. diffinaria*; *S. chalcographata* and *S. sacraria* smaller) (see Plate 9, Figs 1–12).

In the male genitalia 8th sternite, with both cerata of medium size (sternite, with polymorphic cerata, cerata short or right ceras long and slender, left ceras short or both cerata long in *S. diffinaria*; sternite, with right ceras of

medium size, left ceras short in *S. chalcographata*; sternite basally strongly elongated, both cerata long and narrow in *S. sacraria*) (see Plate 19, Figs 2–4; Plate 20, Figs 1–3).

In the female genitalia lamella antevaginalis with a large squared sclerite (similar in *S. diffinaria* and *S. sacraria*; with a large sub-rectangular sclerite in *S. chalcographata*). Antrum with long sclerite, posteriorly notched (similar in *S. diffinaria*; long sclerite, posteriorly strongly notched in *S. chalcographata*; with long and narrow sclerite, posteriorly notched in *S. sacraria*) (see Plate 26, Fig. 6; Plate 27, Figs 1–5).

Phenology. Types collected in July (Hausmann 1996).

Biology. Unknown.

Habitat. Types collected at altitudes from 2500 m to 2700 m (Hausmann 1996).

Distribution. Endemic species to Iran, only known from northern Iran (Map 12)

DNA-barcoding. Nearest species: *S. uberaria* with 3.6 % (see Supplementary Table S1).

Scopula chalcographata (Brandt, 1938)

(Plate 9, Figs 9–10; Plate 20, Fig. 1; Plate 27, Fig. 3; Map 13)

Glossotrophia chalcographata Brandt, 1938. Entomologische Rundschau, 55 (49): 574. Syntypes ♂, ♀ (Iran, Fort Mian-Kotal) (NHRS, examined).

Glossotrophia chalcographata sinaica Rebel, 1948. Zeitschrift der Wiener Entomologischen Gesellschaft, 32 (5–7): 57. Holotype ♀ (Egypt: Wadi Feran) (TMB). Valid at subspecific rank.

Type material examined. Paratypes 1 ♂, 1 ♀, Iran, Fars, Straße Chiraz–Kazeroun, Fort Mian-Kotal, ca. 2000 m, 7.-10.v.1937, coll. Brandt, (♂) NHRS-LEPI 000010181, g. prep. 10875, (♀) NHRS-LEPI 000010180, g. prep. 10874; in NHRS.

Additional material examined: 147 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 18–25 mm. In Iran, *Scopula chalcographata* can externally be confused only with *S. diffinaria*, *S. orbeorum* and *S. sacraria*, but these species could be easily diagnosed based on their genitalia characters.

In the male genitalia 8th sternite, with right ceras of medium size, left ceras short (sternite, with polymorphic cerata, cerata short or right ceras long and slender, left ceras short or both cerata long in *S. diffinaria*; sternite, with both cerata of medium size in *S. orbeorum*; basally strongly elongated, both cerata long and narrow in *S. sacraria*) (see Plate 19, Figs 2–4; Plate 20, Figs 1–3).

In the female genitalia lamella antevaginalis with a large sub-rectangular sclerite (with a large squared sclerite in *S. diffinaria*; *S. orbeorum* and *S. sacraria*). Antrum with long sclerite, posteriorly strongly notched (long sclerite, posteriorly notched in *S. diffinaria* and *S. orbeorum*; with long and narrow sclerite, posteriorly notched in *S. sacraria*) (see Plate 26, Fig. 6; Plate 27, Figs 1–5).

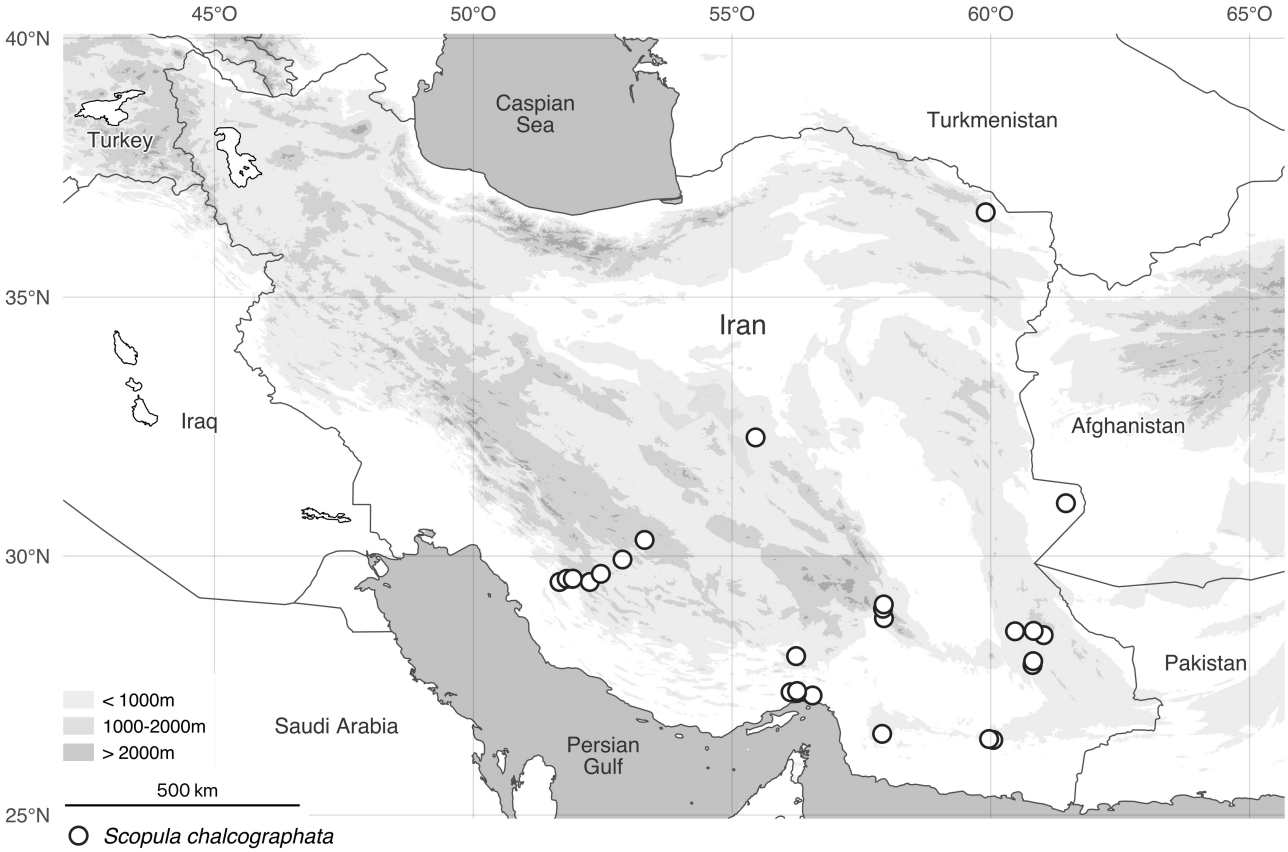
Phenology. Bivoltine species in the Levant and the Arabian Peninsula (Hausmann *et al.* 2020). Investigated specimens in Iran were collected from March to June.

Biology. Larva feeding on *Silene* and *Gypsophila* (Caryophyllaceae) (Hausmann *et al.* 2016b; Hausmann *et al.* 2020).

Habitat. In Israel at altitudes from -400 m to 200 m, and to 1000 m in Jordan (Hausmann *et al.* 2020). Investigated specimens in Iran were collected from 60 m to 2800 m.

Distribution. Distributed across Transcaucasus, from eastern Egypt to Jordan, Israel and the Arabian Peninsula (Viidalepp 1996; Hausmann *et al.* 2020). In Iran distributed in the north-eastern and south-eastern parts (Map 13). Reported in the literature also for the provinces Bushehr, Fars, Hormozgan, Kerman, and Sistan-o-Baluchestan (Brandt 1938; Brandt 1939; Brandt 1941; Reisser 1958; Kouznetsov 1959; Wiltshire 1980; Viidalepp 1996; Lehmann *et al.* 2009).

DNA-barcoding. Nearest species: *S. uberaria* with 3.3 % (see Supplementary Table S1).



MAP 13. Distribution pattern of *Scopula chalcographata* in Iran.

Scopula sacraria (Bang-Haas, 1910)

(Plate 9, Figs 11–12; Plate 20, Figs 2–3; Plate 27, Figs 4–5; Map 14)

Acidalia sacraria Bang-Haas, 1910. Deutsche entomologische Zeitschrift Iris 24 (3): 42. Syntypes ♂, ♀ (Russia, Uralsk) (MNHU).

Glossotrophia romanaria semitata Prout, 1913. In: Seitz, A. (Ed.), Die Großschmetterlinge der Erde 4: 83. Holotype ♂ (Lebanon, Baalbeck) (NHMUK, examined). Valid at subspecific rank.

Glossotrophia asellaria taurica Wehrli, 1930. Internationale Entomologische Zeitschrift, 23 (37/38): 430. Syntypes ♂, ♀ (Turkey, Maras) (NHMUK & ZFMK, examined). Valid at subspecific rank.

Glossotrophia ariana Ebert, 1965. Stuttgarter Beiträge zur Naturkunde, 142: 10. Holotype ♂ (Afghanistan: Sarobi) (SMNK, examined). Valid at subspecific rank.

Glossotrophia semitata fumata Hausmann, 1993: Mitteilungen der Münchner Entomologischen Gesellschaft, 83: 88. Holotype ♂ (Cyprus: Platres) (NHMUK). Valid at subspecific rank.

Glossotrophia bullata Vojnits, 1986. Annales Musei historico-naturalis hungarici, 78: 219. Holotype ♀ (Iran, Baloutchistan, Bendar Tchahabar) (SMNK). Here regarded as synonym to *S. sacraria ariana* based on morphological examination and the lack of clear geographical delimitation from this subspecies.

Synonymies (for more details on nomenclature see Scoble 1999 and Hausmann 2004): *Glossotrophia tangii* Ebert, 1965 (Afghanistan: Sarobi); *Glossotrophia ghirshmani* Wiltshire, 1966 (Afghanistan: Kabul).

For the list of unavailable names, see Hausmann (2004).

Type material examined. *Glossotrophia romanaria semitata* Holotype ♂, [Lebanon], Baalbeck, at light, v.05, [leg.] P. P. Graver, NHMUK 014173556; in NHMUK.

Glossotrophia asellaria taurica Paratype 1 ♂, [Turkey], Taurus c., Marasch, 10.v.[19]28, 700 m, leg. E. Pfeiffer, NHMUK 014173537, g. prep. NHMUK 010317462; Paratype 1 ♀, [Turkey], Taurus c., Marasch, 15-30.v.[19]29, 7-900 m, leg. E. Pfeiffer, NHMUK 014173538, g. prep. NHMUK 010317463; in NHMUK.

Glossotrophia ariana Paratype 1 ♂, O.-Afghanistan, Sarobi, 1100 m, 17.iv.1962, g. prep. G 40; Paratype 1 ♀, same data, but 19.iv.1962, g. prep. G 44; all in SMNK.

Glossotrophia tangii Holotype ♂, O.-Afghanistan, Sarobi, 1100 m, 29.x.1962, g. prep. G 43; Paratype 1 ♀, same data, but 16.ix.1963, g. prep. G 43; all in SMNK.

Glossotrophia ghirshmani Holotype ♂, Afghanistan, Kabul, 15.vii.[19]43, leg. Ghirshman for coll. Wiltshire, g. prep. E.P. Wiltshire 1165; in NHMUK. Paratype 1 ♀, O.-Afghanistan, Sarobi, 1100 m, 3.vii.1956, leg. H. G. Amsel, g. prep. 2259/2020 H. Rajaei; Paratype 1 ♂, N.-Afghanistan, Polichomri, 700 m, 28.v.1956, leg. H. G. Amsel, g. prep. 2260/2020 H. Rajaei; Paratype 1 ♂, same data, but 5.v.1956, leg. H. G. Amsel, g. prep. 2266/2020 H. Rajaei; all in SMNK.

Glossotrophia bullata Holotype ♀, Iran, Baloutchistan, Bender Tchahbahar, Dezember 1937 coll. Brandt [holotype, couldn´t be traced at SMNK, only genitalia preparation slide was available]; in SMNK.

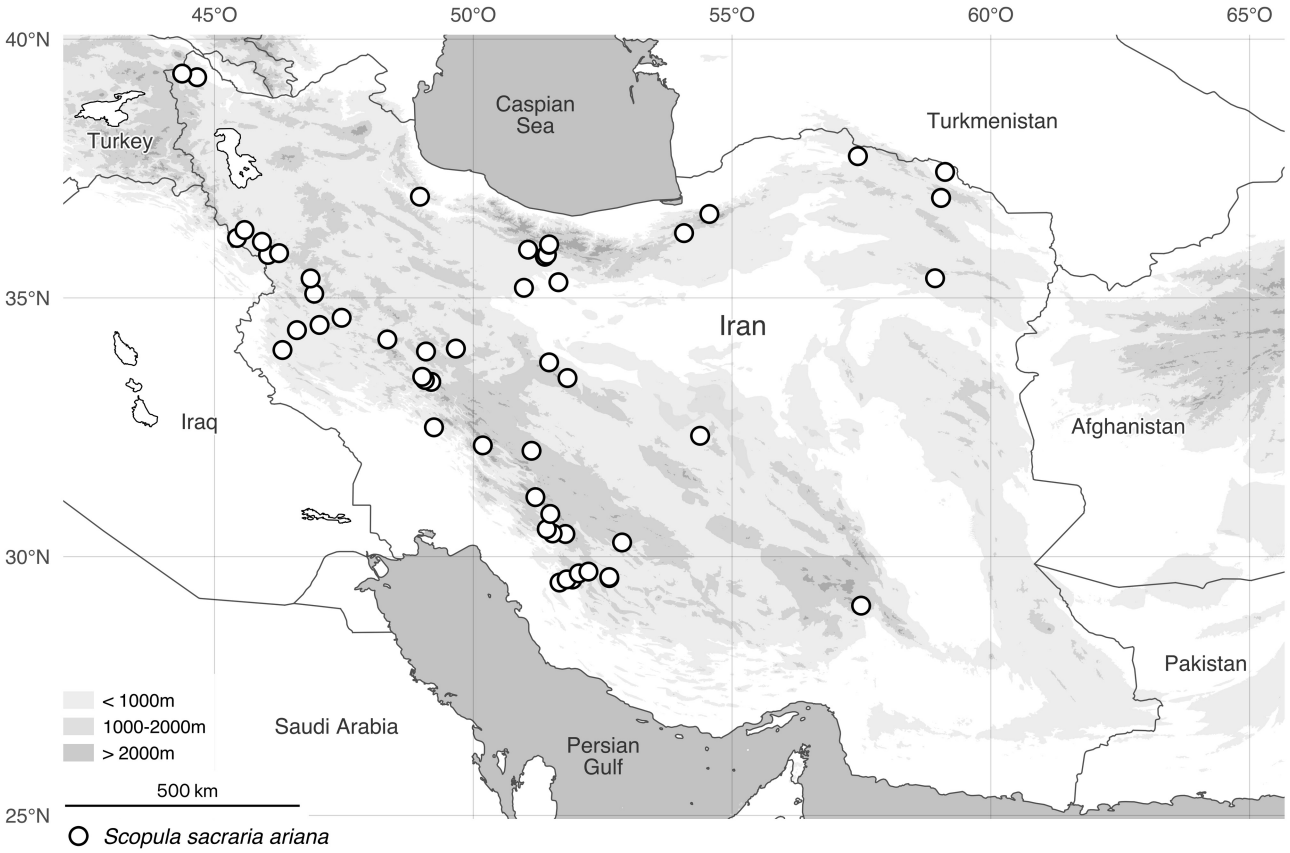
Additional material examined: 458 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 17–22 mm. In Iran, *Scopula sacraria* can externally be confused with *S. diffinaria*, *S. orbeorum* and *S. chalcographata*, but these species could be easily diagnosed based on their genitalia characters.

In the male genitalia 8th sternite basally strongly elongated, both cerata long and narrow (sternite, with polymorphic cerata, cerata short or right ceras long and slender, left ceras short or both cerata long in *S. diffinaria*; sternite, with both cerata of medium size in *S. orbeorum*; sternite, with right ceras of medium size, left ceras short in *S. chalcographata*) (see Plate 19, Figs 2–4; Plate 20, Fig. 1–3).

In the female genitalia lamella antevaginalis with a large squared sclerite (similar in with a large squared sclerite in *S. diffinaria* and *S. orbeorum*; with a large sub-rectangular sclerite in *S. chalcographata*). Antrum with long and narrow sclerite, posteriorly notched (long sclerite, posteriorly notched in *S. diffinaria* and *S. orbeorum*; long sclerite, posteriorly strongly notched in *S. chalcographata*) (see Plate 26, Fig. 6; Plate 27, Figs 1–5).

Phenology. Tri- or plurivoltine species, with generations between mid-February to mid-November, bivoltine in higher altitudes (Hausmann 2004; Hausmann *et al.* 2020). Investigated specimens in Iran were collected from April to September.



MAP 14. Distribution pattern of *Scopula sacraria ariana* in Iran.

Biology. Larva feeding on Caryophyllaceae (Hausmann *et al.* 2020). Adults feed on Caryophyllaceae, *Linum catharticum* (Linaceae), probably on *Polemonium* and *Polygonum* (Polygonaceae) (Hausmann & Dötterl 2004; Hausmann 2004).

Habitat. At altitudes from 0 m to 300 m, in the Middle East and Central Asia to 2200 m, and in Israel from -400 m to 1500 m (Hausmann 2004; Hausmann *et al.* 2020). Investigated specimens in Iran were collected from 700 m to 2860 m.

Distribution. In the Levant, Greece southern Turkey, northern Iraq, Syria, Transcaucasus, Turkmenia, Kazakhstan and Afghanistan (Hausmann 2004; Hausmann *et al.* 2020). In Iran this species is represented by the subspecies *S. sacraria ariana* and widely distributed from the northern, western and central parts of Iran to southern Iran (Map 14). Reported in the literature also for the province Azerbaijan-e Sharghi (Lehmann & Zahiri 2011; Hausmann 2004). Reports of the subspecies *semitata* from the provinces Bushehr, Fars and Khorasan-e Razavi by Brandt and Wiltshire (Brandt 1939; Brandt 1941; Wiltshire 1941; Wiltshire 1966) refer to the subspecies *ariana*.

DNA-barcoding. Nearest species: *S. rufotinctata* (Prout, 1913) with 3.5 % (see Supplementary Table S1).

Scopula gracilis (Brandt, 1941)

(Plate 9, Figs 13–15; Plate 20, Figs 4+6; Plate 27, Fig. 6; Map 12)

Glossotrophia gracilis Brandt, 1941. Mitteilungen der Münchner Entomologischen Gesellschaft 31 (3): 869. Syntype(s) ♂, ♀ (Iran, Bender Tchahbahar) (NHRS, examined).

Type material examined. Paratype ♂, Iran, Baloutchistan, Bender Tchahbahar, Dezember 1937, coll. Brandt, NHRS 000010182, g. prep. 10876; Paratype ♀, same data, but Februar 1938, NHRS 000010183, g. prep. 10877; in NHRS.

Additional material examined: 107 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 14–18 mm. In Iran, *Scopula gracilis* can externally be confused with large specimens of *S. alfierii* and small specimens of *S. chalcographata* and *S. sacraria*. However, these three species can be easily diagnosed based on their genitalia characters.

In the male genitalia 8th sternite, centrally broadened, without cerata (sternite, centrally not broadened, without ceras in *S. alfierii*; sternite, with right ceras of medium size, left ceras short or left ceras medium size, right ceras short in *S. chalcographata*; sternite basally strongly elongated, both cerata long and narrow in *S. sacraria*) (see Plate 20, Figs 1–7).

In the female genitalia antrum with triangular sclerite (similar in *S. alfierii*; long sclerite, posteriorly strongly notched in *S. chalcographata*; with long and narrow sclerite, posteriorly notched in *S. sacraria*) (see Plate 27, Figs 3–7).

Phenology. Investigated specimens in Iran were collected from January to June.

Biology. Unknown.

Habitat. Investigated specimens in Iran were collected from 10 m to 1600 m.

Distribution. Restricted to southern Iranian provinces Bushehr, Fars, Hormozgan and Sistan-o-Baluchestan (see Map 12). Reported in the literature also for the provinces Hormozgan and Sistan-o-Baluchestan (Brandt 1941; Lehmann *et al.* 2009).

DNA-barcoding. Nearest species: *S. harteni* with 4.0 % (see Supplementary Table S1).

Scopula alfierii (Wiltshire, 1949)

(Plate 9, Figs 16–19; Plate 20, Figs 5+7; Plate 27, Fig. 7)

Glossotrophia alfierii Wiltshire, 1949. Bulletin de la Société entomologique d'Égypte, 33: 416. Holotype ♂ (Egypt, Wadi Digla) (USNM).

Type material examined. Paratype [one label with Type, and one label with Paratype written on it], Egypt, Wadi Digla (desert arabique est de Maadi), le soir à la lampe, 22 Août 1925, Preparation E.P. Wiltshire 382, NHMUK 014173529; in NHMUK.

Additional material examined: 4 ♂/♀ (see appendix).

Diagnosis. Wingspan ♂♀ 12–14 mm. In Iran, *Scopula alfierii* can externally be confused with large specimens of *Scopula gracilis* and small specimens of *S. chalcographata* and *S. sacraria*. However, these three species can be easily diagnosed based on their genitalia characters

In the male genitalia 8th sternite, centrally not broadened, without ceras (sternite, centrally broadened, without cerata in *S. gracilis*; sternite, with polymorphic cerata, right ceras of medium size, left ceras short or left ceras medium size, right ceras short in *S. chalcographata*; sternite basally strongly elongated, both cerata long and narrow in *S. sacraria*) (see Plate 20, Figs 1–7).

In the female genitalia antrum with triangular sclerite (similar in *S. gracilis*; long sclerite, posteriorly strongly notched in *S. chalcographata*; with long and narrow sclerite, posteriorly notched in *S. sacraria*) (see Plate 27, Figs 3–7).

Phenology. Bivoltine species with a first generation from mid-March to early May and a second generation from mid-August to late October (Hausmann *et al.* 2020).

Biology. Unknown. Hausmann *et al.* (2020) suggested Caryophyllaceae as possible food plants.

Habitat. In the Levant from 0 m to 300 m (Hausmann *et al.* 2020).

Distribution. Distributed in Egypt, southern Jordan and southern Israel (Hausmann *et al.* 2020). In Iran reported for the province Hormozgan by Kuznetzov (1959), but confirmation is still pending (see Remarks).

Remarks. Kuznetzov (1959) reported this species as a faunal element for the south Iranian province Hormozgan. However, during our investigation no specimens from Iran could be found. It is assumed that this species does not occur in Iran, and the report is likely a confusion with *S. gracilis*.

DNA-barcoding. Nearest species: *S. harteni* with 5.3 % (see Supplementary Table S1).

An updated checklist of the taxa of the tribe Scopulini in Iran, with unconfirmed or endemic status.

Problepsis Lederer, 1853
- *P. cinerea* (Butler, 1886)
- *P. wiltshirei* (Prout, 1938)

Cinglis Guenée, 1858 **stat. rev.**
- *C. humifusaria* (Eversmann, 1837)
- *C. benigna benigna* (Brandt, 1941) **comb. nov.** (Endemic to Iran)
  - *C. benigna amseli* (Wiltshire, 1967) **syn. nov.**
- *C. benigna nigromaculata* (Hausmann, 1994) **comb. nov.** (Endemic to Iran)
- *C. eurata* (Prout, 1913) **comb. nov.**

Scopuloides Hausmann, 1994 **stat. rev.**
- *S. origalis* (Brandt, 1941) **comb. rev.** (Endemic to Iran)

Scopula Schrank, 1802
- *S. conscensa* (Swinhoe, 1885) (Unconfirmed for Iran)
- *S. relictata* (Walker, 1866)
- *S. ansulata* (Lederer, 1871)
- *S. adulteraria* (Erschov, 1874) **stat. nov.**
- *S. immorata riloensis* (Züllich, 1936)
- *S. tessellaria* (Boisduval, 1840)
- *S. nigropunctata* (Hufnagel, 1767)
- *S. caesaria* (Walker, 1861) (Unconfirmed for Iran)
- *S. ornata enzela* Prout, 1935
- *S. orientalis* (Alphéraky, 1876)
- *S. decorata* (Denis & Schiffermüller, 1775)
- *S. subtilata* (Christoph, 1867) (Unconfirmed for Iran)
- *S. transcaspica* Prout, 1935
  - *S. transcaspica taftanica* Brandt, 1941 **syn. nov.**

S. rubiginata (Hufnagel, 1767) (Unconfirmed for Iran)
S. turbulentaria (Staudinger, 1870)
S. imitaria syriacaria (Culot, 1918) (Unconfirmed for Iran)
S. beckeraria (Lederer, 1853)
S. hoerhammeri Brandt, 1941 (Endemic to Iran)
S. incanata (Linnaeus, 1758)
S. marginepunctata (Goeze, 1781)
S. luridata distracta (Butler, 1881)
S. immutata (Linnaeus, 1758) (Unconfirmed for Iran)
S. flaccidaria (Zeller, 1852)
    S. iranaria Bytinski-Salz & Brandt, 1937 **syn. nov.**
S. minorata (Boisduval, 1833)
S. adelpharia (Püngeler, 1894)
S. albiceraria (Herrich-Schäffer, 1847) (Unconfirmed for Iran)
S. immistaria (Herrich-Schäffer, 1852)
S. lactarioides Brandt, 1941 (Endemic to Iran)
S. diffinaria (Prout, 1913)
    S. diffinaria asiatica (Brandt, 1938) **syn. nov.**
S. orbeorum (Hausmann, 1996) (Endemic to Iran)
S. chalcographata (Brandt, 1938) (Endemic to Iran)
S. sacraria ariana (Ebert, 1965)
    Glossotrophia bullata Vojnits, 1986 **syn. nov.**
S. gracilis (Brandt, 1941) (Endemic to Iran)
S. alfierii (Wiltshire, 1949) (Unconfirmed for Iran)

Conclusion

The present study provides an important step forward in our understanding of the classification of geometrid moths, by shedding light on the systematics of the tribe Scopulini. In recent years molecular phylogenies on Geometridae have become more prevalent (e.g., Õunap *et al.* 2016; Jiang *et al.* 2017; Ban *et al.* 2018; Brehm *et al.* 2019; Murillo-Ramos *et al.* 2019; Sihvonen *et al.* 2020) contributing valuable data on each subfamily for further classification. By incorporating additional taxa of questionable status into the Sterrhinae dataset published by Murillo-Ramos *et al.* (2019) and Sihvonen *et al.* (2020), the status of the genera once regarded as synonym to *Scopula* (Sihvonen 2005) were re-evaluated. Of several classification options available, we chose *Cinglis* **stat. rev.** as valid genus, *Pseudocinglis* **syn. nov.** of *Cinglis*, *Scopuloides* **stat. rev.** as valid genus, and *Glossotrophia* as a junior synonym of *Scopula*.

It provides a revision of the whole Scopulini tribe in Iran, a country that has been shown to possess remarkable biodiversity with high rates of endemism, due to its heterogenic abiotic factors (Gholamifard 2011; Noroozi *et al.* 2019; Noori *et al.* 2021; Rajaei *et al.* 2023a). For instance, 28 % of the known reptilians, 23 % of the reported amphibians and 30% of the recorded vascular plant species are endemic to this country (Eskandarzadeh *et al.* 2018; Noroozi *et al.* 2019). In terms of lepidopterans, 19.7% are endemic to Iran, and 24 % are endemic to the country when considering only geometrids (according to the data presented by Rajaei *et al.* 2023b). Due to new classifications introduced in the current paper, the number of valid Iranian Scopulini species is now 33.

In the future, more sampling is required, especially in parts of Iran that have been less explored (e.g., provinces Khorassan-e Jonubi, Qom, Ilam) (see Rajaei *et al.* 2023b). Furthermore, several transitional zones in this country (e.g., the Zagros Mountains and the desert plains of Iraq in the province Ilam) require further investigation to enhance our understanding of the actual diversity and distribution of the family Geometridae in Iran.

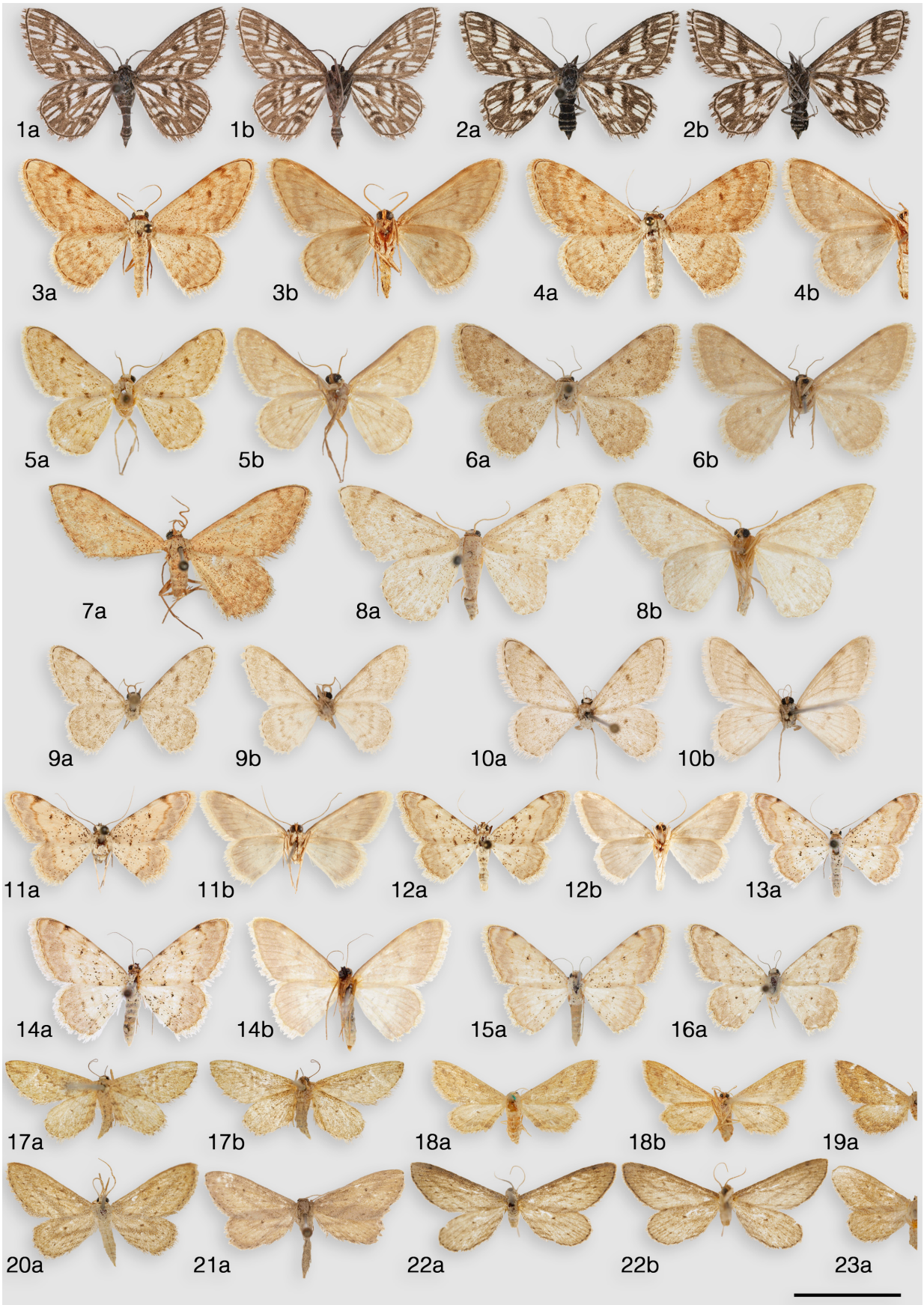

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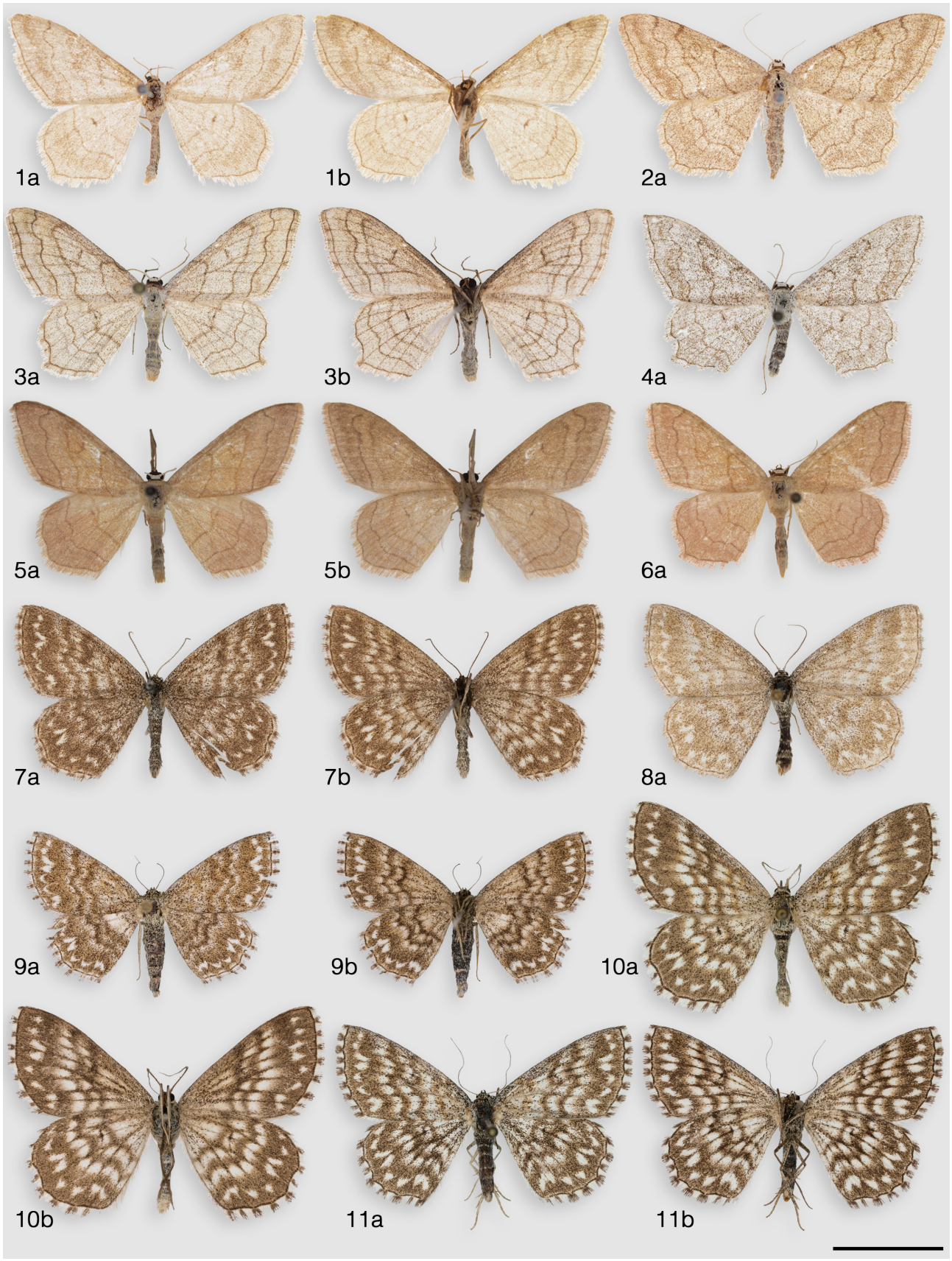
PLATE 3: Figures 1–23. Wing pattern of *Cinglis* and *Scopula* species. 1–2: *Cinglis humifusaria* (Iran, Zanjan, Ab-Dar, 1: g. prep. 1252/2022 D. Wanke; 2: g. prep. 1193/2022 D. Wanke); 3–4: *Cinglis benigna benigna* **comb. nov.** (Iran, Baloutchistan, Fort Sengan, 3: g. prep. 11053; 4: g. prep. 11054); 5–6: *Cinglis benigna nigromaculata* **comb. nov.** (Iran, Teheran, 5: Holotype, g. prep. 3796 Hausmann; 6: Paratype, g. prep. 3797 Hausmann); 7–8: *Cinglis benigna amseli* **syn. nov.** of *Cinglis benigna benigna* **comb. nov.** (7: Holotype, Iran, Fars, Quli-Kush, g. prep. 1127 E.P. Wiltshire; 8: Paratype, Afghanistan, Gulbahar, g. prep. 2263/2020 H. Rajaei); 9–10: *Cinglis eurata* **comb. nov.** (Turkmenistan, Kopet-Dagh, 9: g. prep. 894 Pasi Sihvonen; 10: g. prep. 895 Pasi Sihvonen); 11–16: *Scopuloides origalis* **stat. rev.** (11–13: Iran, Laristan, Straße Bender-Abbas-Saidabad, 11: Holotype, 12: Paratype, g. prep. 10878; 13: g. prep. 0587/2020 D. Wanke; 14: Iran, Balutschestan, Nikschar, g. prep. 0565/2020 D. Wanke; 15–16: Iran, Balutschestan, Khasch, 15: g. prep. 0626/2020 D. Wanke, 16: g. prep. 0617/2020 D. Wanke); 17–19: *Scopula conscensa* (17: Type, [India], Poona, NHMUK014173526; 18: Ceylon, NHMUK014173528; 19: [India], Pusa, NHMUK 014173527); 20–23: *Scopula relictata* (20: Bahrain, Jurdeh desert, NHMUK014173578; 21: Iran, Minab, g. prep. 0923/2021 D. Wanke; 22: Tainan, Formosa, NHMUK014173637; 23: Bahrain, Adari, NHMUK014173579). a = upperside; b = underside. Scale-bar 1 cm.

PLATE 4: Figures 1–11. Wing pattern of *Scopula* species. 1–4: *S. ansulata* (1–2: Syntypes, [Iran], [Golestan], Hadschyabad; 3: Iran, Ostan-e Khorasan, Dolmeh Olia, g. prep. 0695/2020 D. Wanke; 4: Iran, Ostan-e Khorasan, Kuh-e Mirza-e Arab, g. prep. 0697/2020 D. Wanke); 5–6: *S. adulteraria* **bona sp.** (Iran, Ostan-e Khorasan, Izmansufla, 5: g. prep. 0699/2020 D. Wanke, 6: g. prep. 1255/2022 D. Wanke); 7–9: *S. immorata* (7: [Iran], Tacht i Suleiman, g. prep. 1225/2021 D. Wanke; 8: Mongolia, Modoto Chentej Mts, g. prep. 1232/2021 D. Wanke; 9: Türkei, Erzurum, Askale, g. prep. 1226/2021 D. Wanke); 10–11: *S. tessellaria* (10: Kazakhstan, NE Kirova, g. prep. 1241/2021 D. Wanke; 11: Kazakhstan, S Kirgyzsay, g. prep. 1242/2021 D. Wanke). a = upperside; b = underside. Scale-bar 1 cm.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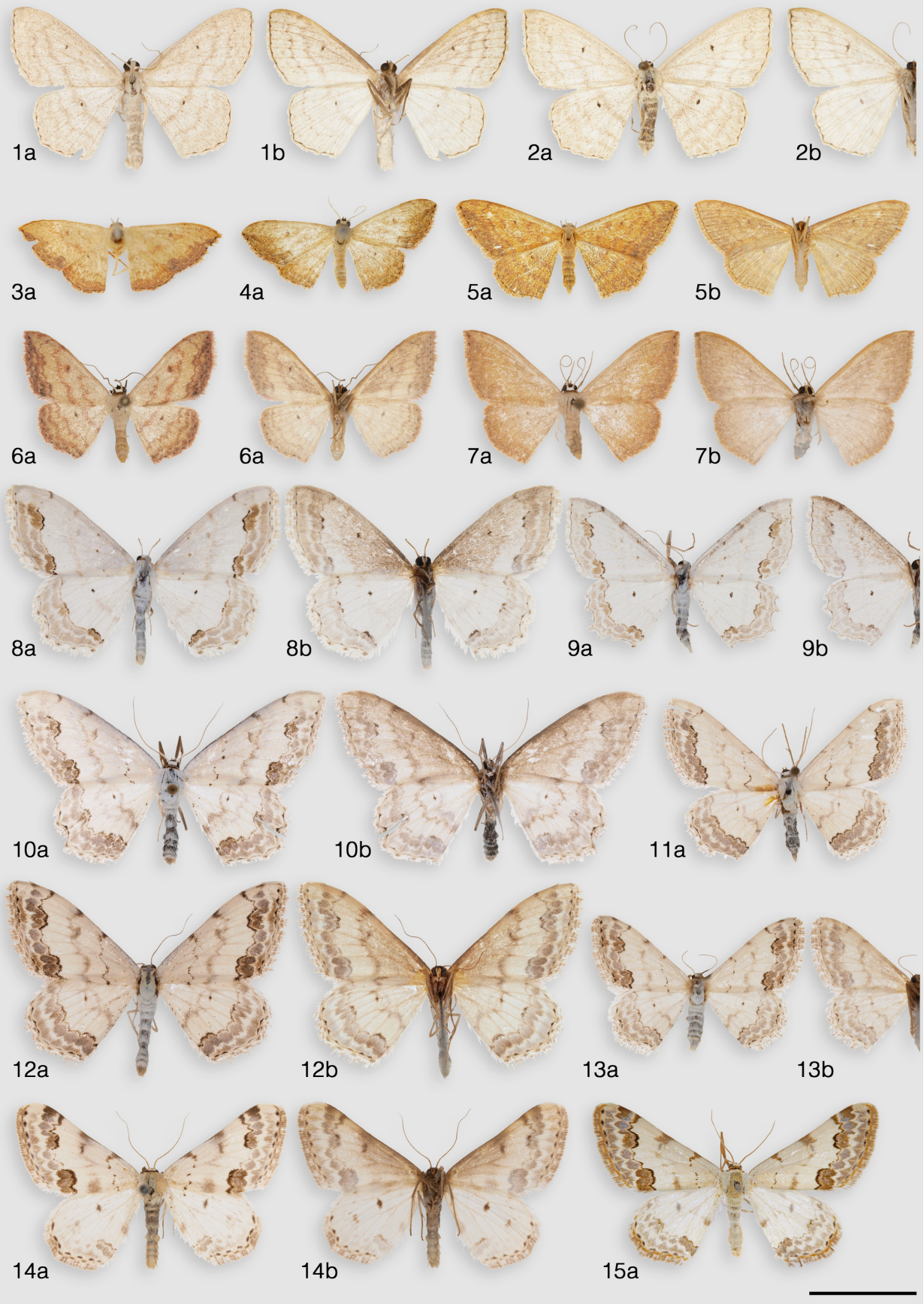
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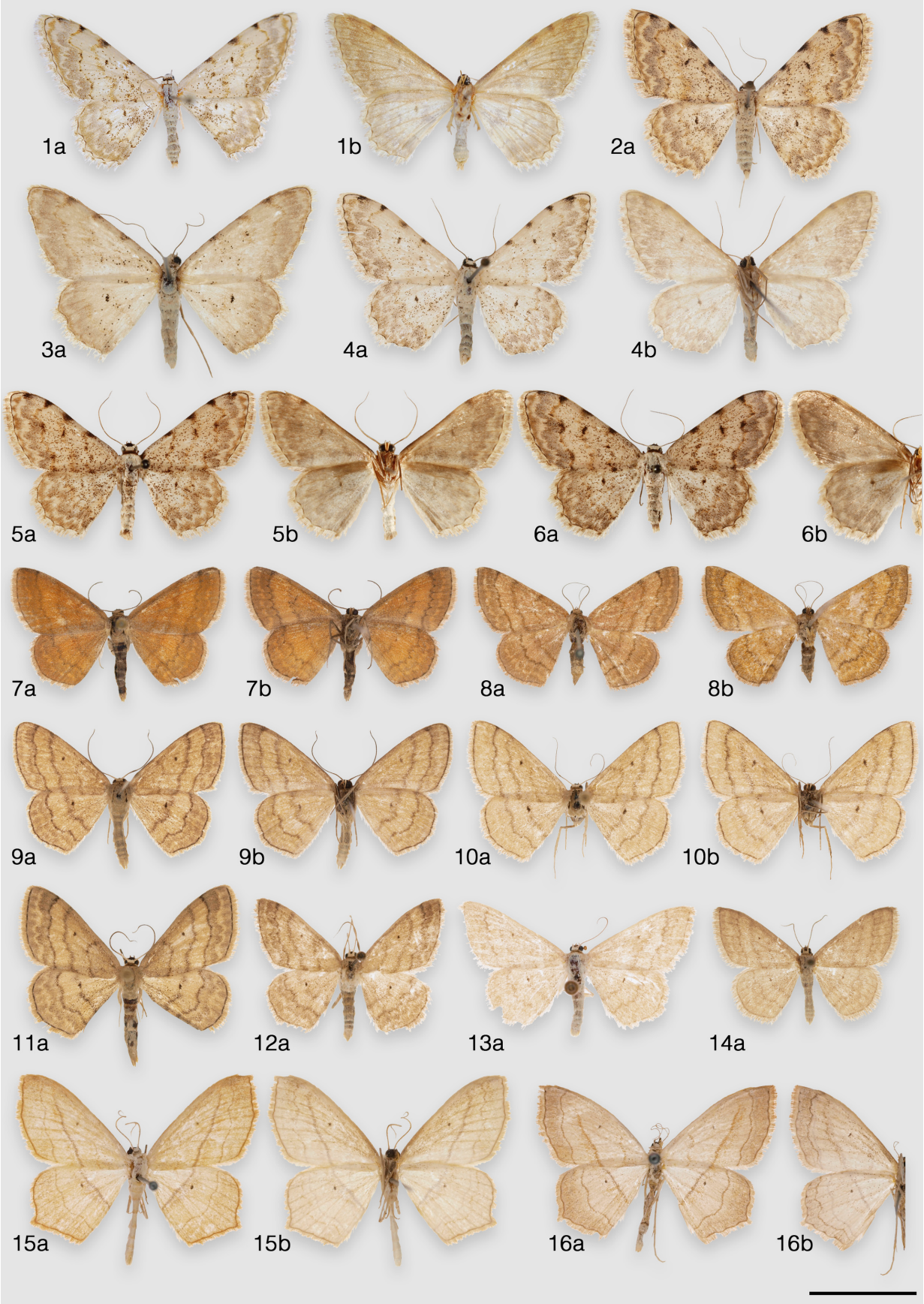
PLATE 5: Figures 1–15. Wing pattern of *Scopula* species. 1–2: *S. nigropunctata* (Turkey, Giresun, 1: g. prep. 1236/2021 D. Wanke, 2: g. prep. 1235/2021 D. Wanke); 3–7: *S. caesaria* (3: Syntype, Ceylon, NHMUK014173570; 4: Oman, Dhofar, NHMUK014173572; 5: N. Oman, Khasab, NHMUK014173571; 6: South Africa, Gauteng, Ezemvelo, g. prep. 1224/2021 D. Wanke; 7: South Yemen, Lahej Governorate, Al Dhala, g. prep. 1287/2022 D. Wanke); 8–9: *S. ornata enzela* (8: W-Iran, Kordestan, Straße Saghez-Baneh, g. prep. 0802/2020 D. Wanke; 9: N-Iran, Bandar Pahlavi, g. prep. 0796/2020 D. Wanke); 10–11: *S. orientalis* (10: Iran, Elburz, g. prep. 1192/2022 D. Wanke; 11: S Iran, Didegan, g. prep. 0801/2020 D. Wanke); 12–13: *S. decorata* (12: Iran, Masandaran, Damavand, g. prep. 0789/2020 D. Wanke; 13: Iran, Lorestan, E Borudjerd, g. prep. 0794/2020 D. Wanke); 14–15: *S. subtilata* (14: Russia, Sarepta [Volgograd], g. prep. 1272/2022 D. Wanke; 15: S. Russia, NHMUK014173553). a = upperside; b = underside. Scale-bar 1 cm.

PLATE 6: Figures 1–16. Wing pattern of *Scopula* species. 1–4: *S. transcaspica* (1: Paratype, [Turkmenistan], Ashkhabad, NHMUK010317468; 2: W-Iran, Kordestan, Straße Zandjan-Bijar, g. prep. 0811/2020 D. Wanke; 3: S-Iran, Bandar-Abbas, Kuhe Genou, g. prep. 0813/2020 D. Wanke; 4: S-Iran, Miyan Kotal, g. prep. 0809/2020 D. Wanke); 5–6: *S. transcaspica taftanica* **syn. nov.** of *S. transcaspica* (Baloutchistan, Kouh i Taftan, 5: Holotype, g. prep. 11021, 6: Paratype, g. prep. 11022); 7–8: *S. rubiginata* (7: Turkey, Aphrodisias, g. prep. 1291/2022 D. Wanke; 8: Amasia [Turkey], g. prep. 1290/2022 D. Wanke); 9–14: *S. turbulentaria steinbacheri* (9–11: Iran Mazandaran, Shirinabad, 9: g. prep. 0824/2020 D. Wanke, 10: g. prep. 0974/2020 D. Wanke, 11: 0973/2020 D. Wanke; 12: NW Iran, SE Maku, g. prep. 1172/2022 D. Wanke; 13: [Iran], [Tehran], Evin, g. prep. 1173/2022 D. Wanke; 14: N Iran, Tehran, Qolhak, g. prep. 0778/2020 D. Wanke); 15–16: *S. imitaria* ([Croatia], Krk, Fiumebucht, 15: g. prep. 0772/2020 D. Wanke, 16: g. prep. 0773/2020 D. Wanke). a = upperside; b = underside. Scale-bar 1 cm.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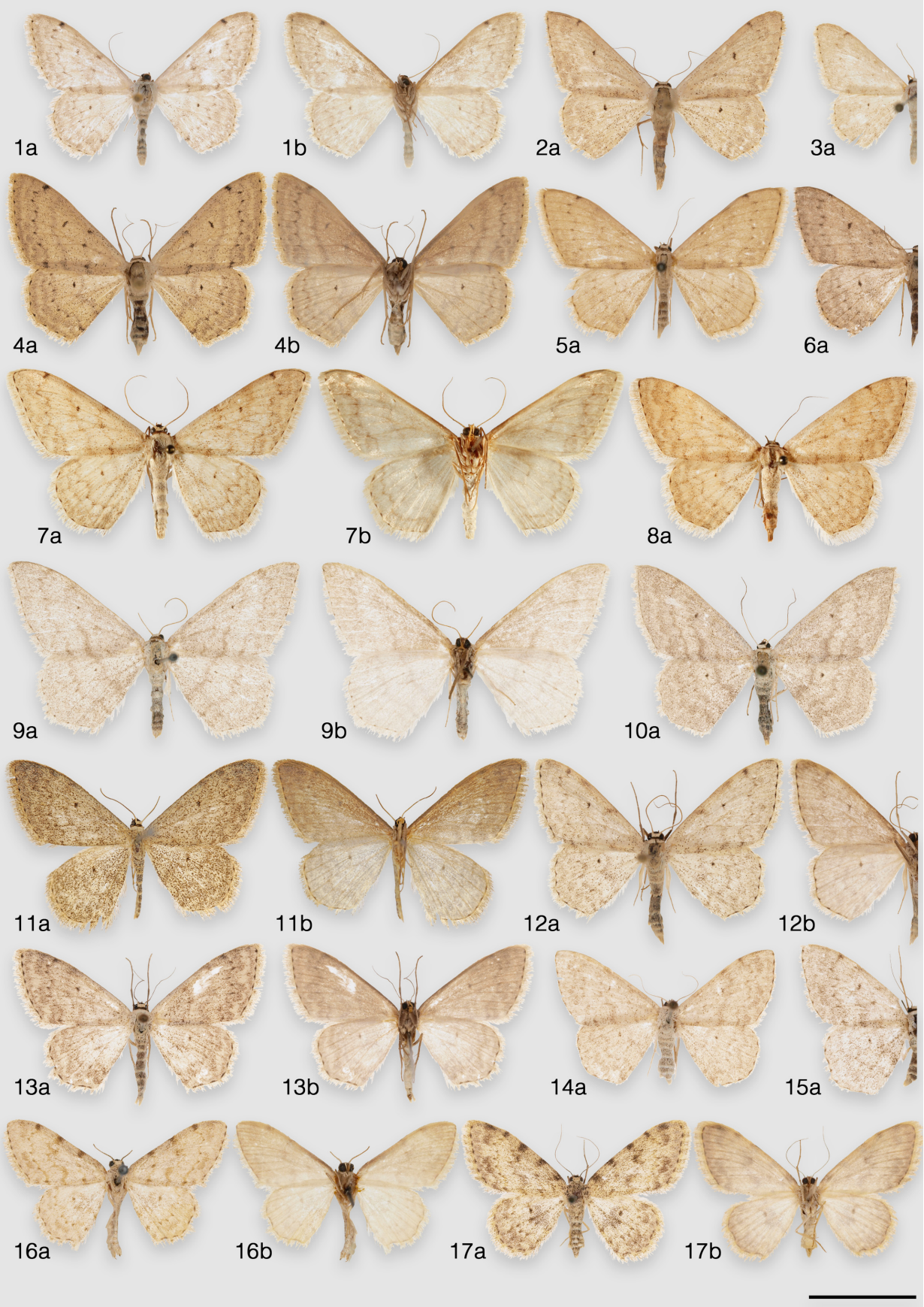
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PLATE 7: Figures 1–17. Wing pattern of *Scopula* species. 1–6: *S. beckeraria* (1: Iran, Kerman, Hushin, g. prep. 1052/2022 D. Wanke; 2: Iran, Khorasan, Izmansufla, g. prep. 0839/2020 D. Wanke; 3: Iran, Esfahan, Kashan, g. prep. 0820/2020 D. Wanke; 4: Iran, Khorasan, Izmansufla, g. prep. 0905/2020 D. Wanke; 5: N-Iran, [Tehran], Varamin, g. prep. 0783/2020 D. Wanke; 6: NE Iran, Khorasan, Akbarabad, g. prep. 1002/2021 D. Wanke); 7–8: *S. hoerhammeri* (Iran, Fars, [Komehr], 7: Paratype, g. prep. 11019, 8: g. prep. 11020); 9–10: *S. incanata* ([Iran], Tacht i Suleiman, 9: g. prep. 1275/2022 D. Wanke, 10: g. prep. 1277/2022 D. Wanke); 11–15: *S. marginepunctata terrigena* (11: Type, [Iran], Mazanderan, [Sabat-Kuh], NHMUK014173548; 12: NE Iran, Khorasan, Izmansufla, g. prep. 0840/2020 D. Wanke; 13: N Iran, Amarlu, g. prep. 0875/2020 D. Wanke; 14: Iran, Mazandaran, Gonbad Qabus, g. prep. 0904/2020 D. Wanke; 15: NW Iran, Maku, g. prep. 1049/2021 D. Wanke); 16–17: *S. luridata* (16: Syria, Marasch, g. prep. 1295/2022 D. Wanke; 17: W Saudi Arabia, Al-Hada, g. prep. 1292/2022 D. Wanke);. a = upperside; b = underside. Scale-bar 1 cm.

PLATE 8: Figures 1–19. Wing pattern of *Scopula* species. 1–2: *S. immutata* ([Hungary], Bükkösd, 1: 1246/2021 D. Wanke, 2: 1247/2021 D. Wanke); 3–4: *S. flaccidaria* (3: N-Iran, Masandaran, Schasavar, g. prep. 1053/2021 D. Wanke; 4: N Iran, Bandar Pahlavi, g. prep. 1054/2021 D. Wanke); 5–6: *S. iranaria* **syn. nov.** of *S. flaccidaria* (Iran, Kerdej, 5: g. prep. 11060, 6: Cotype, g. prep. 2299/2020 H. Rajaei); 7–9: *S. minorata* (Spain, Gran Canaria, Las Palmas, 7: g. prep. 1248/2021 D. Wanke, 8: g. prep. 1249/2021 D. Wanke; 9: Yemen, Sana, Makaban, g. prep. 1304/2022 D. Wanke); 10–13: *S. adelpharia* (10: S Iran, Hormozgan, Sirki, g. prep. 1309/2022 D. Wanke; 11–13: Sudan, Ed Damer, Hudeiba, 11: g. prep. 1268/2022 D. Wanke, 12: g. prep. 1270/2022 D. Wanke, 13: g. prep. 1271/2022 D. Wanke); 14–15: *S. albiceraria* (14: Mongolia, Selenge aimag, near Ochron, g. prep. 1305/2022 D. Wanke; 15: SW Mongolia, Gobi-Altai aimak, SSW Zhargalan, g. prep. 1301/2022 D. Wanke); 16–17: *S. immistaria* (16: N Iran, Masandaran, Damavand, g. prep. 0830/2020 D. Wanke; 17: Iran, Esfahan, Fereydunshahr, g. prep. 0814/2020 D. Wanke); 18–19: *S. lactarioides* (18: Iran, Baloutchistan, Bender Tchahbahar, g. prep. 11057; 19: Iran, Makran, Chahbar Küste, g. prep. 0879/2020 D. Wanke). a = upperside; b = underside. Scale-bar 1 cm.

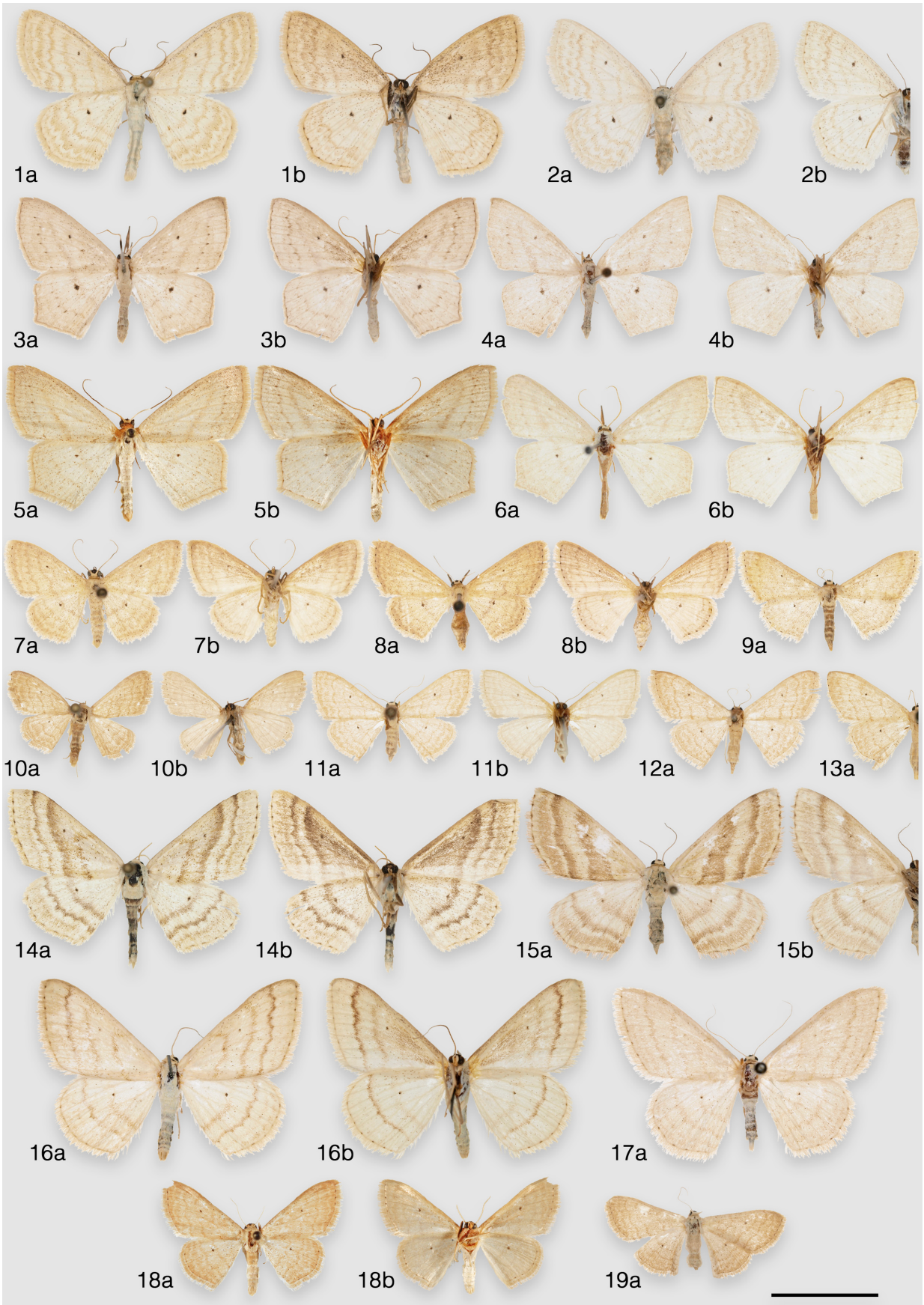
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PLATE 9: Figures 1–19. Wing pattern of *Scopula* species. 1–4: *S. diffinaria diffinaria* (1: Iran, Elbours, Polour, g. prep. 0533/2020 D. Wanke; 2: [Turkey], Akschehir, g. prep. 0574/2020 D. Wanke; 3: Iran, Kohkiluye va Boyerahmad, Yasuj, g. prep. 0713/2020 D. Wanke; 4: Iran, Mazandaran, Shah Kuh-Pain, g. prep. 0521/2020 D. Wanke); 5–6: *S. diffinaria asiatica* **syn. nov.** of *S. diffinaria diffinaria* (Paratypes, Iran, Fars, [Komehr], 5: g. prep. 10872, 6: g. prep. 10873); 7–8: *S. orbeorum* ([Iran], Tacht i Suleiman, 7: Holotype, g. prep. 1970 ZSM Hausmann, 8: Paratype g. prep. 4248 ZSM Hausmann); 9–10: *S. chalcographata* (Iran, Fars, Mian-Kotal, 9: g. prep. 10875; 10: Paratype g. prep. 10874); 11–12: *S. sacraria ariana* (Paratypes, Afghanistan, Sarobi, 11: g. prep. G40, 12: g. prep. G44); 13–15: *S. gracilis* (13-14: Iran Baloutchistan, Bender Tchahbahar, 13: g. prep. 10876, 14: g. prep. 10877; 15: Iran, Hormozgan, Sirik, g. prep. 1307/2022 D. Wanke); 16–19: *S. alfierii* (16: Paratype, Egypt, Wadi Digla, g. prep. 382 E.P. Wiltshire; 17: Yemen, Al Ain, g. prep. 1296/2022 D. Wanke; 18: Yemen, Al Mukalla, g. prep. 1297/2022 D. Wanke; 19: Yemen, Al Mukalla, g. prep. 1298/2022 D. Wanke). a = upperside; b = underside. Scale-bar 1 cm.

PLATE 10: Figures 1–7. Male genitalia of *Cinglis* and *Scopuloides* **stat. rev.** species. 1: *Cinglis humifusaria* (Iran, Zanjan, Ab-Dar, g. prep. 1253/2022 D. Wanke); 2: *Cinglis benigna benigna* **comb. nov.** (Iran, Baloutchistan, a, b, c1: g. prep. 11053; c2: g. prep. 0874/2020 D. Wanke; c3: g. prep. 0604/2020 D. Wanke); 3: *Cinglis benigna nigromaculata* **comb. nov.** (Iran, Kashan, g. prep. 0665/2020 D. Wanke); 4–5: *Cinglis benigna amseli* **syn. nov.** of *Cinglis benigna benigna* **comb. nov.** (4: Paratype, Afghanistan, Gulbahar, g. prep. WM. 131; 5a, b, c1: Paratype, Afghanistan, Gulbahar, g. prep. 2263/2020 H. Rajaei; 5c2: Afghanistan, Polichomri, g. prep. 2262/2020 H. Rajaei); 6: *Cinglis eurata* **comb. nov.** (Iran, Khorasan Razavi, g. prep. 1179/2021 D. Wanke); 7: *Scopuloides origalis* **stat. rev. (**Paratype, Iran, Laristan, Straße Bender-Abbas-Saidabad, g. prep. 10878). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

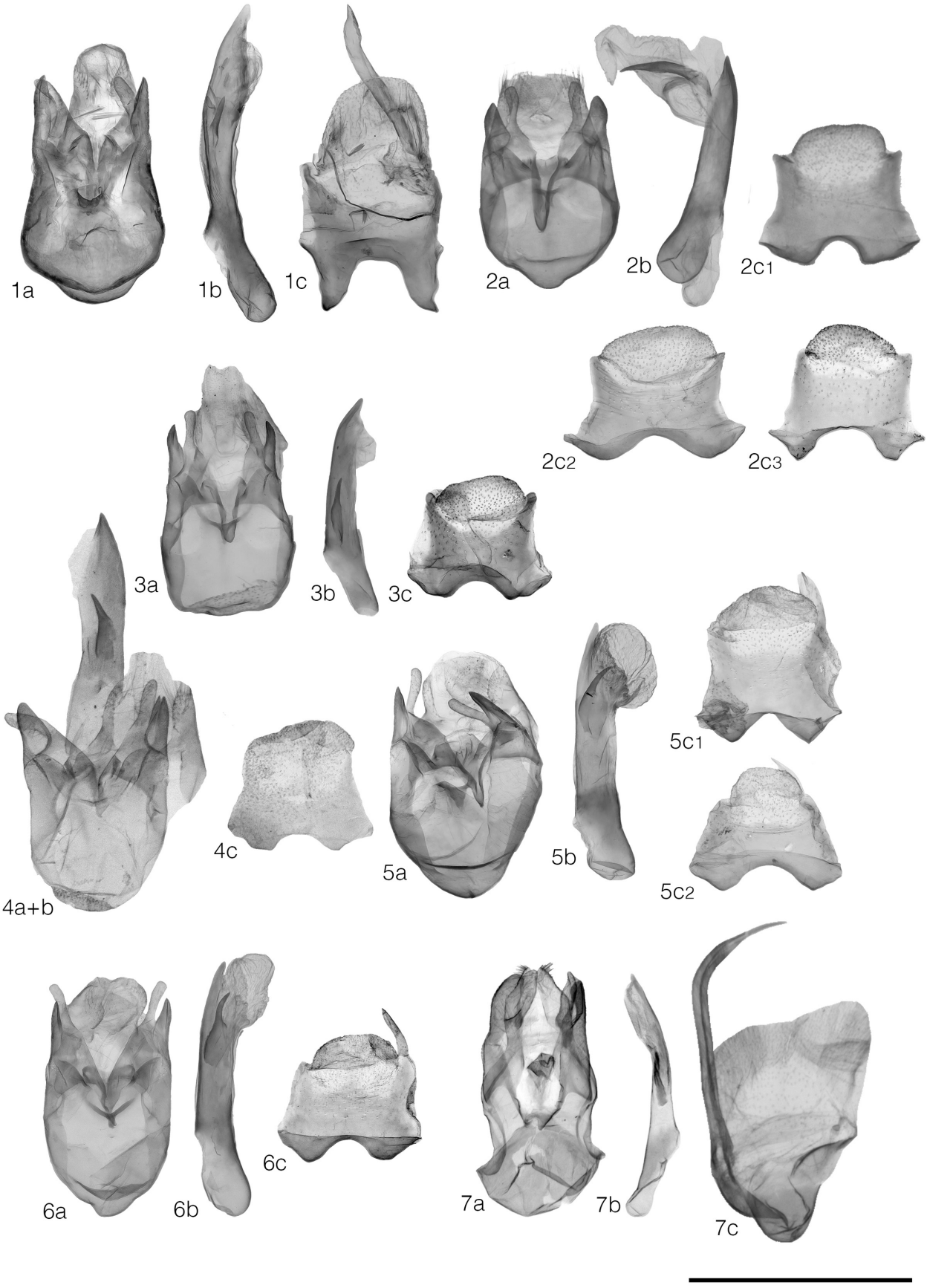
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PLATE 11: Figures 1–3. Male genitalia of *Scopula* species. 1–2: *Scopula conscensa* (India, NHMUK014314490, 1: in scale, 2: enlarged, out of scale); 3: *Scopula relictata* (Iran, Minab, g. prep. 0923/2021 D. Wanke). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

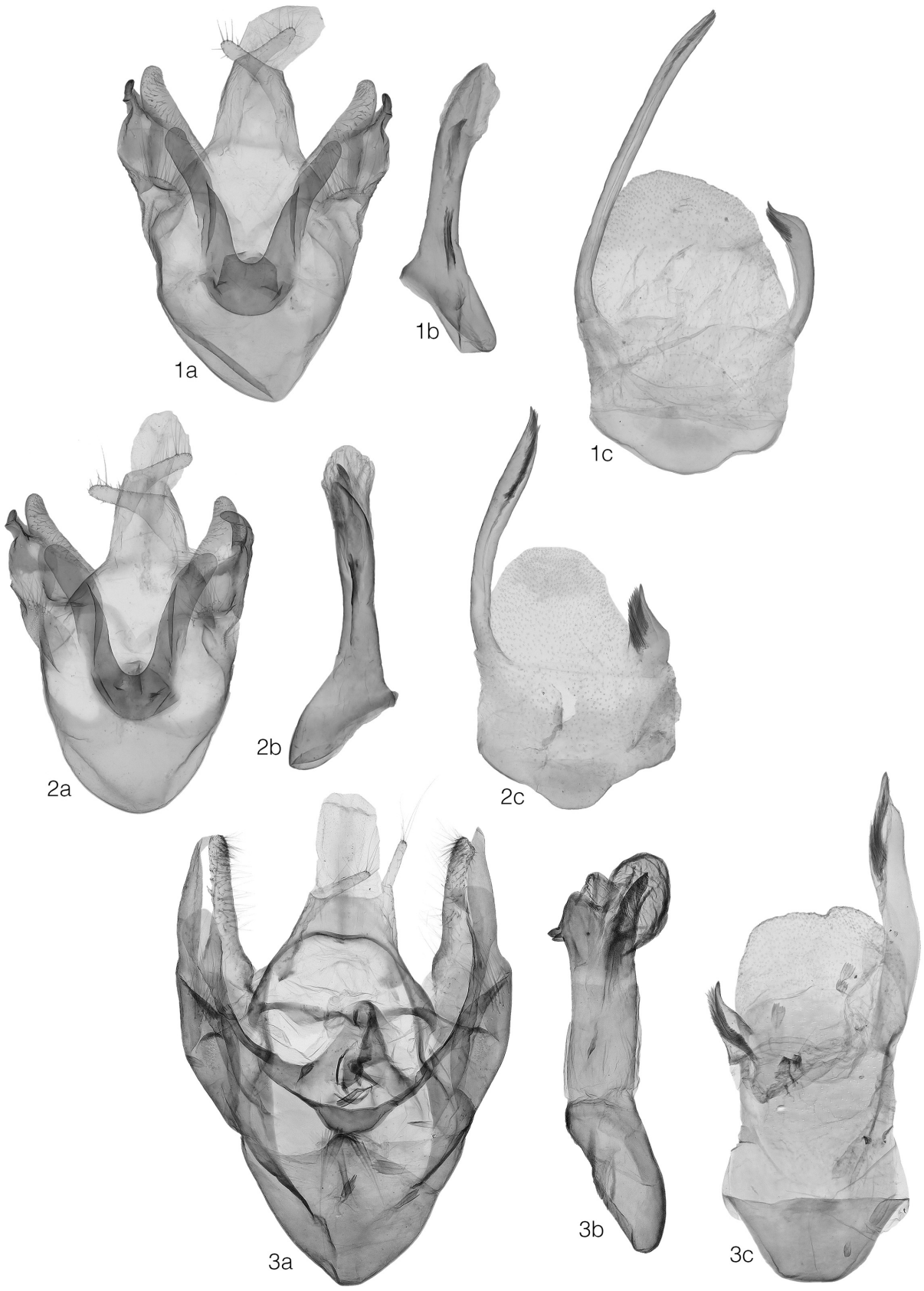

PLATE 12: Figures 1–3. Male genitalia of *Scopula* species. 1: *S. ansulata* (Iran, Ostan-e Khorasan, Dolmeh Olia, g. prep. 0696/2020 D. Wanke); 2: *S. adulteraria* **bona sp.** (Iran, Ostan-e Khorasan, Izmansufla, a, c: g. prep. 0699/2020 D. Wanke, b: g. prep. 0700/2020 D. Wanke); 3: *S. immorata* ([Iran], Särdab Tal-Vandarban, g. prep. 1286/2022 D. Wanke). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

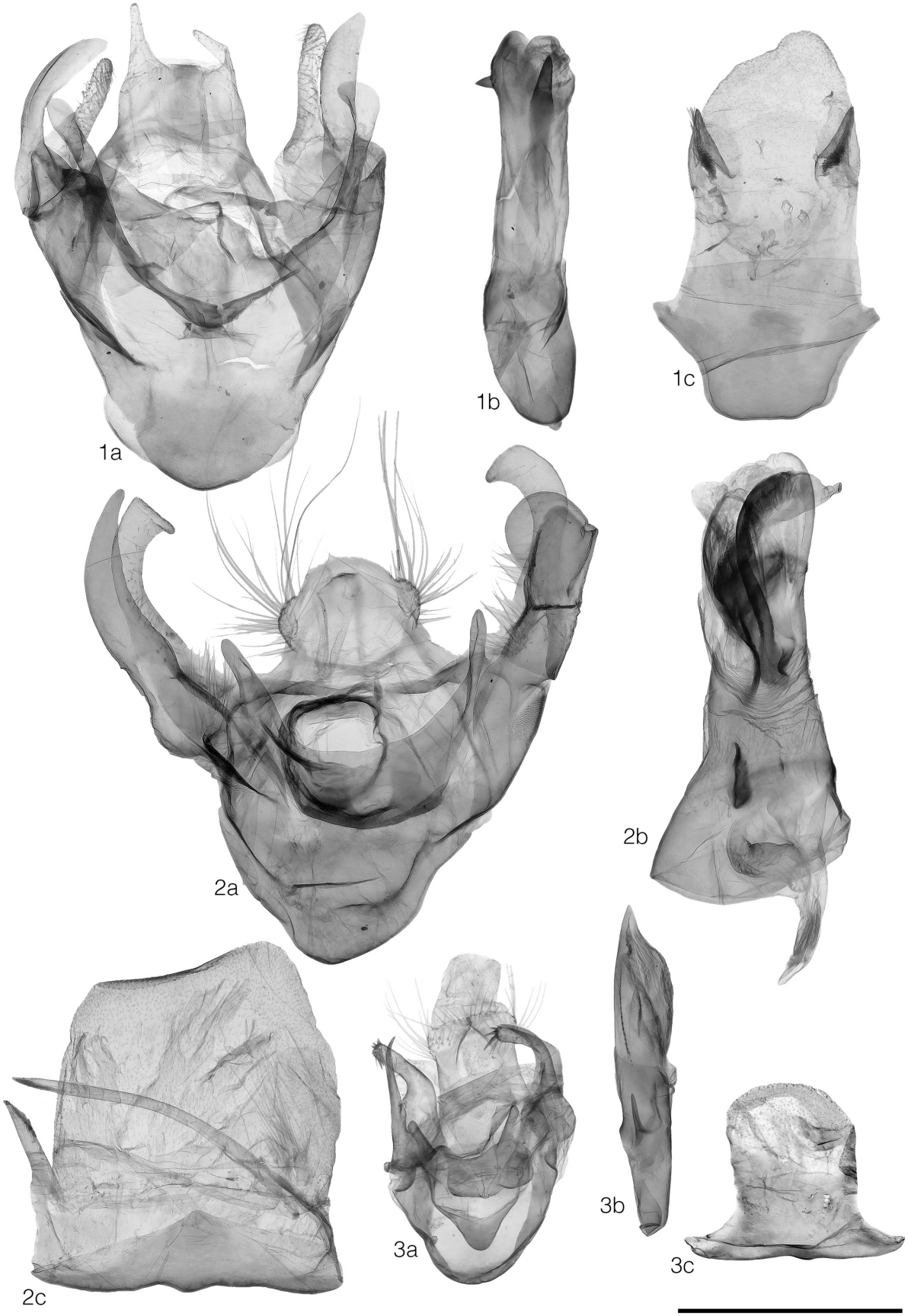

PLATE 13: Figures 1–3. Male genitalia of *Scopula* species. 1: *S. tessellaria* ([Iran], Tacht i Suleiman, g. prep. 1260/2022 D. Wanke); 2: *S. nigropunctata* (Turkey, Giresun, 1: g. prep. 1236/2021 D. Wanke); 3: *S. caesaria* (a, b: South Africa, Gauteng, Ezemvelo, g. prep. 1224/2021 D. Wanke; c: Oman, Dhofar, Wadi Sha'ath, g. prep. NHMUK 010317472). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

PLATE 14: Figures 1–3. Male genitalia of *Scopula* species. 1: *S. ornata enzela* (N-Iran, Bandar Pahlavi, g. prep. 0797/2020 D. Wanke); 2: *S. orientalis* (Iran, Elburz, g. prep. 1192/2022 D. Wanke); 3: *S. decorata* (W Iran, Kordestan, Straße Zandjan-Bijar, g. prep. 0792/2020 D. Wanke). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

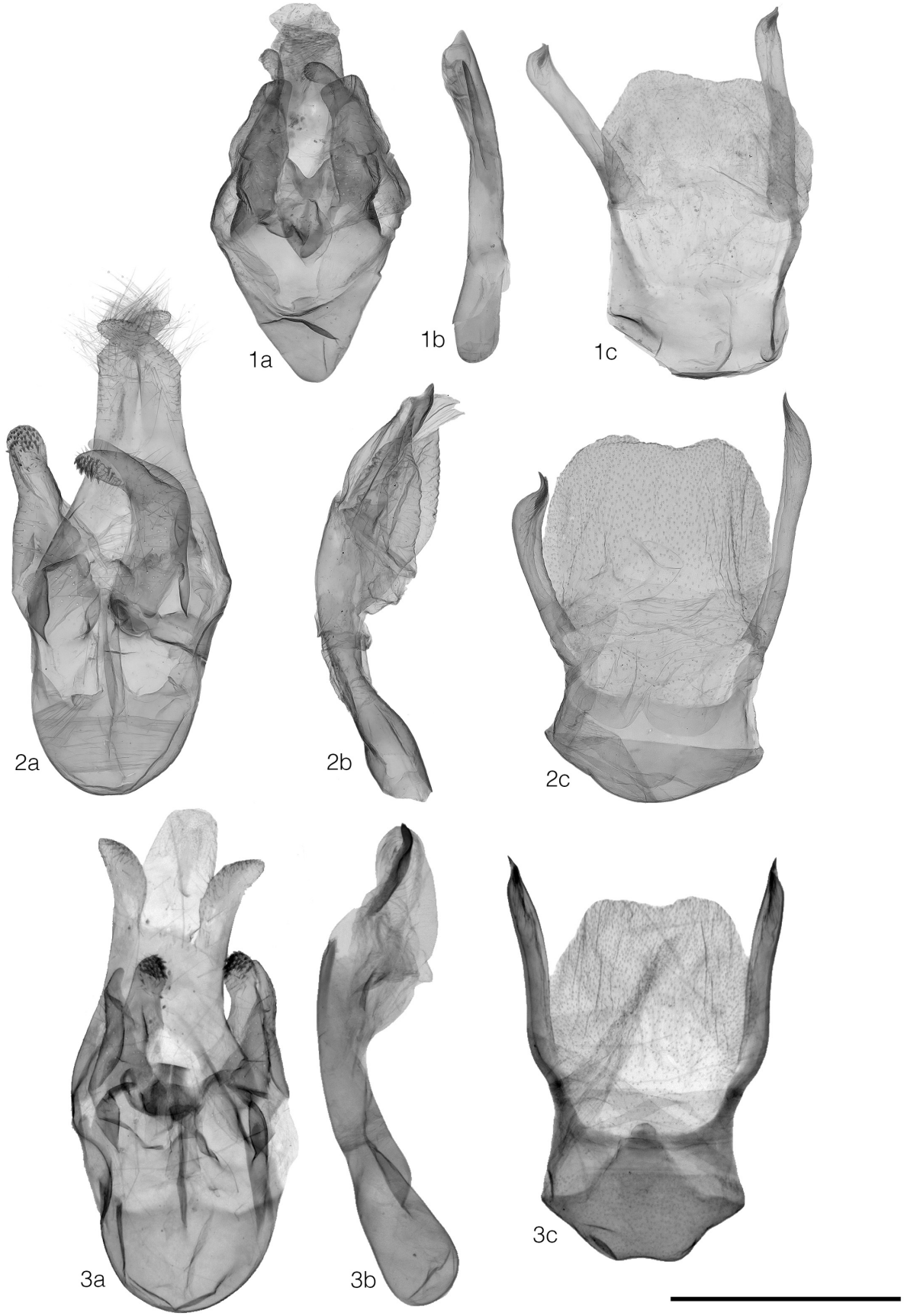

PLATE 15: Figures 1–3. Male genitalia of *Scopula* species. 1: *S. subtilata* (1: Russia, Sarepta [Volgograd], g. prep. 1272/2022 D. Wanke); 2: *S. transcaspica* (a, b, c: Iran, Ostan-e Khorasan, Izmansufla, a, c: g. prep. 0510/2020 D. Wanke, b: g. prep. 0518/2020 D. Wanke); 3: *S. transcaspica taftanica* **syn. nov.** of *S. transcaspica* (Holotype, Baloutchistan, Kouh i Taftan, g. prep. 11021). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

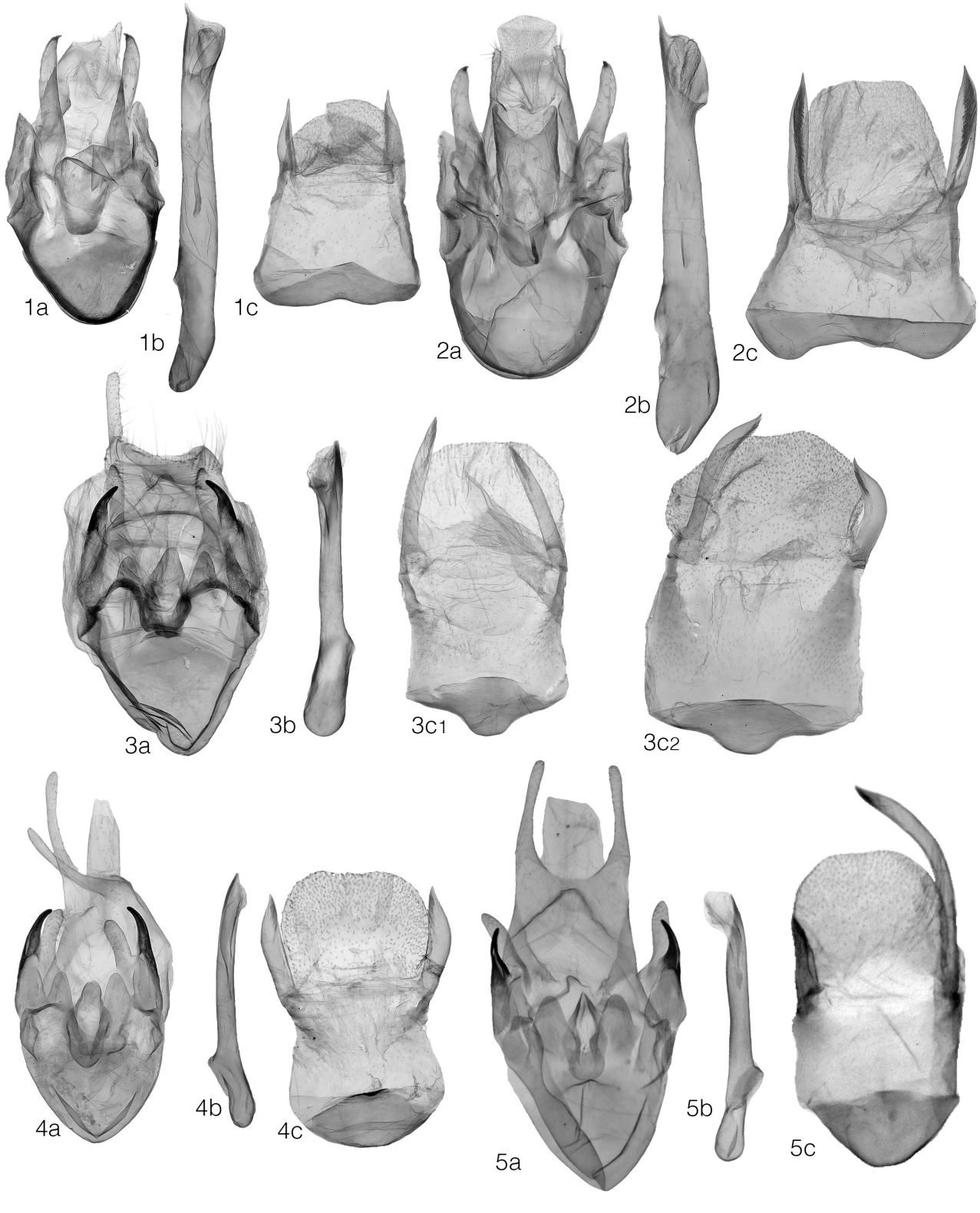

PLATE 16: Figures 1–5. Male genitalia of *Scopula* species. 1: *S. rubiginata* (Iran, Tehran, Qolhak, g. prep. 0778/2022 D. Wanke); 2: *S. turbulentaria steinbacheri* (Iran, Mazandaran, Shirinabad, 9: g. prep. 0825/2020 D. Wanke); 3: *S. imitaria* (a, b, c1: Cyprus, Paphos, g. prep. 1274/2022 D. Wanke, c2: [Croatia], Krk, Fiumebucht, g. prep. 0772/2020 D. Wanke); 4: *S. beckeraria* (a: Iran, Esfahan, Kashan, g. prep. 0820/2020 D. Wanke, b, c: N-Iran, [Tehran], Varamin, g. prep. 0782/2020 D. Wanke); 5: *S. hoerhammeri* (Paratype, Iran, Fars, [Komehr], g. prep. 11019). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

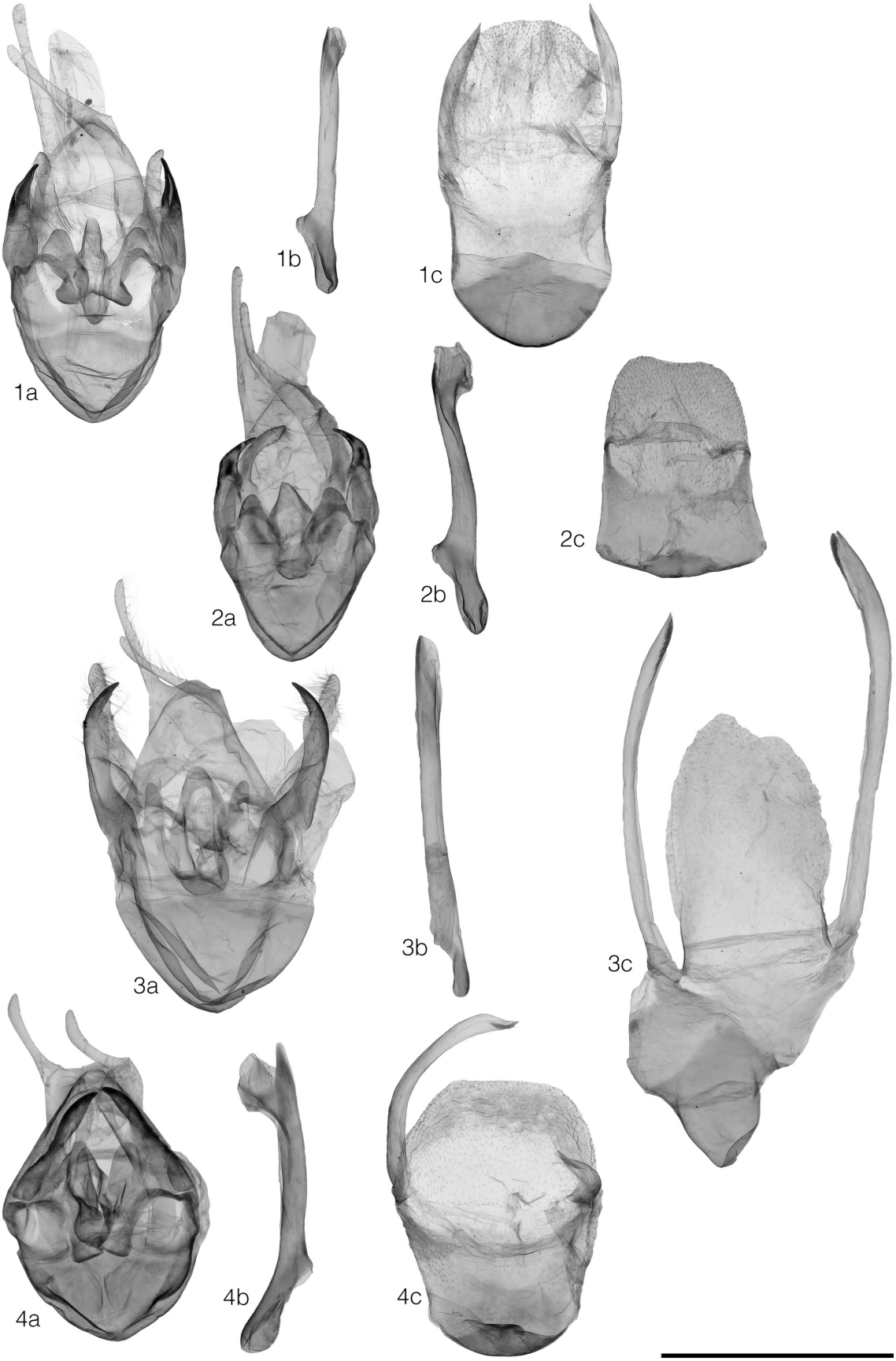

PLATE 17: Figures 1–4. Male genitalia of *Scopula* species. 1: *S. incanata* ([Iran], Tacht i Suleiman, g. prep. 1275/2022 D. Wanke); 2: *S. marginepunctata terrigena* (Iran, Mazandaran, Gonbad Qabus, g. prep. 0903/2020 D. Wanke); 3: *S. luridata* (Syria, Marasch, g. prep. 1295/2022 D. Wanke); 4: *S. immutata* ([Hungary], Bükkösd, 1246/2021 D. Wanke). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

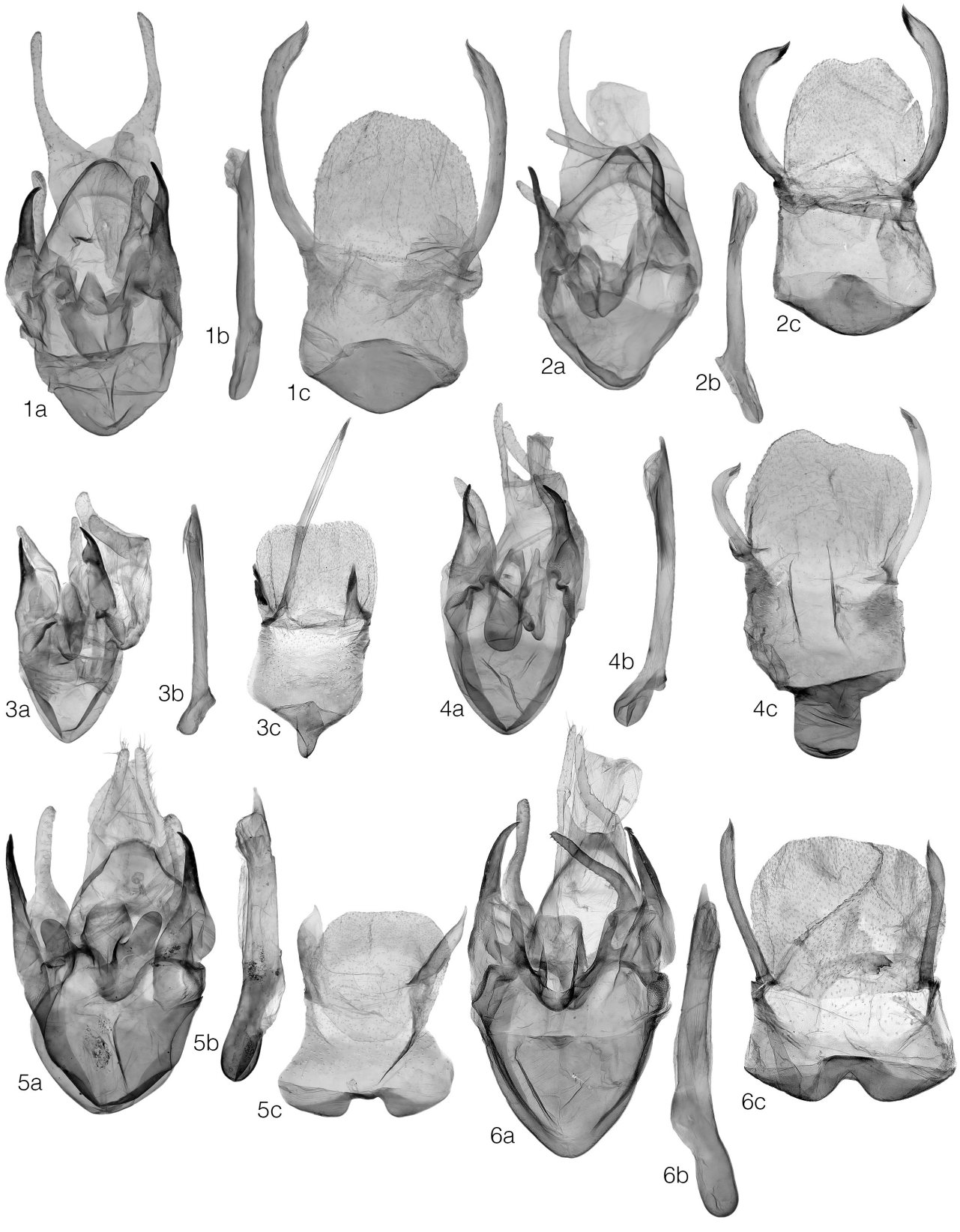

PLATE 18: Figures 1–6. Male genitalia of *Scopula* species. 1: *S. flaccidaria* (N-Iran, Masandaran, Schasavar, g. prep. 1053/2021 D. Wanke). 2: *S. iranaria* **syn. nov.** of *S. flaccidaria* (Cotype, Iran, Kerdej, g. prep. 2299/2020 H. Rajaei); 3: *S. minorata* (Spain, Gran Canaria, Las Palmas, g. prep. 1248/2021 D. Wanke); 4: *S. adelpharia* (S Iran, Hormozgan, Sirki, g. prep. 1309/2022 D. Wanke); 5: *S. albiceraria* (Mongolia, Selenge aimag, near Ochron, g. prep. 1305/2022 D. Wanke); 6: *S. immistaria* (N Iran, Masandaran, Damavand, g. prep. 0830/2020 D. Wanke); a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

PLATE 19: Figures 1–4. Male genitalia of *Scopula* species. 1: *S. lactarioides* (Iran, Baloutchistan, Bender Tchahbahar, g. prep. 11057); 2: *S. diffinaria diffinaria* (a, b, c1: [Turkey], Akschehir, g. prep. 0574/2020 D. Wanke, c2: Iran, Elbours, Polour, g. prep. 0533/2020 D. Wanke; c3: Iran, Kordestan, NE Baneh, g. prep. 0653/2020 D. Wanke); 3: *S. diffinaria asiatica* **syn. nov.** of *S. diffinaria diffinaria* (a, b, c1: Paratype, Iran, Fars, [Komehr], g. prep. 10872, c2: S Iran, Fars, Tange Surkh, g. prep. 0592/2020 D. Wanke); 4: *S. orbeorum* (Holotype, [Iran], Tach i Suleiman, g. prep. 1970 ZSM Hausmann). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

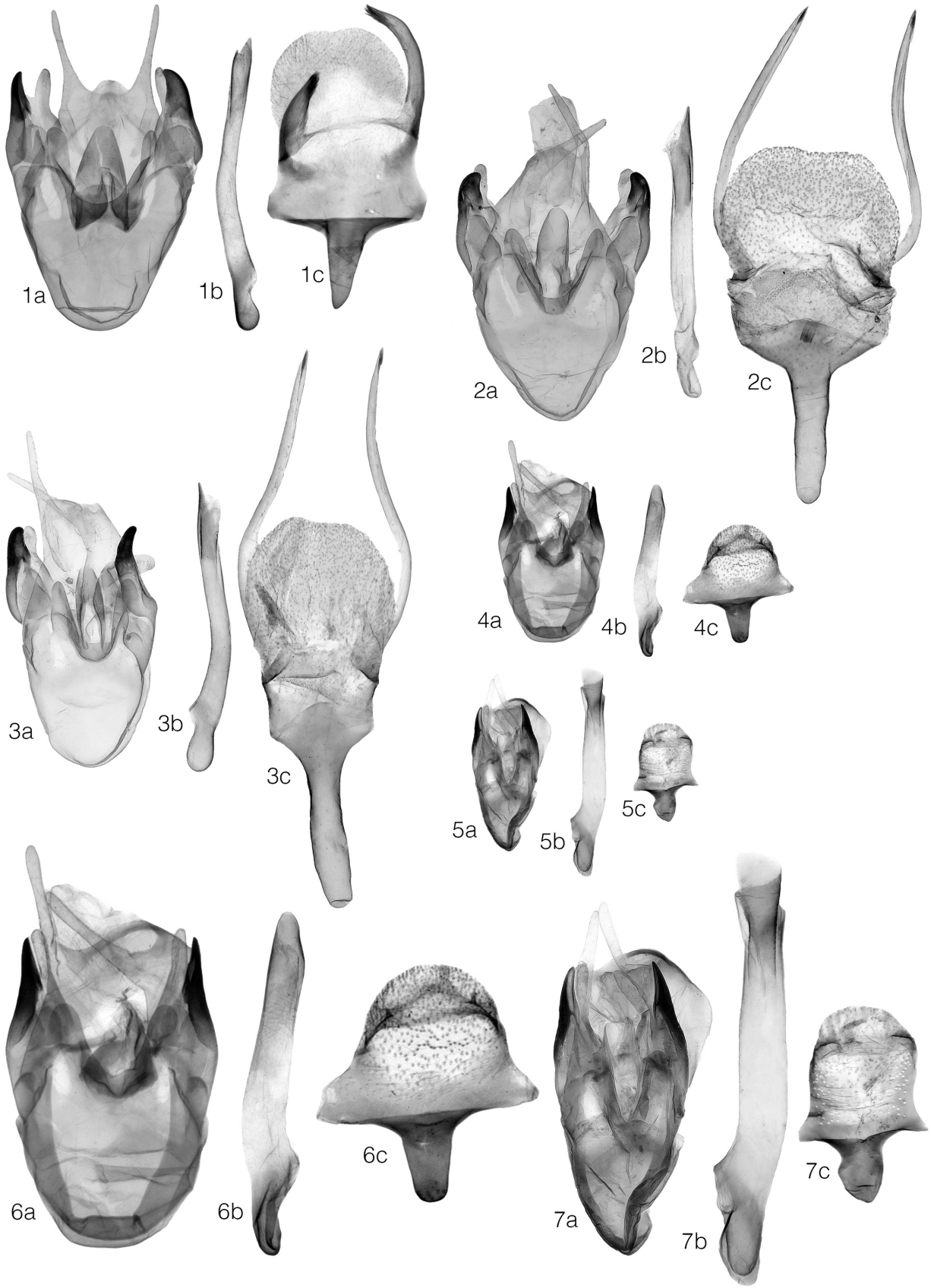

PLATE 20: Figures 1–7. Male genitalia of *Scopula* species. 1: *S. chalcographata* (Iran, Fars, Mian-Kotal, g. prep. 10875); 2–3: *S. sacraria ariana* (2: NO Afghanistan, Badakhshan, Baharak, g. prep. 0614/2020 D. Wanke; 3: Iran Boyerahamd-va-Kohgiluyeh, SE Yasuj, g. prep. 0557/2020 D. Wanke); 4+6: *S. gracilis* (Iran, Baloutchistan, Bender Tchahbahar, g. prep. 10876, 4: in scale, 6: enlarged, out of scale); 5+7: *S. alfierii* (Yemen, Al Ain, g. prep. 1296/2022 D. Wanke, 5: in scale, 7: enlarged, out of scale). a = genitalia capsule; b = aedeagus; c = 8th sternite. Scale-bar 1 mm.

PLATE 21: Figures 1–9. Female genitalia of *Cinglis*, *Scopuloides* and *Scopula* species. 1: *Cinglis humifusaria* (Iran, Zanjan, Ab-Dar, g. prep. 1193/2022 D. Wanke); 2: *Cinglis benigna benigna* **comb. nov.** (Iran, Straße Shiraz-Kazerun, Imam Sade, g. prep. 1050/2021 D. Wanke); 3: *Cinglis benigna nigromaculata* **comb. nov.** (Iran, Semnan, Cheschme Ali, g. prep. 0985/2021 D. Wanke); 4: *Cinglis benigna amseli* **syn. nov.** of *Cinglis benigna benigna* **comb. nov.** (Paratype, Afghanistan, Gulbahar, g. prep. WM 131); 5: *Cinglis eurata* **comb. nov.** (Turkmenistan, Kopet-Dagh, g. prep. 895 Pasi Sihvonen); 6: *Scopuloides origalis* **stat. rev.** (Iran, Balutschestan, Nikschar, g. prep. 0565/2020 D. Wanke); 7: *Scopula conscensa* (Ceylon, NHMUK014173528, Slide NHMUK010317461); 8–9: *Scopula relictata* (8: Oman, Adam, NHMUK014173580, Slide NHMUK014314454; 9: [Kenya], Suna, S. Kavirondo, NHMUK014173536, Slide NHMUK014314489); Scale-bar 1 mm.

PLATE 22: Figures 1–7. Female genitalia of *Scopula* species. 1: *S. ansulata* (Iran, Ostan-e Khorasan, Haji Abad, g. prep. 0697/2020 D. Wanke); 2: *S. adulteraria* **bona sp.** (Iran, Ostan-e Khorasan, Izmansufla, g. prep. 1255/2022 D. Wanke); 3: *S. immorata* (Turkey, Erzurum, N-Askole, g. prep. 1226/2022 D. Wanke); 4: *S. tessellaria* (Kazakhstan, S Kirgyzsay, g. prep. 1242/2021 D. Wanke); 5: *S. nigropunctata* (Turkey, Giresun, 1: g. prep. 1235/2021 D. Wanke); 6–7: *S. caesaria* (6: Paratype, Ceylon, Slide NHMUK 012821272; 7: South Yemen, Lahej Governorate, Al Dhala, g. prep. 1287/2022 D. Wanke). Scale-bar 1 mm.

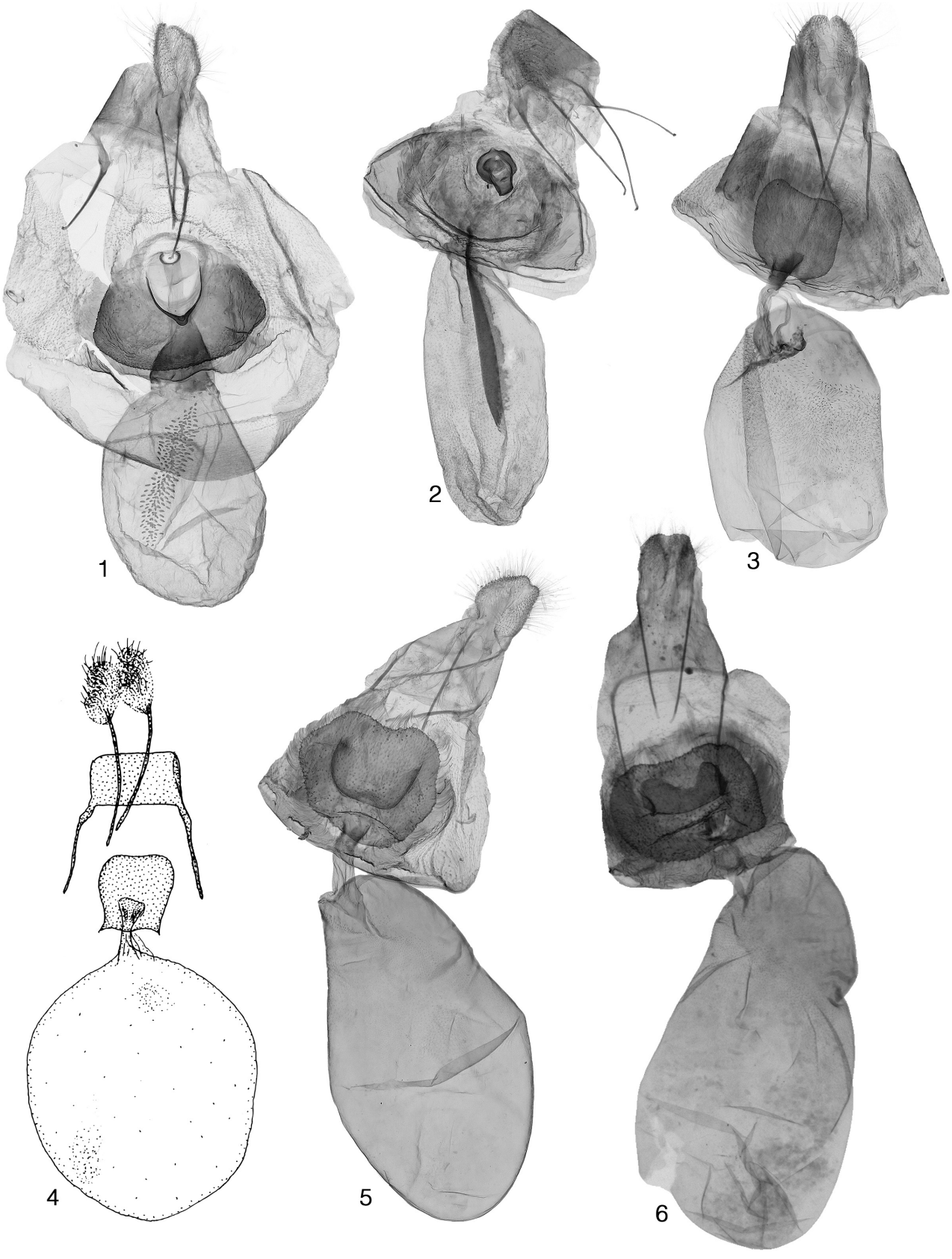

PLATE 23: Figures 1–6. Female genitalia of *Scopula* species. 1: *S. ornata enzela* (S-Iran, Miyan Kotal, g. prep. 0800/2020 D. Wanke); 2: *S. orientalis* (S-Iran, S Abadeh, N Didegan, g. prep. 0801/2020 D. Wanke); 3: *S. decorata* (N-Iran, Masandaran, Damavand, g. prep. 0790/2020 D. Wanke); 4: *S. subtilata* (altered Hausmann 2004); 5: *S. transcaspica* (S-Iran, Bandar Abbas, Kuhe Genou, g. prep. 0810/2020 D. Wanke); 6: *S. transcaspica taftanica* **syn. nov.** of *S. transcaspica* (Paratype, Baloutchistan, Kouh i Taftan, g. prep. 11022). Scale-bar 1 mm.

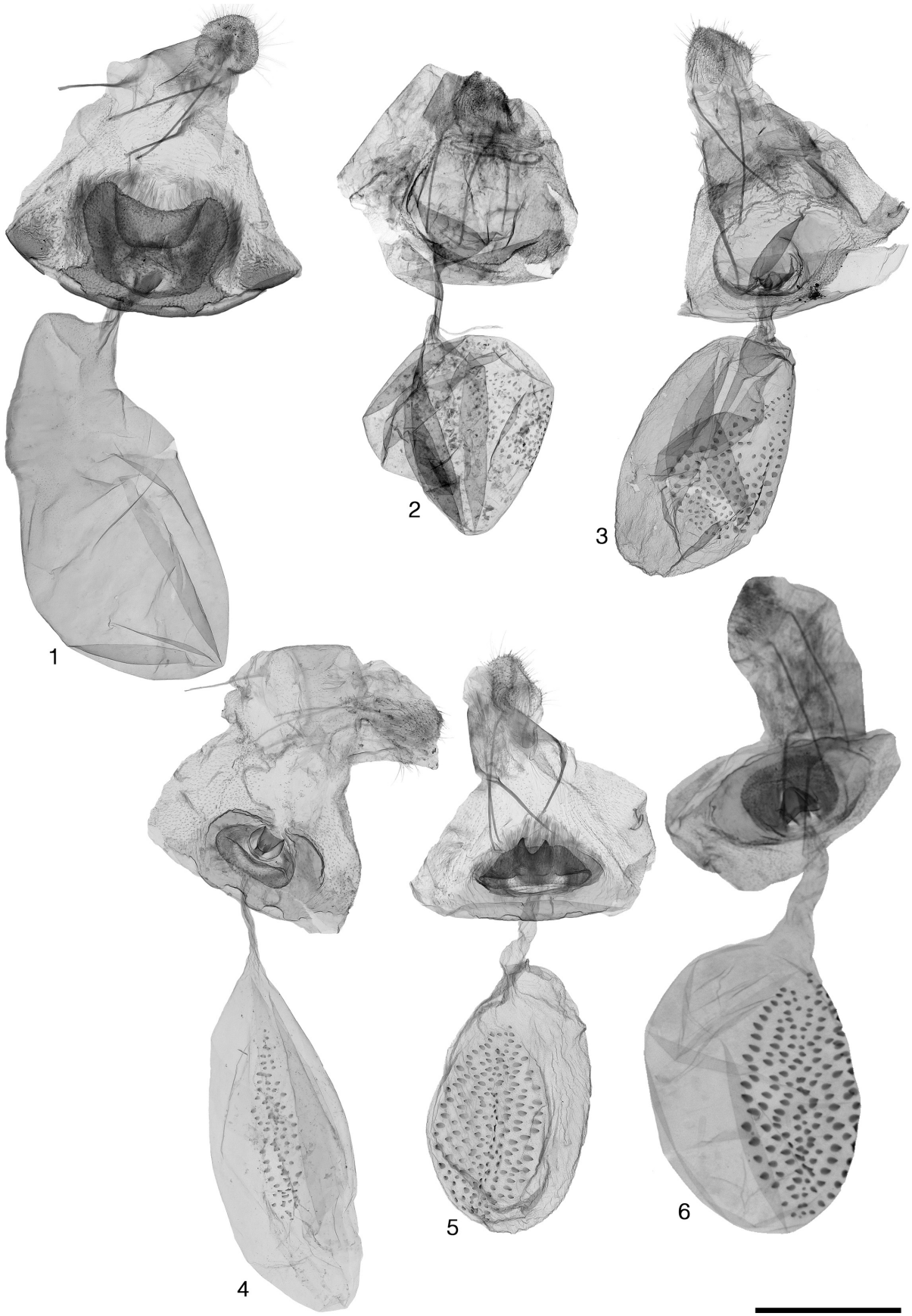

PLATE 24: Figures 1–6. Female genitalia of *Scopula* species. 1: *S. transcaspica* (Iran, Hamadan, S of Arak, g. prep. 0808/2020 D. Wanke); 2: *S. rubiginata* ([Turkey], Amasia, g. prep. 1290/2022 D. Wanke); 3: *S. turbulentaria steinbacheri* (Iran Mazandaran, Shirinabad, g. prep. 0974/2021 D. Wanke); 4: *S. imitaria* ([Croatia], Krk, Fiumebucht, g. prep. 0773/2020 D. Wanke); 5: *S. beckeraria* (Iran, Varamin, E Teheran, g. prep. 0783/2020 D. Wanke); 6: *S. hoerhammeri* (Iran, Fars, [Komehr], g. prep. 11020); Scale-bar 1 mm.

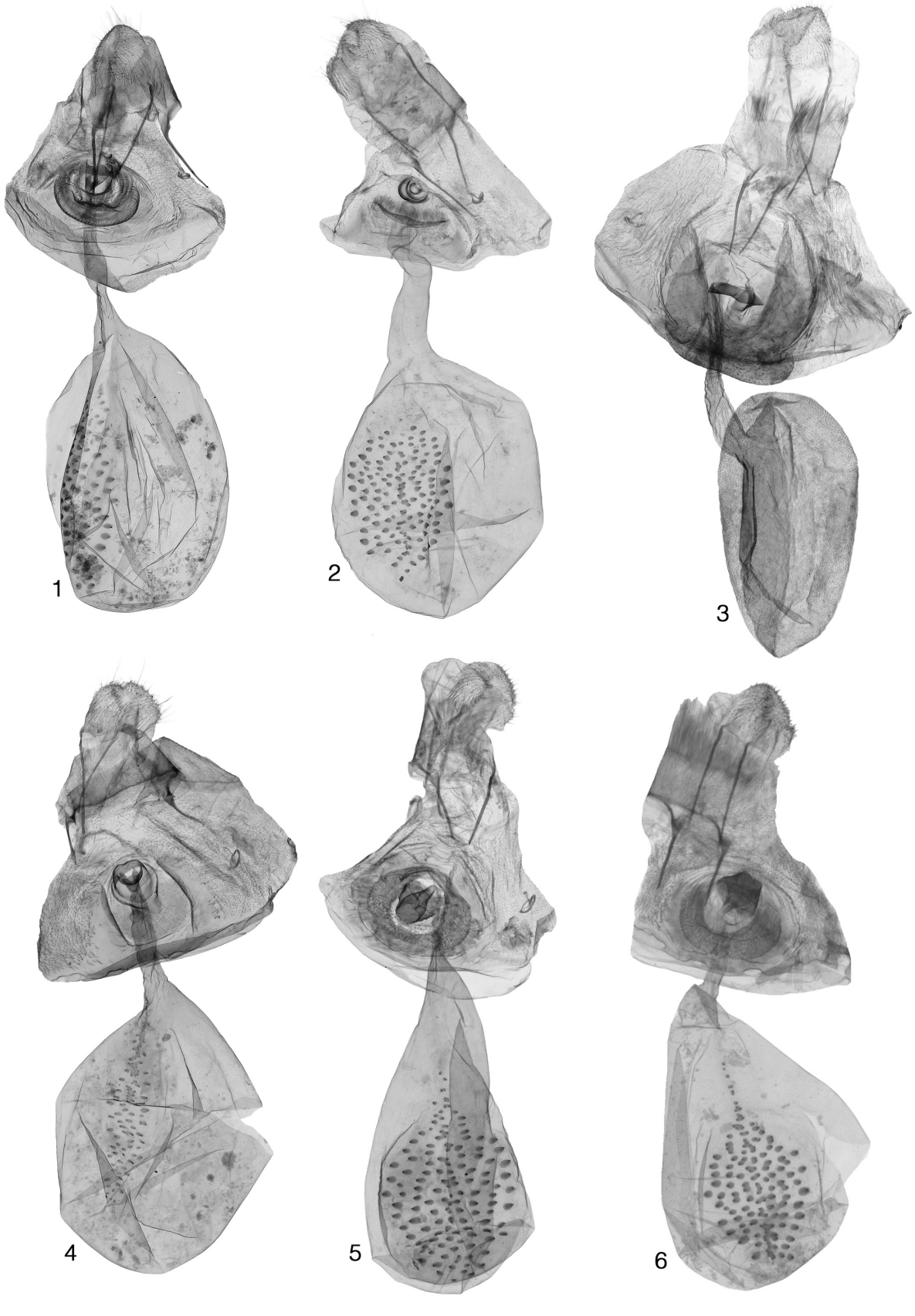

PLATE 25: Figures 1–5. Female genitalia of *Scopula* species. 1: *S. incanata* ([Iran], Tacht i Suleiman, g. prep. 1277/2022 D. Wanke); 2: *S. marginepunctata terrigena* (N-Iran, Amarlu, Rudbar, g. prep. 0875/2020 D. Wanke); 3: *S. luridata* ([Israel], Jaffa, g. prep. 1240/2021 D. Wanke); 4: *S. immutata* ([Hungary], Bükkösd, 1247/2021 D. Wanke); 5: *S. flaccidaria* (N-Iran, Bandar Pahlavi, g. prep. 1054/2021 D. Wanke); 6: *S. iranaria* **syn. nov.** of *S. flaccidaria* (Iran, Kerdej, g. prep. 11061). Scale-bar 1 mm.

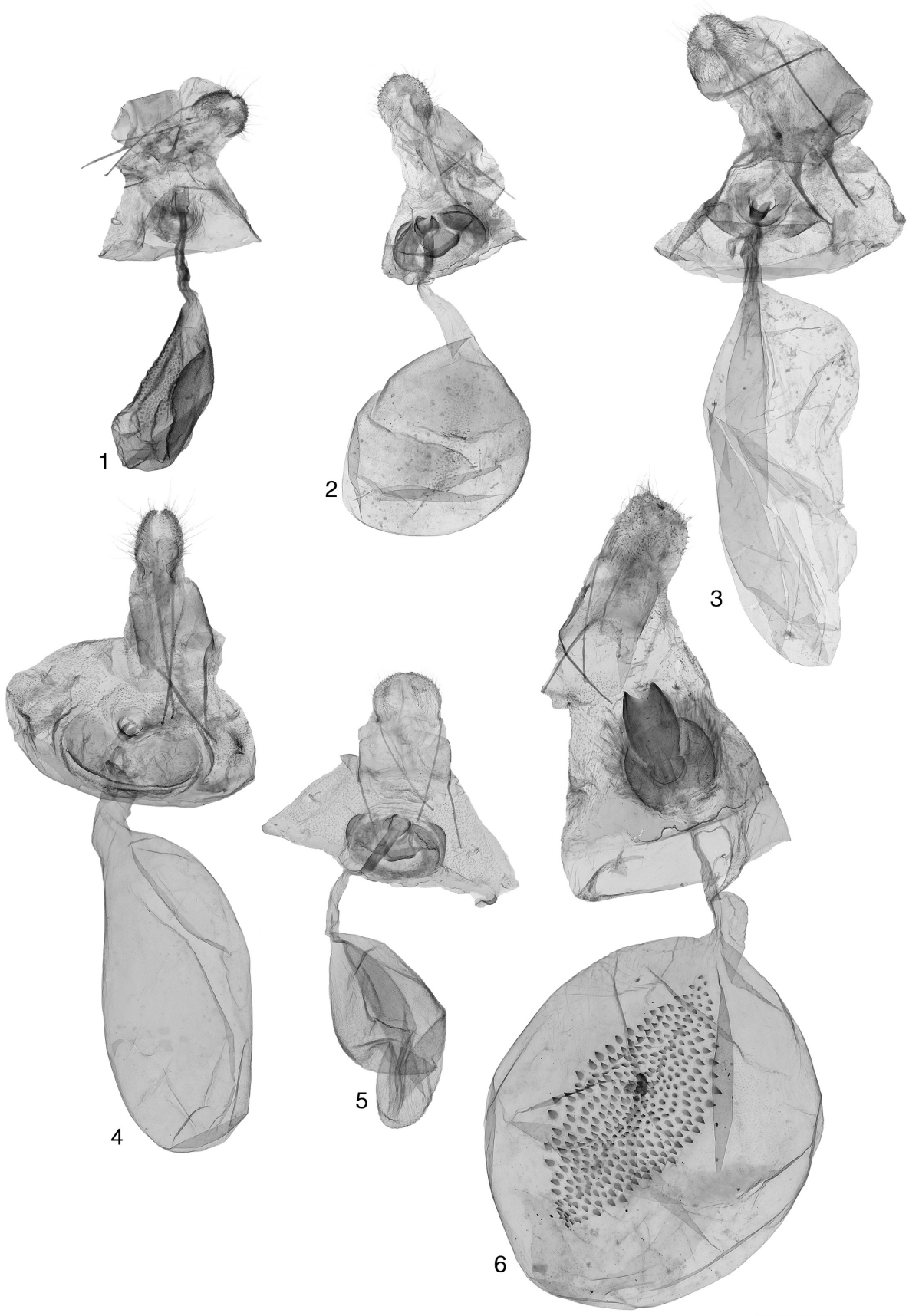

PLATE 26: Figures 1–7. Female genitalia of *Scopula* species. 1: *S. minorata* (Spain, Gran Canaria, Las Palmas, g. prep. 1249/2021 D. Wanke); 2: *S. adelpharia* (Sudan, Ed Damer, Hudeiba, g. prep. 1270/2022 D. Wanke); 3: *S. albiceraria* (SW-Mongolia, SSW Zhargalan, g. prep. 1301/2022 D. Wanke); 4: *S. immistaria* (Iran, Tehran, NNW Shemshak, g. prep. 0832/2020 D. Wanke); 5: *S. lactarioides* (Iran, Makran, Chahbar Küste, g. prep. 0879/2020 D. Wanke); 6: *S. diffinaria diffinaria* (Iran, Mazandaran, S Shah Kuh-e Pain, g. prep. 0521/2020 D. Wanke). Scale-bar 1 mm.

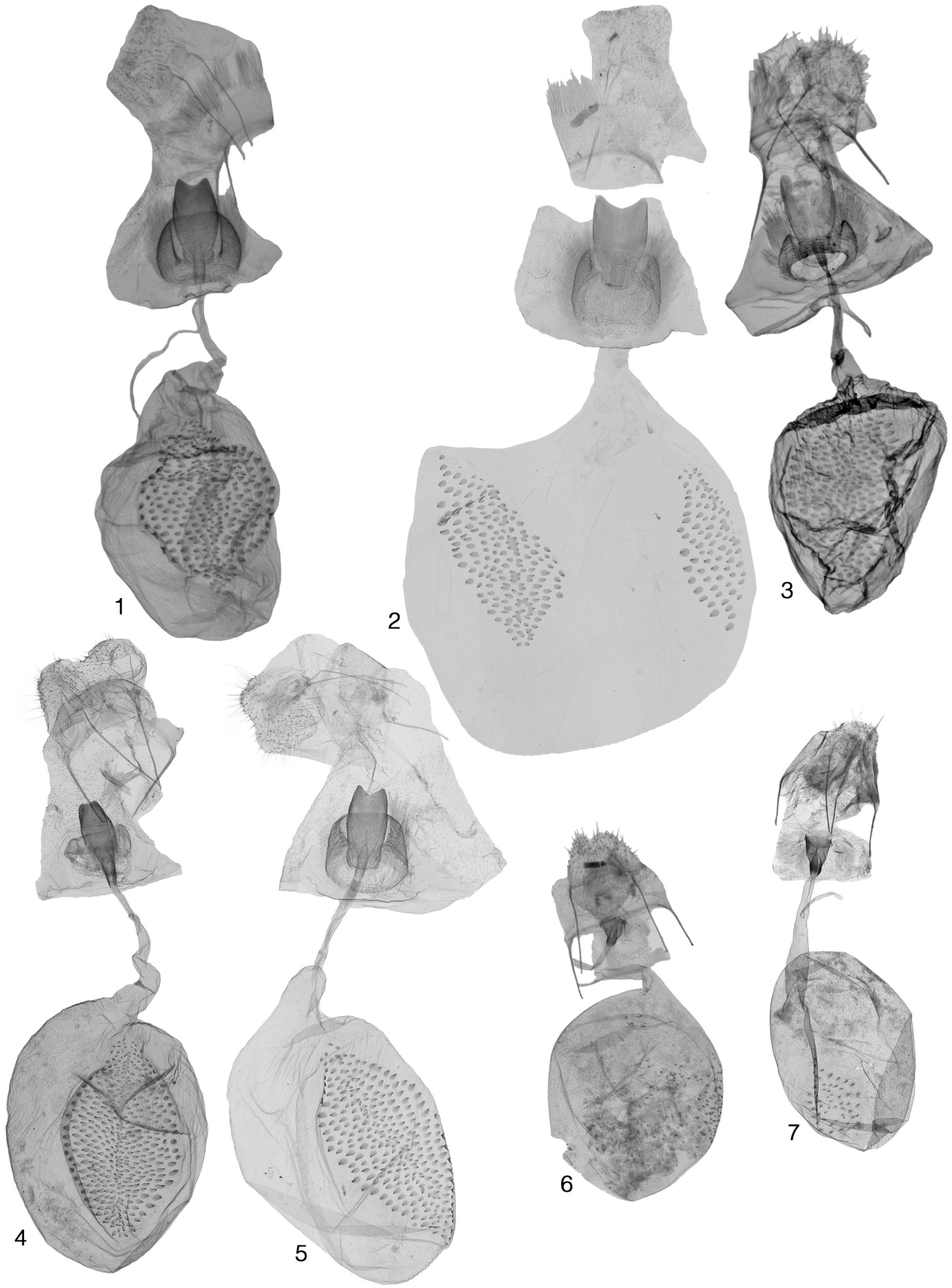

PLATE 27: Figures 1–7. Female genitalia of *Scopula* species. 1: *S. diffinaria asiatica* **syn. nov.** of *S. diffinaria diffinaria* (Paratype, Iran, Fars, [Komehr], g. prep. 10873); 2: *S. orbeorum* (Paratype, [Iran], Tacht i Suleiman, g. prep. 4248 ZSM Hausmann); 3: *S. chalcographata* (Paratype, Iran, Fars, Mian-Kotal, g. prep. 10874); 4–5: *S. sacraria ariana* (4: Iran, Fars, Sine-Sefid, g. prep. 0581/2020 D. Wanke; 5: N-Iran, Tehran-Evin, g. prep. 0684/2020 D. Wanke); 6: *S. gracilis* (Iran, Baloutchistan, Bender Tchahbahar, g. prep. 10877); 7: *S. alfierii* (Yemen, WSW Al Mukalla, g. prep. 1298/2022 D. Wanke). Scale-bar 1 mm.

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Appendix—Additional material examined

Cinglis humifusaria

4 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053 m, 17.v.2010, Leg. G. Petrányi, P. Hentschel, g. preps (♂) 1252, 1253/2022 D. Wanke (♀) 1193, 1194/2021 D. Wanke; **all in SMNS.**

3 ♂/♀, South East Kazakhstan, Almaty Province, 12 km SW of Akzhar vill. Ili River valley, 44°52'N, 75°53'E, 25.–26.v.2015, Leg. P. Gorbunov; 1 ♂/♀, West Kazakhstan, Irgiz river basin, 17 km NEN of Kurylys settl., saline semidesert, 49°47'N, 60°49'E, 13.v.2016, Leg. P. Gorbunov; **all in ZSM.**

Cinglis benigna benigna

1 ♂, Iran, Fars, Eqlid SSE, Kuh–e Bol, Darre Absad, 2700 – 3000 m, 23.vi.2005, leg. A. Hofmann, g. prep. 0519/2020 D. Wanke; 1 ♂, S–Iran, [prov. Fars], Miyan Kotal, östl. Kazerun, 4.–7.vi.1969, 1900 m, N 29°30', E 51°40', leg. G. Ebert, g. prep. 0867/2020 D. Wanke; 1 ♀, S–Iran, [prov. Fars], Straße Shiraz–Kazerun, Imam Sade, 1200 m, 3.vi.1969, leg. G. Ebert, g. prep. 1050/2021 D. Wanke; 1 ♂, S–Iran, [prov. Fars], 100 km s. Abadeh, n. Didegan, 2000 m, 9.vi.1969, leg. G. Ebert, g. prep. 1058/2021 D. Wanke; 3 ♂/♀, Iran, Balutschestan, Khasch, 3 km S Sangan, 1300 m, 13.v.1972, leg. Ebert & Falkner, g. prep. (♂) 0874/2020 D. Wanke; 2 ♂/♀, Iran, Baloutchistan, Straße Khach–Zahedan, Fort Sengan, 1800 m, 30.iv.1938, coll. Brandt, g. prep. 0604/2020 D. Wanke; 1 ♂, [Iran], Balutschestan, Khasch, Kousche, 2000 m, 21.v.1972, leg. Abai, Ebert, g. prep. 1163/2021 D. Wanke; **all in SMNK.**

Cinglis benigna nigromaculata

6 ♂/♀, Iran N, prov. Semnan, 30 km NW Damghan, Cheschme Ali, N 36°15'07'', E 54°04'20'', 1560 mNN, 23.v.05, leg. Trusch, Petschenka, Müller, g. preps (♂) 0983, 0984, (♀) 0985/2020 D. Wanke; 2 ♂/♀, Iran Z., Kashan, Karkas Berg, 22.v.1970, leg. M. Abai, g. prep. (♂) 0663/2020 D. Wanke; 4 ♂/♀, same locality as before, 2.vi.1970, leg. M. Abai, g. preps (♂) 0664, 0665/2020 D. Wanke; 1 ♂, N–Iran, Salzsee, 90 km s. Teheran, 800 m, 23.vi.1969, leg. H. G. Amsel, g. prep. 0868/2020 D. Wanke; 1 ♂/♀, N–Iran, Kamard, 40 km w. Teheran, ca. 1700 m, 9.ix.1970, leg. G. Ebert; **all in SMNK.**

Cinglis eurata

6 ♂/♀, Iran, Khorasan Razavi, 65 km Kalat road, Khor, 1431m, 36°38'15.1''N, 59°54'04''E, 16.vi.2016, leg. Sh. Feizpour, g. preps (♂) 0722/2020, 1179, 1180, 1181/2021 D. Wanke; 1 ♂/♀, Iran, Khorasan Razavi, 5 km W Chenaran, 3 km before Akhlamand, 1210 m, 36°38'21'' N, 58°57'04'' E, 16.vi.2010, leg. H. Rajaei; **all in SMNS.**

1 ♂, Turkmensitan, Kopet–Dagh Mts., 5 km S of Chull, 700–800 m, 58°01'E, 37°56'N, 5.viii.1992, No. L68, leg, M. Hreblay. Gy. László and G. Ronkay, g. prep. 894 Pasi Sihvonen, ZSM G 12558; 1 ♀, same data, but 55.viii.1992, No. L75, g. prep. 895 Pasi Sihvonen, ZSM G 12559; **all in ZSM.**

Scopuloides origalis

3 ♂, Iran–Centr., Prov. Yazd, N Yazd, Chak Chak, N 32°20' 07.8'', E 54°22'58.0'', 1.550 mNN, 10. – 11.iv.2007, leg. R. Trusch, SMNK E–Lep. 234, g. preps 0546, 0547/2020, 1182/2021 D. Wanke; 2 ♂, Iran, prov. Esfahan, Kuh–e–Karkas, 1600 m, 7 km NW of Natanz, 11.–12.vi.2005, leg. P. Gyulai & A. Garai, g. preps 0549, 0548/2020 D. Wanke; 1 ♂/♀, Iran, prov. Esfahan, Kuh–e–Karkas, 1700 m, 3 km SE of Natanz, 11.–12.vi.2005, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, prov. Fars, S–Zagros, 40 km SW of Sivand, 09.–10.06. 2005, leg. P. Gyulai & A. Garai, 3 ♂/♀, Iran, Laristan, Straße Bender–Abbas–Saidabad, Sardze Umgebung, ca. 200 m, Mitte November 1937, coll. Brandt, g. preps (♂) 0586, 587/2020 D. Wanke; 9 ♂/♀, Iran, Balutschestan, Khasch, 11 km NE Karavandar, 1300 m, 13.v.1972, leg. Ebert & Falkner, g. preps (♂) 0627 (♀) 0617, 0626/2020 D. Wanke; 3 ♂/♀, Iran, Balutschestan, Nikschar, Tange–Sarheh, 1100m, 16.5.1972, leg. Ebert & Falkner, g. preps (♂) 0564, (♀) 0565/2020 D. Wanke; **all in SMNK.**

Scopula conscensa

1 ♂/♀ Ceylon, NHMUK014173528; 1 ♀ [India], Pusa, NHMUK 014173527; **all in NHMUK**

Scopula relictata

1 ♀, India, Dehra Dun, 2300 ft., 5.v.1936, Major J.A. Graham, at light, NHMUK 014173577, g. prep. NHMUK

010317475; 1 ♂, Bahrain, Jurdeh desert, 11.iii.[19]61, E.P. Wiltshire, NHMUK 014173578, g. prep. NHMUK 010317476; 1 ♂, Bahrain, Adari, 25.x.[19]59, E.P. Wiltshire, NHMUK 014173579, g. prep. E.P. Wiltshire 1027; 1 ♀, N. Oman, Adam, 22°22'N, 57°32'E, 17.vi.1990, MD. Gallagher, NHMUK 014173580, g. prep. E.P. Wiltshire 2690; **all in NHMUK.**

1 ♂, Iran, [prov. Hormozgan], Minab, 13.iii.1971, [leg.] Paz., Ayat, g. prep. 0923/2021 D. Wanke; **in SMNK.**

1 ♂/♀, Iran, Khuzestan, Shush, 19.–24.iii.1956, leg. Richter & Schäuffele; 1 ♂/♀, Iran, Khuzestan, Shadegan, 1.–10.iv.1956, leg. Richter & Schäuffele; **all in SMNS.**

Scopula ansulata

1 ♂/♀, Iran, Golestan, Sharud W, Kash, Kuh–e Shavar, 2900 m, 19.vii.2003, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; **in PCJM.**

10 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, NE–Birjand, S Haji Abad, Gomenj vic., Kuh–e Mirza Arab, N 33°16'13.9'', E 60°06'59.7'', 1.v.2008, 2040 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247, g. prep. (♀) 0697/2020 D. Wanke; 11 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, NW Mashad, N Tschenaran, N Radkan, Dolmeh Olia, N 36°55'56.6'', E 59°02'18.6'', 8.v.2008, 1560 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247, g. prep. (♂) 0695/2020 D. Wanke; 11 ♂/♀, same data, 9.v.2008, g. prep. (♂) 0696/2020 D. Wanke; 1 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 10.v.2008, 1240mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247; 2 ♂/♀, same data, 11.v.2008; 19 ♂/♀, Iran, prov. Semnan, 15 km W of Miyandasht, N 36°25', E 56°14', 1000 m, 16.iv.2010, leg. B. Benedek & T. Hácz; **all in SMNK.**

Scopula adulteraria

33 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 10.v.2008, 1240 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247, g. preps (♀) 0698/2020, 1255/2022, (♂) 0700/2020 D. Wanke; 26 ♂/♀, same data, 11.v.2008, g. prep. (♂) 0699/2020 D. Wanke; 26 ♂/♀, same data, 17.v.2005, leg. R. Trusch, G. Petschenka & B. Müller, SMNK E. Lep. 215; 1 ♂/♀, N–Iran, E Alborz, Prov. Mazandaran, E Gorgan, S Aliabad, oberh. Shirinabad, N 36°47'21'', E 55°01'25'', 21.v.2005, 1100 mNN, leg. R. Trusch, G. Petschenka & B. Müller, SMNK E. Lep. 215; **all in SMNK.**

1 ♂/♀, Iran, Khorasan Shomali, Ismansufla, 18.v.2015, leg. Sh. Feizpour; **all in SMNS.**

Scopula immorata riloensis

1 ♀, Turkey, Erzurum, 20 km nördl. Askole, Kop Gec, 2300 m, 16.vii.1992, g. prep. 1226/2021 D. Wanke; 1 ♂, Persia sept., Elburs mts.c.s., Tacht i Suleiman, Hecarcal–Tal, 28–3200 m, 3.–7.vii.[19]37, E. Pfeiffer & W. Forster leg., München, g. prep. 1225/2021 D. Wanke; **all in SMNK.**

1 ♂, Turkey, Erzurum, Kopdagi gec., 2400 m, 10.–14.vii.1983, leg. W. Thomas, g. prep. 1230/2021 D. Wanke; 1 ♂, Kleinasien [Turkey], prov. Tokat–Sivas, Camlibel–Pass, 1700 m, 1.–10.vii.1978, leg. deFreina, g. prep. 1231/2021 D. Wanke; 1 ♂, Mongolia, Chentej aimak Tsenhernandel, Modoto Chentej Mts. 1600–1800 m, 47°48'N, 109°04'E, 9.–14.vii.1984, leg. Cerny, g. prep. 1232/2021 D. Wanke; **all in SMNS.**

1 ♂, [Iran] Persia sept., Elburs mts.c.s., Tacht i Suleiman, Hecarcal–Tal, 28–3200 m, 3.–7.vii.[19]37, E. Pfeiffer & W. Forster leg., München, g. prep. 1259/2022 D. Wanke; **in ZFMK.**

1 ♀, Persia sept. [Iran], Elburs mts.c.s., Tacht i Suleiman, Särdab–Tal (Tanakarud), 29–3200 m, 19.–23.vii.[19]37, leg. E. Pfeiffer & W. Forster, München, g. prep. 1284/2022 D. Wanke; 1 ♂, Persia sept. [Iran], Elburs mts.c.s., Särdab–Tal, 3000 m, 19.–23.vii.[19]37, leg. E. Pfeiffer & W. Forster, München, g. prep. 1285/2022 D. Wanke; 1 ♂, Persia sept. [Iran], Elburs mts.c.s., Särdab–Tal, Vandarban, 19–2200 m, 10.–14.vii.[19]37, leg. E. Pfeiffer & W. Forster, München, g. prep. 1286/2022 D. Wanke; **all in ZSM.**

Scopula tessellaria

6 ♂/♀, Kasachstan, Alma Ata, 1500 m, 12.vi.[19]69, g. preps (♂) 1227 (♀) 1228, 1229/2021 D. Wanke; **in SMNK.**

1 ♂, E Kazakhstan, S Tarbagatay Mts., 6 km, NE Kirovka (=Karatuma), 1100 m, 23.vi.2001, 47°10'N, 82°06'E, leg. D. Bartsch, g. prep. 1241/2021 D. Wanke; 1 ♀, SE Kazakhstan, N Ketmen Mts., S Kirgyzsay (=Podgornoe), 1600–1800 m, 3.vi.2001, 43°17'N, 79°31'E, leg. D. Bartsch, g. prep. 1242/2021 D. Wanke; **all in SMNS.** 1 ♂,

Persia sept., Elburs mts.c.s., Tacht i Suleiman, Vandarban–Tal, 19–2200 m, 1.–3.vii.[19]37, E. Pfeiffer & W. Forster leg., München, g. prep. 1260/2022 D. Wanke; **in ZFMK.**

Scopula nigropunctata

1 ♂, N–Iran, 12 km n. Amol, 250 m, 28.x.1970, leg. G. Ebert, g. prep. 0964/2021 D. Wanke; 1 ♀, [Iran], Shahsavar, 7.viii.1971, [leg.] Ghazioff, g. prep. 1069/2021 D. Wanke; **in SMNK.**

1 ♂, 1 ♀, Turkey, Giresun, 4 km W Tirebolu, 0 m, 21.–23.viii.[19]92, leg. P. Kautt & V. Weiss, g. preps (♂) 1235 (♀) 1236/2021 D. Wanke; **in SMNS.**

Scopula caesaria

1 ♀, N. Oman, Khasab, 9.iv.1983, leg. M.D. Gallagher, NHMUK014173571, g. prep. NHMUK 010317471; 1 ♂, Oman, Dhofar, Wadi Sha'ath, 5.x.1979, leg. T.B. Larsen, NHMUK014173572, g. prep. NHMUK 010317472; **all in NHMUK.**

1 ♂, Republic South Africa, Gauteng prov., Ezemvelo NR, 25°42'S, 29°00'E, 1350–1400 m, at light, 11.xii.2007, leg. D. Bartsch, g. prep. 1224/2021 D. Wanke; **in SMNS.**

1 ♀, South Yemen, P. D. R. Y, Lahej Governorate, Al Dhala, 1500 m, 7.vi.1987, leg. Bernd Müller, g. prep. 1287/2022 D. Wanke; **in ZSM.**

Scopula ornata enzela

3 ♂/♀, Iran, Kerman, Jiroft W, Shingera, 2800 m, 26./27.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Esfahan, Yasuj E, Kuh–e–Dena, Nurabad N, 2450m, 08.vi.2005, leg. A. Hofmann, J.–U. Meineke; 3 ♂/♀, Iran, Khorasan–e Shomali, Kopet–Dagh, Izman–e Sufla vic., N 37°51'31.9'', E 57°32'27.2'', 1823 m, 2.vi.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Markazi, Tafresh via Dastgerd, 2300–2500m, 15./16.6.2005, leg. J.–U. Meineke; **all in PCJM.**

1 ♂, 1 ♀, N–Iran, Bandar Pahlavi, 28.ix.1970, 20 m, leg. Ebert, g. preps (♂) 0797, (♀) 0796/2020 D. Wanke; 1 ♂, 1 ♀, S–Iran, Miyan Kotal, östl. Kazerun, 4.–7.vi.1969, 1900 m, N 29°30', E 51°40', leg. G. Ebert, g. preps (♂) 0795, (♀) 0800/2020 D. Wanke; 2 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 30.–2.vii.1975, 1950 m, leg. Ebert & Falkner, g. prep. (♂) 0802/2020 D. Wanke; 1 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 86 km SE Baneh, 5.vii.1975, 1950 m, leg. Ebert & Falkner; 1 ♀, N–Iran, Masandaran, Golestan–Wald, 60 km E Gonbad Qabus, 8.vii.1972, 510 m, leg. Ebert & Falkner, g. prep. 0798/2020 D. Wanke; 1 ♂/♀, Iran, Esfahan, W Fereydoun Shahr, vic. Sibac, 6./7.vi.2006, 2450 m, leg. W. ten Hagen; 1 ♂/♀, Iran, Esfahan, Esfahan–Daran, Ashan vic., 2.vii.2005, 2490 – 2500 m, leg. A. Hofmann; **all in SMNK.**

1 ♂/♀, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248 m, 12.v.2010, leg. G. Petrányi, P. Hentschel; 2 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053 m, 17.v.2010, leg. G. Petrányi, P. Hentschel; **all in SMNS.**

1 ♂/♀, Nord–Iran, Schahkuh, West–abhg. Geröllzone, 1800–2000 m, Juni, Exp. Wernicke; **in ZFMK.**

Scopula orientalis

2 ♂/♀, S–Iran, 100 km s. Abadeh, n. Didegan, 9.vi.1969, 2000 km, leg. G. Ebert, g. prep. (♀) 0801/2020 D. Wanke; **in SMNK.**

1 ♀, Kleinasien, SW–Anatolien, Sultan Dagh, Um. Aksehir, 1000–1500 m, 16.vi.–01.vii.[19]76, leg. deFreina, g. prep. 1190/2021 D. Wanke; 1 ♀, Kleinasien, Prov. Hakkari, 15 km nordwest Yüksekova, vic. Suüstü, 1900 m, 20.vi.[19]81, leg. deFreina, g. prep. 1191/2021 D. Wanke;

1 ♂, Iran, Elburz, Dizin, 3200 m, vii.1975, leg. Czipka, g. prep. 1192/2021 D. Wanke; **all in SMNS.**

Scopula decorata

1 ♂/♀, Iran, Zagros, Esfahan Umg., Fereidun Shah, 2200 m, 9.vii.1999, leg. A. Hofmann, J. Meineke; 1 ♂/♀, Iran, prov. Azarbayjan–e–Gharbi, Takht–e Suleyman, 20 km E, Gharawol–Khaneh, 2300–2500 m, 29./30.vi.2009, leg. A. Hofmann, J. U.Meineke, H. Rajaei; 1 ♂/♀, Iran, prov. Azarbayjan–e–Sargi, Kaleybar 10 km E, 1900 m, 27./28.vii.2006, leg. A. Hofmann, J. Meineke; 1 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Kuh–e Bozghush, Sarab S, 2233 m, 28.vi.2013, N 37°45'49.4'', E 47°21'30.8'', leg. J. U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Gharek Aghai, 2200 m, 4.vi.2013, N 36°50'16.5'', E 46°58'07.5'', leg. J. U. Meineke, H. Rajaei, B. Hafezi; 3 ♂/♀, Iran, Zanjan, Zanjan–Gilvan, Gargovol Dag, 2500m, 26./27.6.2001, leg. A. Hofmann,

J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, Zanjan NE, Gard–ye Alamut N, 2000–2300 m, 1./2.vii.[20]09, leg. A. Hofmann, J. U. Meineke, A. Naderi, H. Rajaei; 1 ♂/♀, Iran, Mazandaran, Ramsar SE, Haris via Javaherdeh, Kaspiswald, 1350 m, 17.vii.2006, leg. J. U. Meineke, H. Rajaei; 1 ♂/♀, Iran, Golestan, Gorgan to Sharud, N 36°37'20.0'', E 54°38'07.0'', 2455 m, 23.vi.2013, leg. J. U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Alborz, Demavand NE, via Taar See, 2400 m, 19.vii.2006, leg. J. U. Meineke, A. Hofmann, g. prep. 1254/2022 D. Wanke; **all in PCJM.**

45 ♂/♀, N–Iran, Elburs Mts., Masandaran, Polur, Damavand, 7.–10.vii.1972, 2500 m, leg. Ebert & Falkner, g. preps (♂) 0789, (♀) 0790/2020 D. Wanke; 3 ♂/♀, same data, 2200 m; 2 ♂/♀, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 5.viii.1972, 2600 m, leg. Ebert; 1 ♂/♀, N–Iran, Elburs Mts., N Teheran, Dizin Hotel, N 36°02'52.1'', E 51°24'58.1'', 2700 m, 20.vii.2006, leg. R. Trusch; 1 ♂/♀, N–Iran, Elburs Mts., N Teheran, ca. 30 km E Kendevan, Labaschm Pass, W Nesen, N 36°13'56.1'', E 51°26'18.8'', 3000 m, 19.vii.2006, leg. R. Trusch; 2 ♂/♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel, g. prep. (♀) 0791/2020 D. Wanke; 2 ♂/♀, W–Iran, Kordestan, Straße Zandjan–Bijar, 53 km S Zandjan, 28.–29.vi.1975, 1700m, leg. Ebert & Falkner, g. prep. (♂) 0792/2020 D. Wanke; 1 ♂/♀, Nordiran, Elbursgebirge östl. Shemshak, 50 km nördl. Teheran, 2100–2500 m, 8.–24.vi.1973, leg. G. Junge; 2 ♂/♀, Iran, prov. Azerbayejan, E–Sharqi, 10 km NW of Miyane, 14.–15.vi.2005, leg. P. Gyulai & A. Garai; 3 ♂/♀, N–Iran, Elburs Geb., Polour, 1600 m, 21.vi.1969, leg. H. G. Amsel; 9 ♂/♀, Iran, prov. Zanjan, W–Alborz range Tarom vic, 20 km NE of Zanjan, 13.–14.vi.2005, leg. P. Gyulai & A. Garai, g. prep. (♂) 0793/2020 D. Wanke; 1 ♀, W–Iran, Lorestan, 28 km E Borudjerd, 27.vii.1975, 2300 m, leg. Ebert & Falkner, g. prep. 0794/2020 D. Wanke; 1 ♂/♀, Iran, Ardabil, Talish, 3 km W Lake Noer, E Helabad, 23.vi.2006, 2600 m, leg. W. ten Hagen; **all in SMNK.**

3 ♂/♀, Iran, Zanjan prov., E Zanjan, road to Gilvan, Alt. 1889 m, N36°45'21.8'', E48°49'20.7'', 6.vii.2013, leg. H. Rajaei, J.–U. Meineke, B. Hafezi, g. prep. (♀) 1187/2021 D. Wanke; 3 ♂/♀, Iran, Azerbaijan–e Sharghi prov., S Ghareh Aghaj, after Argsnay–Sufla Alt. 2020 m, N 36°50'16.5'', E 46°58'07.5'', 4.vii.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi, g. prep. (♀) 1188/2021 D. Wanke; 1 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Khoy to Ghotur road, Esteran vill., Alt. 1637 m, N 38°27' 03.1'', E 44°44'33.6'', 1.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 2 ♂/♀, Iran, prov. Kordestan, Saghez–Baneh road, 10 km to Baneh Garnadeh–Khan, N 36°04'13'', E 45°59'31'', 1976 mNN, 26–27.vi2009, leg. H. Rajaei, J.U. Meineke & A. Hofmann, g. prep. (♀) 1185/2021 D. Wanke; 1 ♂/♀, Iran, Azerbaijan–e Sharghi prov., Kuh–e Bozghush, S Sarab, Warzeghan to Sarab sandy road, after Chichaklu vill., Alt. 2233 m, N 37°45'49.4'', E 47°21'30.9'', 28.vi.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi; 1 ♂/♀, Iran, Azerbaijan–e Gharbi prov., 15 km W Jolfa, Sint–Stepanus Church, Alt. 951 m, N 38°58' 43.2'', E 45°28'24.0'', 3.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 1 ♂/♀, Iran, Ghazwin–Alamut road, after Gardane Alamut, sandy road to Khanjar Bolagh village N 36°24'11''; E50°12'52'', 2024 m, 1.–2.vii.2009, H. Rajaei, J.–U. Meineke A. Hofmann, g. prep. (♀) 1186/2021 D. Wanke; 3 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, leg. G. Petrányi, P. Hentschel; 1 ♂/♀, Iran, Elburs, Shemshak, 2700 m, 10.–11.viii.1978, leg. W. Thomas; **all in SMNS.**

2 ♂/♀, NE Iran, Mazandaran, Sari, 100 m, viii.2002, leg. Müller; 1 ♂/♀, N Iran, Gilan prov., W. Alborz, Umg. Delir, ca 2600 m, 11.–20.vii.2001, leg. Müller; **all in ZSM.**

Scopula subtilata

1 ♂, S. Russia, NHMUK 014173553, g. prep. NHMUK 010317467; **in NHMUK.**

2 ♂/♀, Rossia m.or. Sarepta, g. preps (♂) 1272/2022 D. Wanke (♀) No. 9542 ZSM; **in ZSM**.

Scopula transcaspica

2 ♂/♀, Iran, Khorasan–e Shomali, Kopet–Dagh, Izman–e Sufla vic., N 37°51'31.9'', E 57°32'27.2'', 1823 m, 2.vi.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 4 ♂/♀, Iran, Markazi, Tafresh via Dastgerd, 2300–2500m, 15./16.6.2005, leg. J.–U. Meineke; 1 ♂/♀, Iran, Khorasan, Askaneh 20 km, 1800 m, 25.v.2008, leg. J.–U. Meineke, W. Kramer; 1 ♂/♀, Iran, Boyer Ahmad–Va–Kohgiluyeh, Gardaneh, Meymand, 2450–2800 m, 14./15.vi.2001, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 2 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Gharek Aghai, 2200 m, 4.vi.2013, N 36°50'16.5'', E 46°58'07.5'', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, prov. Hamadan, Hamadan NNE, Razan N, Gardaneh Avaj, 2100–2150 m, 19.vi.1998, leg. A. Hofmann, J.–U. Meineke; 2 ♂/♀, Iran, Tehran, Z–Elburs, Maighoon–Ort, 2200 m, 17.vii.2003, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Zagros, Boyer Ahmad–Va–Kohgiluyeh, Meymand Umg., 2500 m, 11./12.vii.1999, leg. A. Hofmann, J.–U. Meineke; 3 ♂/♀, Iran, Baluchestan, Kuh–e Taftan, Jain Chin, 2500m,16.– 18.v. 2004, leg. A. Hofmann, J.–U.

Meineke, G. Tremewan; 2 ♂/♀, Iran, Kerman, Rayen SW, Kuh–e Hesar, Abshar, 2700–3000 m, 24./25.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Kerman, 55 km N Gardaneh–ye Khorasani, 2450–2600 m, 30./31.v.2001, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; 9 ♂/♀, Iran, Kerman, Bam SW, Deh Bakri, 2000–2200 m, 18.–21.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Kerman, Jiroft W, Shingera, 2800 m, 22./23.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Same data, but 26./27. v.2004; **all in PCJM.**

22 ♂/♀, N–Iran, Elburs–Mts, Masandaran, Polur, Damavand, 2200 m, 11.vii.1972, leg. Ebert & Falkner, g. prep. (♂) 0534/2020 D. Wanke; 2 ♂/♀, N–Iran, Elburs–Mts, Masandaran, Polur, Damavand, 2500 m, 7.–10.vii.1972, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Elburs–Geb., Polour, 1600 m, 21.vi.1969, leg. H. G. Amsel; 7 ♂/♀, Iran, prov. Azerbayejan, E – Sharqi, 10km NW of Miyane, 14.–15.vi.2005, leg. P. Gyulai & A. Garai; 3 ♂/♀, Iran, prov. Azerbayejan, E – Sharqi, 10km NW of Miyane, 31.v.–01.vi.2005, leg. P. Gyulai & A. Garai; 3 ♂/♀, Iran, prov. Tehran, Elburz mts. 3km NNW Shemshak, N36°02' E051°28', 2860mNN, 24.vii.2003 (lux), leg. G. Ebert & R. Trusch; 2 ♂, NE–Iran, prov. Ostan–e Khorasan, Kopet Dagh, ca.50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 10.v.2008, 1.240mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, g. preps 0510, 0518/2020 D. Wanke; 2 ♂/♀, Iran, prov. Mazandaran, Elburs Mts., S Shah Kuh–e Bala, 2400 m, (lux), N 36°33', E 54°36', 19.vii.2003, leg. G. Ebert & R Trusch; 1 ♂/♀, N–Iran, 40 km östl. Teheran, 16.vi.1969, 1500 m, leg. H. G. Amsel; 2 ♂/♀, Iran, Elburs–Geb., 12 km v. Keredj, 1650 m, 12.vi.1969, leg. Ebert, g. prep. (♀) 1155/2021 D. Wanke; 1 ♂/♀, N–Iran, Elburs–Mts., prov. Tehran, Arangeh 25 km N Karadj, 1550 m, 1.–6.vi.1972, leg. Ebert & Falkner; 1 ♂/♀, Nordiran, Elbursgebirge östl. Shemshak, 50km nördl. Teheran, 2100 – 2500 m, 8–24.vi.1973, leg. G. Junge; 2 ♂/♀, N–Iran, Shemshak, ca. 70 km n. Teheran, 20.vi.1969, 1700 m, leg. H. G. Amsel; 1 ♀, Iran, prov. Hamadan, 8 km S of Arak, 02. – 03.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0808/2020 D. Wanke; 1 ♂/♀, Iran N, prov. Semnan, 30 km NW Damghan, Cheschme Ali, N 36°15'07'', E 54°04'20'', 1560 mNN, 23.v.[20]05, leg. Trusch, Petschenka, Müller; 2 ♂/♀, Iran NE, Kopet Dagh, prov. Khorasan, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 17.v.2005, 1240mNN, lux, leg. Trusch, Petschenka, Müller, g. prep. 0806/2020 D. Wanke; 2 ♂/♀, Iran, Esfahan, Esfahan – Daran, Ashan vic., 25.vi.2005, 2490 – 2500 m, leg. A. Hofmann; 2 ♂/♀, Iran, prov. Esfahan, N of Tarq, Kuh–e Karkas, 2600 m, N 33°24' E 051°48', 09.vii.2003, leg. G. Ebert & R. Trusch; 2 ♂/♀, Iran, prov. Esfahan Kuh–e–Karkas, 1600 m, 7 km NW of Natanz, 11.–12.vi.2005,
leg. P. Gyulai & A. Garai; 4 ♂/♀, W–Iran, Lorestan, 28 km E Borudjerd, 2300 m, 27.vii.1975, leg. Ebert & Falkner; 2 ♂/♀, W–Iran, Lorestan, Dorud, Darrya–che Gahar, 2400 m, 31.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Lorestan, Dorud, 4 km SE Saravand, "Nermyeh" 2400 m, 4.–6.viii.1975, leg. Ebert & Falkner; 3 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 1950 m, 30–2.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 86 km SE Baneh, 1950 m, 5.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Kordestan, Ariz, 27 km W Sanandaj, 10.vii.1975, 2200 m, leg. Ebert & Falkner; 1 ♂/♀, NW–Iran, 15 km westl. Rezaiyeh, 1400 m, Artemisia–Steppe, 11.vi.[19]75, leg. H. G. Amsel; 1 ♂/♀, NW–Iran, 40 km westl. Marand, 1100 m, 6.vi.1975, leg. H. G. Amsel; 1 ♂/♀, W–Iran, 15 km nördl. Kermanshah, 1350 m, 16.vi.1975, leg. H. G. Amsel; 56 ♂/♀, W–Iran, Kordestan, Straße Zandjan–Bijar, 53 km S Zandjan, 28.–29.vi.1975, 1700 m, leg. Ebert & Falkner, g. preps (♀) 0811, 0812/2020 D. Wanke; 8 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, 35 km SE of Yasuj, 2600 m, 06.–07.vi.2005, leg. P. Gyulai & A. Garai, g. preps (♀) 0558, 0803/2020 D. Wanke; 1 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, 3000 m, 05.–06.vi.2005, Kuh–e–Dena, n. Bijan pass, 6 km N of Cisakht, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, prov. Khuzestan, Yasudj, Sisakht, 50 km NW, 15.–18.vi.1975, leg. Ebert, Falkner; 4 ♂/♀, S–Iran, 100 km s. Abadeh, n. Didegan, 9.vi.1969, 2000 m, leg. G. Ebert; 1 ♂/♀, S–Iran, Straße Shiraz–Kazerun, Imam Sade, 1200 m, 3.vi.1969, leg. G. Ebert; 1 ♂/♀, S–Iran, Fars, Daschte Pirehsan, 18.vi.1972, 2000 m, leg. Ebert, Falkner; 5 ♂/♀, S–Iran, 4.–7.6.1969, Miyan Kotal, 1900m, östl. Kazerun, 51°40' öL./29°30' nB., leg. G. Ebert, g. preps (♂) 0563, 0809 (♀) 0560/2020 D. Wanke; 1 ♂/♀, S–Iran, Fars, Kaserun, Mian–Kotal, 1900 m, 11.vi.1972, leg. Ebert & Falkner; 2 ♂/♀, Iran, prov. Fars, S–Zagros, 40 km SW of Sivand, 09.–10.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0538/2020 D. Wanke; 7 ♂/♀, S–Iran, Bandar–Abbas, Kuhe Genou, S–exp. 550 m, 1.u.5.iii.1973, leg. G. Ebert, g. preps (♀) 0810, 0813/2020 D. Wanke; 1 ♂/♀, S–Iran, Bandar–Abbas, km 74 d. Strasse nach Sirdjan, 450 m 7.iii.1973, leg. G. Ebert; 1 ♀, Iran, Khorasan, Koppe Dag, 1200 m, Robat 25 km SW Izman so flea [Izman–e Sufla], 27.v.2008, leg. J.–U. Meineke, W. Kramer, g. prep. 1167/2021 D. Wanke; 1 ♂, [Iran], Baloutchestan, 18 km W Iranschar, Rig–Kaboud, 500 m, 15.v.1972, leg. Abai, Ebert, g. prep. 0804/2020 D. Wanke; 1 ♀, Iran, Balutschestan, Khasch, 3 km S Sangan, 1550 m, 19.v.1972, leg. Ebert & Falkner, g. prep. 1166/2021 D. Wanke; **all in SMNK.**

3 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Khoy to Ghotur road, Esteran vill., Alt. 1637 m, N 38°27’ 03.1’’, E 44°44’33.6’’, 1.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi, g. preps (♂) 0729 (♀) 0726/2020, 1189/2021 D. Wanke; 1 ♂/♀, Iran, Azerbaijan–e Sharghi prov., S Ghareh Aghaj, after Argsnay–Sufla Alt. 2020 m, N 36°50’16.5’’, E 46°58’07.5’’, 4.vii.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi; 1 ♂/♀, Iran, prov. Lorestan, Noorabad–Nahawand road, 25km to Nahawand, Gardane–Garrin, N34°02’48’’ E 48°20’31’’, Alt. 2135m, 25.vi.2009, leg. H. Rajaei, J.U. Meineke & A. Hofmann; 2 ♂/♀, Iran, Zanjan prov., E Zanjan, road to Gilvan, Alt. 1889 m, N36°45’21.8’’, E48°49’20.7’’, 6.vii.2013, leg. H. Rajaei, J.–U. Meineke, B. Hafezi; 1 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, S Sahand Mt., 2431 m, 30.vi.2013, N 37°35’41’’, E 46°27’18.4’’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Ghazwin–Alamut road, after Gardane Alamut, sandy road to Khanjar Bolagh village N 36°24’11’’; E50°12’52’’, 2024 m, 1.–2.vii.2009, H. Rajaei, J.–U. Meineke A. Hofmann; 2 ♂/♀, Iran, Lorestan, Dorud, Gahar lake, 2309 m, 33°18’40.8’’N, 49°16’43’’E, 28.vii.2016, leg. Sh. Feizpour; 2 ♂/♀, Iran, Kohkiluye va Boyerahmad, Yasuj, Sisakht, Dena, 2799 m, 30°57’23.6’’N, 51°23’28.9’’, 30.vii.2016, leg. Sh. Feizpour; 5 ♂/♀, Iran, Isfahan prov. Abade–Semirom road, 30 km before Hanna protected area, 2435 m, N 31°12’22’’, E 51°51’37’’ 09.vi.2010 leg. H. Rajaei, g. preps (♀) 0701, 0702/2020 D. Wanke; 1 ♀, Iran, Isfahan prov. Kashan, 7 km after Ghamsar to Ghohroud, 1705 m, N 33°44’ 49’’, E 51’29’10’’, 08.vi.2010, leg. H.Rajaei, g. prep. 0703/2020 D. Wanke; 1 ♂, Iran, Hormozgan, Bandar Abbas, Genu, 2128 m, 27°25’02’’N, 56°10’160’’, 01.v.2016, leg. Sh. Feizpour, g. prep. 0710/2020 D. Wanke; 1 ♂/♀, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248m, 12.v.2010, Leg. G. Petrányi, P. Hentschel; 2 ♂/♀, Iran, prov. Esfahan, near Qamsar, 1781m, 06.v.2010, Leg. G. Petrányi, P. Hentschel; 3 ♂/♀, Iran, prov. Hamedan, Nehavand, 1855m, 13.v.2010, Leg. G. Petrányi, P. Hentschel; 3 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, Leg. G. Petrányi, P. Hentschel; 4 ♂/♀, NW–Iran, Kaleibar, 1700m, 3.viii.1977, leg. W. Thomas; 2 ♂/♀, Nordpersien, Umg. Shahabad Nationalpark, 1300 m, 21.–22.viii.1977, leg. deFreina; **all in SMNS.**

1 ♂/♀, Nordost–Iran, Kuh i Mirabi, Waldzone, 1600–1900m, Juli, Exp. Wernicke; 1 ♂/♀, Persia sept. [Iran], Elburs mts.c.s., Särdab Tal–Vandarban, 19–2200 m, 1.–3.vii.[19]37, E. Pfeiffer & W. Forster München leg.; 1 ♂/♀, Persia sept. [Iran], Elburs mts.c.s., Ort Demavend, Tar Tal, 22–2500 m, 13.–17.vii.[19]36, Pfeiffer München leg.; **all in ZFMK.**

2 ♂/♀, Iran, Sharqui, prov. Kivi, 2200 m, viii.2002, leg. Müller; 1 ♂, Iran, Lorestan, 22 km E Dorud, vic. Saravand, 2300–2500 m, 33°23’N, 49°11’E, 9.–10.vi.1997, leg. A. Hofmann & P. Kautt, coll N. Pöll, g. prep. ZSM G 10719; 1 ♂/♀, S. Iran, Hormozgan, Beshagerd Mts., Davari vill., 26°27’N, 57°38’E, 5.–11.vi.2000, leg. V. Siniaev & A. Plutenko; 1 ♀, Iran, Kerman, 5 km S Deh Bakri, 2300–2400 m, leg. A. Hofmann & P. Kautt, 28°59’N, 57°55’E, 31.v.–1.vi.1997, coll N. Pöll, g. prep. ZSM G 10718; **all in ZSM.**

Scopula rubiginata

1 ♀, Asia min. [Turkey], Paphlagonia, Songuldak, 30.viii.[19]35, coll. Osthelder, g. prep. 1288/2022 D. Wanke; 1 ♂, same data but 15.–30.viii.[19]35, coll. Osthelder, g. prep. 1289/2022 D. Wanke; 1 ♀, Amasia [Turkey], 1888, Korb, g. prep. 1290/2022 D. Wanke; 1 ♂, Turkey, Aphrodisias, 10 km E Karakasu, LF, 09.v.1988, leg. J. Lenz, g. prep. 1291/2022 D. Wanke; 1 ♂/♀, NO–Turkey, Umg. Ankara, Güvern, 06.vi.1991, leg. Geck; **all in ZSM.**

Scopula turbulentaria steinbacheri

7 ♂/♀, Iran N, E Alborz, prov. Mazandaran, E Gorgan, S Aliabad, oberh. Shirinabad, N 36°47’21’’, E 55°01’25’’, 21.v.2005, 1100 mNN, leg. Trusch, Petschenka, Müller, SMNK E–Lep. 215, g. preps 0824, 0825/2020 D. Wanke; 2 ♂, Iran N, E Alborz, prov. Mazandaran, E Gorgan, S Aliabad, oberh. Shirinabad, N 36°47’21’’, E 55°01’25’’, 22.v.2005, 1100 mNN, leg. Trusch, Petschenka, Müller, SMNK E–Lep. 215; 1 ♂/♀, N–Iran, Masandaran, Golestan–Wald, 60 km E Gonbad Qabus, 8.vii.1972, 510 m, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 1600 m, 27.v.1972, leg. G. Ebert; 1 ♂, [Iran], Polour, 22.ix.1970, [leg.] Abai, g. prep. 1071/2021 D. Wanke; 1 ♂/♀, [Iran], Evin, 15.v.[19]70; 1 ♂/♀, Iran, Amarlu östl., Rudbar, 1000 m, 27.ix.1970, leg. G. Ebert; 1 ♂/♀, S–Iran, 1600m, 2.vi.1969, Persepolis, leg. G. Ebert; 1♀, S–Iran, prov. Khuzestan, Yasudj, Sisakht, 50 km NW, 15.–18.vi.1975, leg. Ebert & Falkner, g. prep. 0880/2020 D. Wanke; 1 ♂, Iran, Khuzistan, Shadegan, 1.–8.iii.1956, leg. Richter; 1 ♂/♀, Iran, prov. Khuzestan, Yasudj, Sisakht, 50 km NW, 15.–18.vi.1975, leg. Ebert, Falkner; 1 ♂, NW–Iran, 15 km sö. Maku, 1050 m, 3.vi.1975, leg. H. G. Amsel, g. prep. 1172/2021 D. Wanke; 1 ♂, [Iran], Evin, 22.v.1970, [leg.] L.T., g. prep. 1173/2021 D. Wanke; 1 ♂, [Iran], Gorgan, 8.viii.1970, g. prep. 1174/2021 D. Wanke; 1♀, [Iran], Varamin, 5.viii.1949, Eghl., g. prep. 0998/2021 D. Wanke; 1 ♂, Iran, Tehran, Qollhak, 1400 m, 14.x.1961, leg. J. Klapperich, g. prep. 0778/2020 D. Wanke; 1 ♀, Iran, 10.vii.1961, leg. J. Klapperich, g. prep. 1136/2021 D.

Wanke; 1 ♂, [Iran], Evin, 15.v.[19]70, [leg.] L.T., g. prep. 1171/2021 D. Wanke; 1 ♀, N–Iran, Teheran/Evin, ca. 1400 m, 4. – 10.x.1970, leg. G. Ebert, g. prep. 0975/2020 D. Wanke; 1 ♀, W–Iran, Kordestan, 95 km N Kermanschah, Straße nach Sanandaj, 11.vii.1975, 1350 m, leg. Ebert & Falkner, g. prep. 1123/2021 D. Wanke; **all in SMNK.**
1 ♂/♀, Iran, Kohkiluye va Boyerahmad, Yasuj, Sisakht, Dena, 2799 m, 30°57'23.6''N, 51°23'28.9''E, 30.vii.2016, leg. Sh. Feizpour; **all in SMNS.**

Scopula imitaria
1 ♂, Croatia, Krk (Fiumebucht), 26.v.1928, Licht, Günther Barth, g. prep. 0772/2020 D. Wanke; 1 ♀, same data but 8.vi.1930, g. prep. 0773/2020 D. Wanke; **all in SMNS.**
1 ♀, Asiamin. [Turkey], Gebze, 17.ix.1963, e.o. 27.v.1969, leg. Friedel, g. prep. 1273/2022 D. Wanke; 1 ♂, Zypern, Paphos Umg., 13.–19.iii.[19]94, leg. J. Wimmer, g. prep. 1274/2022 D. Wanke; **all in ZSM.**

Scopula beckeraria
4 ♂/♀, Iran, Chamarmahal–va–Bakhtiyari, Zarde–Kuh, Samsami vic., Gardaneh–ye Cheri, 2800–3000 m, 8./9. vii.2003, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 2 ♂/♀, Iran, Esfahan, Miyandasht NW, Afous. Chebleh–Kuh, Sar Chesmeh vic., 2700–2900 m, 12./13.vii.2003, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 2 ♂/♀, Iran, Esfahan, Fereidun Shahr S, Gardaneh–ye Kameran, 2900–3200 m, 16./17.vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; 2 ♂/♀, Iran, Markazi, Tafresh via Dastgerd, 2300–2500m, 15./16.6.2005, leg. J.–U. Meineke; 6 ♂/♀, Iran, Alborz, Theran, Firuzkuh W, Abzweig, Namrud, 2050 m, 21.vii.2006, leg. A. Hofmann, J.–U. Meineke; 5 ♂/♀, Iran, Esfahan, Kashan S, Quarud SW, 2600 m, 24.vi.2001, leg. A. Hofmann, J.–U. Meineke, W. G. Tremewan; 2 ♂/♀, Iran, Zanjan, Zanjan E to Gill van, N36°45'21.8'', E 48°49'20.7'', 1900 m, 6.vii.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Zanjan, Zanjan–Gilvan, Gargovol Dag, 2500m, 26./27.6.2001, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, prov. Hamadan, Hamadan NNE, Razan N, Mahanye 2 km N, 2100–2150 m, 19.vi.1998, leg. A. Hofmann & J.–U. Meineke; 1 ♂/♀, Iran, prov. Hamadan, Hamadan NNE, Razan N, Gardaneh Avaj, 2300–2500 m, 25.vi.2001, leg. A. Hofmann, J.–U. Meineke, W. G. Tremewan; 2 ♂/♀, Iran, Theran, Firuzkuh 20 km E, 2200 m, 05.vi.2008, leg. J.–U. Meineke, W. Kramer; 5 ♂/♀, Iran, Boyer Ahmad–Va–Kohgiluyeh, Gardaneh, Meymand, 2450–2800m, 14./15.vi.2001, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 9 ♂/♀, Iran, Khorasan, Koppe Dag, 1200 m, Robat 20 km SW Izman Olia, 25./26.v.2008, leg. J.–U. Meineke, W. Kramer; 5 ♂/♀, Iran, Khorasan, Askaneh 20 km, 1800 m, 25.v.2008, leg. J.–U. Meineke, W. Kramer; 1 ♂/♀, Iran, Fars, Shiraz E, Dash–e–Arzhan E, 1900–2200 m, 6./7.vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*;
1 ♂/♀, Iran, Fars, Eqid via Gardaneh, Timur Gun, 2400 m, 6./7.vi.2005, leg. J.–U. Meineke, A. Hofmann; 1 ♂/♀, Iran, Khorasan–e Razavi, Nishabour to Quochan, Bar vic., 1718 m, 17.vi.2013, N36°30'27.9'', E 58°44'30.8'', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Khorasan–e Shomali, Allah–o Akbar Mt., 1763 m, 18.vi.2013, N37°19'27.2'', E 58°43'26.1'', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Kerman, Baft E, Darb–e–Beshnesht S, Kuh–e Bochrasman, Khaf Kuh, 2900–3100 m, 4.vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; 2 ♂/♀, Iran, Kerman, Jiroft W, Shingera, 2800 m, 26./27.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Kerman, Rayen SW, Kuh–e Hesar, Abshar, 2700–3000 m, 24./25.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Kerman, Baft 20 km W, Gard Timur Gun, 2300 m, 27.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; **all in PCJM.**
11 ♂/♀, NW–Iran, 12 km westl. Rezaiyeh, 1350 m, 3.v.1975, leg. Amsel, g. prep. (♀)1045/2021 D. Wanke; 7 ♂/♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel, g. prep. (♀) 0791/2020 D. Wanke; 2 ♀, NE–Iran, Prov. Ostan–e Khorasan W Torbat de Heidarye, Kuh–e Sorkh, N Rivash, Akbarabad vic., N 35°34'16'', E 58°35'53.3'', 30.iv.2008, 2100 mNN, leg. R. Trusch, M. Falkenberg, B. Müller, g. preps 1001, 1002/2021 D. Wanke; 1 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan E Torbat de Heidarye S Fariman, Zharf vic. N 35°24'25.1'', E 59°56'08.2'' 5.v.2008, 2160 m, leg. R. Trusch, M. Falkenberg, B. Müller, SMNK E–Lep. 247; 2 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 11.v.2008, 1240 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247, g. prep. (♂) 1000/2021 D. Wanke; 1 ♀, NE–Iran, Prov. Ostan–e Khorasan, NE–Birjand, S Haji Abad, Gomenj vic., Kuh–e Mirza Arab, N 33°16'13.9'', E 60°06'59.7'', 1.v.2008, 2040 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247, g. prep. 1003/2021 D. Wanke; 1 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, NW Mashad, N Tschenaran, N Radkan, Dolmeh Olia, N 36°55'56.6'', E 59°02'18.6'', 9.v.2008, 1560 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK

E–Lep. 247; 4 ♂/♀, W–Iran, Kordestan, Straße Zandjan–Bijar, 53 km S Zandjan, 28.–29.vi.1975, 1700m, leg. Ebert & Falkner, g. preps (♂) 0993 (♀) 1048/2021 D. Wanke; 2 ♂/♀, Iran, prov. Chahar Mahal, Zagros mts. NW Samsami, 2800 mNN, N 32°09', E050°11', 13.vii.2003 (lux), leg. G. Ebert & R. Trusch; 3 ♂/♀, Iran NE, Kopet Dagh, prov. Khorasan, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 1.240 mNN, 17.v.2005, leg. Trusch, Petschenka, Müller, g. preps (♂) 0839, (♀) 0905/2020 D. Wanke; 1 ♂/♀, Jran mer. occ., Kasrun, 900 m, Ende iv.[19]38; 1 ♂, 1♀, Iran–N, Varamin, E. Tehran, 1000 m, 14.vi.1961, leg. J. Klapperich, g. preps (♂) 0782, (♀) 0783/2020 D. Wanke; 6 ♂/♀, N–Iran, Kamard, 40 km w. Teheran, ca. 1700 m, 9.ix.1970, leg. G. Ebert; 4 ♂/♀, N–Iran, Masandaran, Golestan–Wald, 60 km E Gonbad Qabus, 8.vii.1972, 510 m, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Elburs Mts., Masandaran, Polur, Damavand, 7.–10.vii.1972, 2500 m, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Teheran/Evin, ca. 1600 m, 4.–10.x.1970, leg. G. Ebert; 3 ♂/♀, N–Iran, Elburs–Mts., S–Rand, Tehran–Evin, 30.vi.–5.vii.1972, 1600 m, leg. G. Ebert; 1 ♂, same data, 24.ix.1972, 1600 m, leg. G. Ebert, g. prep. 1140/2021 D. Wanke; 1 ♂/♀, same data, 17.viii.1963, 1600 m, leg. Dr. Leuchs; 2 ♂/♀, N–Iran, Elburs–Mts., prov. Tehran, Arangeh, 25 km N Karadi, 4.vii.1972, 1550 m, leg. Ebert & Falkner, g. prep. (♂) 1135/2021 D. Wanke; 1 ♂/♀, Iran, Amarlu östl., Rudbar, 1000 m, 27.ix.1970, leg. G. Ebert; 1 ♂/♀, N–Iran, Salzsee, 90 km s. Teheran, 800 m, 18/23.vi.1969, leg. H. G. Amsel; 1 ♂/♀, N–Iran, Elburs–Geb., Sheshmak, 1700 m, 20.vi.1969, leg. H. G. Amsel; 1 ♂/♀, N–Iran, 70 km s. Teheran, 1300 m, 29.v.1969; 1 ♂, Iran, Elburs–Geb., 12 km v. Keredj, 1650 m, 27.v.1969, leg. Ebert, g. prep. 1159/2021 D. Wanke; 1 ♂, W–Iran, Kordestan, Straße Saghez–Baneh, 23 km NE Baneh, 2.vii.1975, 1800 m, leg. Ebert & Falkner, g. prep. 1162/2021 D. Wanke; 1 ♂/♀, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 17.viii.1972, 2800 m, leg. Ebert; 5 ♂/♀, [Iran], Kurdistan, Wan [Van] Umgeb., 1800 – 2000 m, 1.–5.ix.[19]35, g. preps. (♀) 0779, 0780/2020 D. Wanke; 5 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, 35 km SE of Yasuj, 06.–07.vi.2005, 2600 m, leg. P. Gyulai & A. Garai; 2 ♂, Iran, prov. Zanjan, W–Alborz range Tarom vic, 20 km NE of Zanjan, 13.–14.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0838, 0999/2020 D. Wanke; 1 ♂, Iran, prov. Esfahan, 1 km N of road between Abuzeidabad and Kashan, N 33°59'17'', E 51°35'71'', 925 m, 01.vi.2005, leg. M. Fibiger & R. Zahiri, g. prep. 0820/2020 D. Wanke; 1 ♂, Iran N, prov. Semnan, 90 km S Damghan, N 35°21'83'', E 54°27'63'', 1750 m, 30.v.2005, leg. M. Fibiger & R. Zahiri, g. prep. 0821/2020 D. Wanke; 1 ♂/♀, S–Iran, prov. Khuzestan, Yasudj, Sisakht, 50 km NW, 15.–18.vi.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Kermanshahan, Ghalladje Pass, 40 km S Schahabad, 1880 m, 13.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, 51 km westl. Kermanshah, 1500 m, Quercetum, 17.vi.1975, leg. H. G. Amsel; 1 ♂, Iran c., Prov. Esfahan, Kashan–Meymeh, Qorud, N 33°39'04'', E 51°23'53'', 2450 mNN, 12.v.2005, leg. Trusch, Petschenka, Müller, SMNK E–Lep. 215, g. prep. 1046/2021 D. Wanke; 1 ♀, W–Iran, Lorestan, 28 km E Borudjerd, 27.vii.1975, 2300 m, leg. Ebert & Falkner, g. prep. 1047/2021 D. Wanke; 1 ♂, S–Iran, Khusestan, 15 km SE Yassudj, 2250 m, 13./14.vi.1972, leg. Ebert & Falkner, g. prep. 1144/2021 D. Wanke; 21 ♂/♀, S–Iran, Straße Shiraz–Kazerun, Imam Sade, 1200 m, 3.vi.1969, leg. G. Ebert; 34 ♂/♀, S–Iran, Miyan Kotal, östl. Kazerun, 4.–7.vi.1969, 1900 m, N 29°30', E 51°40', leg. G. Ebert; 20 ♂/♀, S–Iran, prov. Fars, Tange Surkh, 50 km NW Ardekan, 2250 m, 12.–15.vi.1975, leg. Ebert/Falkner; 1 ♂/♀, Iran, prov. Fars, S–Zagros, 40 km SW of Sivand, 09.–10.vi.2005, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, prov. Fars, S–Zagros, 5km NE of Saidatshahr, 09.–10.vi.2005, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, Fars, Eqlid SSE, Kuh–e Bol, Darre Absad, 2700 – 3000 m, 23.vi.2005, leg. A. Hofmann; 1 ♂, Iran, prov. Fars, ca. 20 km S Jahron, Sistan, Garden Ahmad Najafzadeh, N 28°21', E 53°22', 29.iii.2006, 870 mNN, leg. Hossein Rajaei, g. prep. 0822/2020 D. Wanke; 2 ♂/♀, Iran, Hushin, 5.v.2005, leg. A. Hofmann; 1 ♂, Iran, Kerman, Ostor E, Hushin vic., LF, 2250 m, 12.v.2005, leg. A. Hofmann, g. prep. 1052/2021 D. Wanke; 5 ♂/♀, S–Iran, Tangetchogan, 930 m, 30 km n. Kazerun, 23.iii.[19]73, leg. H. G. Amsel; 2♂/♀, S–Iran, Fars, Kaserun, Mian–Kotal, 1900 m, 11.vi.1972, leg. Ebert & Falkner; 2 ♂/♀, S–Iran, Fars, Daschte Ardjan, Kotal–Pirehsan, 20.vi.1972, 2000 m, leg. Ebert & Falkner; 1 ♂/♀, same data, leg. Ebert & Pazouki; 1 ♂/♀, S–Iran, Bandar–Abbas–Sirjan, km 24, 250 m, 2.iv.1973, leg. H. G. Amsel; 1 ♂/♀, S–Iran, Bandar–Abbas, km 107 d. Strasse nach Sirdjan, 850 m, 7.iii.1973, leg. G. Ebert; 1 ♂, S–Iran, Straße Shiraz–Kazerun, Imam Sade, 1200 m, 3.vi.1969, leg. G. Ebert, g. prep. 1161/2021 D. Wanke; 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; 3 ♂/♀, same data as before, 12.vii.2003, g. prep. (♂) 1099/2020 D. Wanke; 40 ♂/♀, 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 (♂) 0846, 0848/2020, 1097, 1106/2021, (♀) 1107, 1108/2021 D. Wanke; 1 ♂, Iran, prov. Esfahan, N of Tarq, Kuh–e Karkas, 2600 m, N 33°24' E 051°48', 07.vii.2003, leg. G. Ebert & R. Trusch, g. prep. 0846/2020 D. Wanke; 11 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 25 km E Baneh, 4.vii.1975, 1950 m, leg. Ebert & Falkner; 4 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 23 km NE Baneh, 2.vii.1975, 1800 m, leg. Ebert & Falkner; 7 ♂/♀, W–Iran,

Kordestan, 36 km, NE Marivan, Straße nach Baneh, 1550m, 8.–9.7.1975, leg. Ebert & Falkner; 33 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 1950 m, 30.[vi.]–2.vii.1975, leg. Ebert & Falkner, g. preps (♂) 1112, 1115/2021; 11 ♂/♀, W–Iran, Kordestan, Straße Zandjan–Bijar, 53 km S Zandjan, 28.–29.vi.1975, 1700m, leg. Ebert & Falkner; 8 ♂/♀, W–Iran, Lorestan, Dorud, Darrya–che Gahar, 2400 m, 1.–3.viii.1975, leg. Ebert & Falkner; 1 ♂/♀, same data, 31.vii.1975; 3 ♂/♀, W–Iran, Lorestan, 14 km E Dorud, 6.viii.1975, 1990 m, leg. Ebert & Falkner; 2 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 86 km SE Baneh, 5.vii.1975, 1950 m, leg. Ebert & Falkner; 4 ♂/♀, W–Iran, Lorestan, Dorud, 4 km SE Saravand, "Nermyeh", 4.–6.viii.1975, 2400 m, leg. Ebert & Falkner; 2 ♂/♀, W–Iran, Lorestan, Dorud, 5 km SE Saravand, "Kohyeh", 29–30.vii.1975, 2300 m, leg. Ebert & Falkner; 7 ♂/♀, W–Iran, Lorestan, 28 km E Borudjerd, 27.vii.1975, 2300 m, leg. Ebert & Falkner; 4 ♂/♀, W–Iran, W–Azarbaijan, 2 km W Sardasht, 1650 m, 3.vii.1975, leg. Ebert & Falkner; 2 ♂/♀, W–Iran, Kordestan, 95 km N Kermanschah, Straße nach Sanandaj, 11.vii.1975, 1350 m, leg. Ebert & Falkner; 3 ♂/♀, W–Iran, Kordestan Paß, 10 km W Bijar, Straße nach Saghez, 29.–30.vi.1975, 2180 m, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Kordestan, Ariz, 27 km W Sanandaj, 10.vii.1975, 2200 m, leg. Ebert & Falkner; 5 ♂/♀, W–Iran, Kermanshahan, Ghalladje Pass, 40 km S Schahabad, 1880 m, 13.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, W–Iran, Kermanshahan, Surkhe Dizeh, 56 km NW Schahabad, 1320 m, 14.vii.1975, leg. Ebert & Falkner; 1 ♂/♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel; 1 ♂/♀, NW–Iran, 12 km westl. Rezaiyeh, 1350 m, 30.v.1975, leg. Amsel; 1 ♂/♀, NW–Iran, 8 km westl. Rezaiyeh, 1400 m, 2.vi.1975, leg. Amsel; **all in SMNK.**

21 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Khoy to Ghotur road, Esteran vill., Alt. 1637 m, N 38°27' 03.1'', E 44°44'33.6'', 1.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 2 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, S Sahand Mt., 2431 m, 30.vi.2013, N 37°35'41'', E 46°27'18.4'', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 3 ♂/♀, Iran, Ghazwin–Alamut road, after Gardane Alamut, sandy road to Khanjar Bolagh village N 36°24'11''; E50°12'52'', 2024 m, 1.–2.vii.2009, H. Rajaei, J.–U. Meineke A. Hofmann; 12 ♂/♀, Iran, Lorestan, Dorud, Gahar road, 2281 m, 33°22'32.1''N, 49°11'34.8''E, 27.vii.2016, leg. Sh. Feizpour; 5 ♂/♀, Iran, Lorestan, Dorud, Gahar lake, 2309 m, 33°18'40.8''N, 49°16'43''E, 28.vii.2016, leg. Sh. Feizpour; 5 ♂/♀, Iran, Lorestan, Dorud, Astaneh door, 1801 m, 33°24'48.1''N, 49°08'42.5''E, 25.vii.2016, leg. Sh. Feizpour; 4 ♂/♀, Iran, Khorasan Razavi, 5 km W Chenaran, 3 km before Akhlamand, 1210 m, 36°38'21'' N, 58°57'04'' E, 16.vi.2010, leg. H. Rajaei; 2 ♂/♀, Iran, Khorasan Razavi, 65 km Kalat road, Khor, 1431m, 36°38'15.1''N, 59°54'04''E, 16.vi.2016, leg. Sh. Feizpour; 1 ♂/♀, Iran, Khorasan Shomali, Babaaman, near Bojnurd, 26.vi.2016, leg. Sh. Feizpour; 2 ♂/♀, Iran, Khorasan Razavi, Mashad, Binaloud, 1553m, 36°15'17.5''N, 59°21'41.2''E, 13.vi.2016, leg. Sh. Feizpour; 1 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, S Sahand Mt., S Batmanghelich vill., 2358 m, 29.vi.2013, N 37°34'29.8'', E 46°27'03.4'', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Isfahan prov. Kashan, 7 km after Ghamsar to Ghohroud, 1705 m, N 33°44' 49'', E 51'29'10'', 08.vi.2010, leg. H. Rajaei; 1 ♂/♀, Iran, Prov. Golestan, Shahrud–Golestan road, Shahkuh, 2585 m, 36°38'36''N, 54°31'31''E, 28.v.2015, leg. Sh. Feizpour; 1 ♂/♀, Iran, Zanjan prov., E Zanjan, road to Gilvan, Alt. 1889 m, 36°45' 21.8''N,48°49'20.7''E, 6.vii.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi; 3 ♂/♀, Iran, Kohkiluye va Boyerahmad, yasuj, Sisakht, Dena, 2799 m, 30°57'23.6''N, 51°23'28.9''E, 30.vii.2016, leg. Sh. Feizpour; 1 ♂/♀, Iran, Prov. Fars, ca. 20 km S Jahron, Sistan, Garden Ahmad Najafzadeh, N28°21' E53°22', 30.iii.2011, 870 mNN, leg. Hossein Rajaei; 1 ♂/♀, Iran, Fars prov., Shiraz–Kazeroun Road, Dasht Arjan, 2090 m, N 29°38'38, E 052°00'59, 12.vi.2010, H. Rajaei; 1 ♂/♀, Iran, prov. Hamedan, Nehavand, 1855m, 13.v.2010, Leg. G. Petrányi, P. Hentschel; 5 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, Leg. G. Petrányi, P. Hentschel; 1 ♂/♀, Iran, Elburs, vic. Kendevan, 7.–9.viii.1977, 2500–3000 m, leg. W. Thomas; 1 ♂/♀, Iran, Ostan Boyr Amadi, yasuj, Abshar, 2000 m, 16.–18.iv. 1978, leg. W. L. Blom; 1 ♂/♀, Iran, Tabris, Azar Shahr, südl. Tabris, vii.1976, leg. Czipka; **all in SMNS.**

1 ♂/♀, Nordost–Iran, Kuh I Mirabi, Waldzone, 1600–1900m, Juli, Exp. Wernicke; **in ZFMK.**

1 ♂/♀, NW Iran, Kordestan, Bijar, 2500 m, viii.2002, leg. Müller; 1 ♂/♀, N Iran, 20 km NO Teheran, Steppe (Tagfang), 21.–31.vii.1996, leg. Müller; 1 ♂/♀, NW Iran, Azarbaijan prov., Marand, 2000 m, viii.2002, leg. Müller; 3 ♂/♀, Iran, Fars, Dast–E–Arzan, 1950 m, 29°35'N, 51°56'E, leg. A. Hofmann & P. Kautt, 5.–6.vi.1997, coll N. Pöll; 1 ♂, Iran, Kerman, 5 km S Deh Bakri, 2300–2400 m, leg. A. Hofmann & P. Kautt, 28°59'N, 57°55'E, 31.v.–1.vi.1997, coll N. Pöll, g. prep. ZSM G 10723; **all in ZSM.**

Scopula incanata

1 ♂/♀, Iran, Mazandaran, Sari, Darabkola Forest, N 36°31'57'', E 53°16'35', alt. 391 m, 23.v.2015, Forest type: *Pinus brutia* mix, leg. Goodarz, Hajizadeh; 4 ♂/♀, Iran, Mazandaran, Sari, Darabkola Forest, N 36°30'42'', E

53°18’17’, alt. 550 m, 6.vi.2015, Forest type: *Parrotia persica*, *Carpinus betulus*, leg. Goodarz, Hajizadeh; 2 ♂/♀, Iran, Mazandaran, Sari, Darabkola Forest, N 36°30’42’’, E 53°18’17’, alt. 550 m, 17.vi.2015, Forest type: *Parrotia persica*, *Carpinus betulus*, leg. Goodarz, Hajizadeh; 2 ♂/♀, Iran, Mazandaran, Sari, Darabkola Forest, N 36°30’38’’, E 53°18’19’, alt. 555 m, 18.viii.2015, Forest type: *Parrotia persica*, *Carpinus betulus*, leg. Goodarz, Hajizadeh; **all in SMNS.**

1 ♂, 1 ♀, Persia sept. [Iran], Elburs mts.c.s., Tacht i Suleiman, Särdab–Tal (Vanderban), 25–2700cm, 14.–18.vii.[19]37, E. Pfeiffer & W. Forster leg., München, g. preps (♂) 1275, (♀) 1276/2022 D. Wanke;
1 ♀, same data but 19–2200 m, 10.–14.vii.[19]37, g. prep. 1277/2022 D. Wanke; **all in ZSM.**

Scopula marginepunctata terrigena

9 ♂/♀, Iran, Zagros, Esfahan Umg., Fereidun Shah, 2200 m, 9.vii.1999, leg. A. Hofmann, J. Meineke; 2 ♂/♀, Iran, Zanjan, Takht–e Suleiman, Barbar Naza, 2462 m, 5.vii.2013, N36°33’49.0’’, E 47°17’57.7’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Ardabil, Kuhha–ye Tales, Khal Khal W, Meragin vic., 2400 m, 1.viii.2006, leg. A. Hofmann, J. Meineke; 1 ♂/♀, Iran, prov. Hamadan, Hamadan NNE, Razan N, Gardaneh Avaj, 2100–2150 m, 19.vi.1998, leg. A. Hofmann, J.–U. Meineke; 2 ♂/♀, Iran, prov. Azarbayjan–e–Gharbi, Takht–e Suleyman, 20 km E, Gharawol–Khaneh, 2300–2500 m, 29./30.vi.2009, leg. A. Hofmann, J.U.Meineke, H. Rajaei; 1 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Kuh–e Bozghush, Sarab S, 2233 m, 28.vi.2013, N 37°45’49.4’’, E 47°21’30.8’’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Gharek Aghai, 2200 m, 4.vi.2013, N 36°50’16.5’’, E 46°58’07.5’’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, Sahand Mt., S Batmanghelich S, 2358 m, 29.vi.2013, N 37°34’29.8’’, E 46°27’03.4’’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, Zanjan NE, Gard–ye Alamut N, 2000–2300 m, 1./2.vii.[20]09, leg. A. Hofmann, J.U. Meineke, A. Naderi, H. Rajaei; 2 ♂/♀, Iran, Zanjan, Zanjan E to Gill van, N 36°45’21.8’’, E 48°49’20.7’’, 1900 m, 6.vii.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 8 ♂/♀, Iran, Golestan, Shahkuh 20 km W, Paband, 2000 m, 31.v.2008, leg. J.–U. Meineke, W. Kramer; 1 ♂/♀, Iran, Golestan, Tange Gol, N 37°22’13.2’’, E 55°56’10.2’’, 700 m, 21.vi.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 7 ♂/♀, Iran, Khorasan, Koppe Dag, 1200 m, Robat 20 km SW Izman Olia, 25./26.v.2008, leg. J.–U. Meineke, W. Kramer; 6 ♂/♀, Iran, Khorasan–e Shomali, Kopet–Dagh, Izman–e Sufla vic., N 37°51’31.9’’, E 57°32’27.2’’, 1823 m, 2.vi.2013, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, Khorasan–e Shomali, Allah–o Akbar Mt., 1763 m, 18.vi.2013, N37°19’27.2’’, E 58°43’26.1’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, Khorasan–e Shomali, Kopet–Dagh, Darreh Hersh, 2038 m, 19.vi.2013, N37°40’23.2’’, E 58°09’22.6’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, prov. Khorasan, Kuh–e Sorb, Kadkan S, 2200–2400 m, leg. A. Hofmann, J.U. Meineke; 2 ♂/♀, Iran, Esfahan, Semirom W, Pashmeh Kuh, Hochtal, 2800 m, 31.v.–2.vi.2004, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, Khorasan–e Razavi, Nishabour to Quochan, Bar vic., 1718 m, 17.vi.2013, N36°30’27.9’’, E 58°44’30.8’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; **all in PCJM.**

9 ♂/♀, N–Iran, Amarlu östl., Rudbar, 1000 m, 27.ix.1970, leg. G. Ebert, g. preps (♀) 0875, 0876/2020 D. Wanke; 1 ♂/♀, N–Iran, Teheran/Evin, ca. 1400 m, 4. – 10.x.1970, leg. G. Ebert; 1 ♂/♀, N–Iran, Talysch, Asalem, 1300 m, 29.ix.1970, leg. G. Ebert; 10 ♂/♀, N–Iran, Elburs–Mts, Masandaran, Polur, Damavand, 11.vii.1972, 2200 m, leg. Ebert & Falkner; 8 ♂/♀, N–Iran, Elburs Mts., Masandaran, Polur, Damavand, 7.–10.vii.1972, 2500 m, leg. Ebert & Falkner, (♂) g. prep. 1133/2021 D. Wanke; 56 ♂/♀, N–Iran, Masandaran, Golestan–Wald, 60 km E Gonbad Qabus, 8.vii.1972, 510 m, leg. Ebert & Falkner, g. preps (♂) 0903/2020, 1132/2021 (♀) 0904/2020 D. Wanke; 26 ♂/♀, N–Iran, E Alborz, Prov. Mazandaran, E Gorgan, S Aliabad, oberh. Shirinabad, N 36°47’21’’, E 55°01’25’’, 21.v.2005, 1100 mNN, leg. R. Trusch, G. Petschenka & B. Müller, SMNK E. Lep. 215; 3 ♂/♀, N–Iran, 10 km s. Chalus, 130 m, 26.v.1969, leg. G. Ebert; 3 ♂/♀, N–Iran, Masandaran, Lar–Tal, NW Polur, 2200 – 2500 m, 20.vii.1975, leg. Müller; 1 ♂/♀, Iran, prov. Mazandaran, Elburs Mts., S Shah Kuh–e Bala, 2400 m, N 36°33’, E 54°36’, 20.vii.2003, leg. G. Ebert & R Trusch (lux); 8 ♂/♀, Persia sept., Elburs mts.c.s., Tacht i Suleiman, Särdab–Tal (Vanderban), 25–2700m, 14.–18.7. [19]37, leg. E. Pfeiffer & W. Forster, München, g. preps (♂) 0787, (♀) 0786/2020 D. Wanke; 2 ♂/♀, Persia [Iran], Särdabtal, 1500 m, 19.–22.vii.[19]37; 2 ♂/♀, Iran, prov. Esfahan, C–Zagros, 2600 m, 2 km NE of Semirom, 03.–04.vi.2005, leg. P. Gyulai & A. Garai, g. prep. (♂) 0781/2020 D. Wanke; 3 ♂/♀, Iran, prov. Hamadan, 5 km SW of Aradj Pass to Razan, 2500 m, 1. – 02.vi.2005, leg. P. Gyulai & A. Garai; 2 ♂/♀, Iran, prov. Tehran, Elburz mts. 3 km NNW Shemshak, N36°02’, E051°28’, 24.vii.2003, 2860 mNN, lux, leg. G. Ebert & R. Trusch; 1 ♂/♀, Nordiran, Elbursgebirge östl. Shemshak, 50 km nördl. Teheran, 2100 – 2500 m, 8.–24.vi.1973, leg. G. Junge; 3 ♂/♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel, g. prep. (♀) 1049/2021 D. Wanke; 1 ♂/♀,

N–Iran, Elburs Geb., Polour, 1600 m, 21.vi.1969, leg. H. G. Amsel; 1 ♂/♀ N–Iran, Elburs–Mts., Prov. Tehran, Arangeh 25 km N Karadj, 1550 m, 1.–6.vi.1972, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 17.viii.1972, 2800 m, leg. Ebert; 2 ♂/♀, N–Iran, 12 km n. Amarlu, 250 m, 28.x.1970, leg. G. Ebert; 1 ♀, Iran, Tehran, Qollhak, 1400 m, 19.vi.1961, leg. J. Klapperich, g. prep. 0784/2020 D. Wanke; 1 ♀, same data, 04.vii.1961, g. prep. 0785/2020 D. Wanke; 1 ♂/♀, Iran, 15.viii.1961, leg. J. Klapperich; 1 ♂/♀, Iran, 10.vii.1961, leg. J. Klapperich; 1 ♂/♀, Iran, 14.vii.1961, leg. J. Klapperich; 3 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, 3000 m, 05.–06.vi.2005, Kuh–e–Dena, n. Bijan pass, 6 km N of Cisakht, leg. P. Gyulai & A. Garai; 2 ♂/♀, Iran, prov. Azerbayejan, E – Sharqi, 10 km NW of Miyane, 14.–15.vi.2005, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, prov. Azerbayejan, E – Garbi, 8 km S of Shoet, 15.–16.vi.2005, 1350 m, leg. P. Gyulai & A. Garai; 49 ♂/♀, Iran NE, Kopet Dagh, prov. Khorasan, ca. 50 km N Bojnurd, S Izmansufla, N 37°44’20’’, E 57°25’53’’, 1.240 mNN, 17.v.2005, leg. Trusch, Petschenka, Müller, g. prep. (♂) 0840, 0906/2020 D. Wanke; 1 ♂/♀, same data, 18.v.2005; 17 ♂/♀, same data, 11.v.2005; 30 ♂/♀, same data, 10.v.2005; 24 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan E Torbat de Heidarye S Fariman, Zharf vic. N 35°24’25.1’’, E 59°56’08.2’’ 5.v.2008, 2160 m, leg. R. Trusch, M. Falkenberg, B. Müller; 31 ♂/♀, same data, 6.v.2008, g. prep. (♀) 0841/2020 D. Wanke; 17 ♂/♀, NE–Iran, Prov. Ostan–e Khorasan, Kopet Dagh, NW Mashad, N Tschenaran, N Radkan, Dolmeh Olia, N 36°55’56.6’’, E 59°02’18.6’’, 8.v.2008, 1560 mNN, lux, leg. R. Trusch, M. Falkenberg & B. Müller, SMNK E–Lep. 247; 19 ♂/♀, same data, 9.v.2008; 1 ♂/♀, N–Iran, Elburs Mts., N Teheran, Dizin Hotel, N 36°02’52.1’’, E 51°24’58.1’’, 2700 m, 20.vii.2006, leg. R. Trusch; 1 ♂/♀, Iran–Centr., Prov. Yazd, N Yazd, Chak Chak, N 32°20’ 07.8’’, E 54°22’58.0’’, 1.550 mNN, 10. – 11.iv.2007, leg. R. Trusch, SMNK E–Lep. 234; 1 ♂, Iran, prov. Zanjan, Takhte Suleyman–Dandi road, 15 km E Takhte Suleyman, N36°36’23’’, E47°21’02’’, 2420 m, 29.vi.2009 leg. H. Rajaei, J.U. Meineke A. Hofmann, g. prep. 0828/2020 D. Wanke; 8 ♂/♀, Iran, prov. Zanjan, 2350 m, W–Alborz range Tarom vic. 20 km NE of Zanjan, 13.–14.vi.2005, leg. P. Gyulai & A. Garai E–Lep 221, g. prep. (♂) 0837/2020, 1146/2021 D. Wanke; 3 ♂/♀, NW–Iran, 12 km westl. Rezaiyeh, 1350 m, 3.v.1975, leg. Amsel; 1 ♂, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 17.viii.1972, 2800 m, leg. Ebert, g. prep. 1145/2021 D. Wanke; 1 ♂/♀, same data, 5.viii.1972, 2600 m; 1 ♂, N–Iran, Elburs–Mts., S–Rand, Tehran–Evin, 24.vii.1972, 1600 m, leg. G. Ebert, g. prep. 1139/2021 D. Wanke; 1 ♂/♀, N–Iran, Shemshak, ca. 70 km n. Teheran, 20.vi.1969, 1700 m, leg. H. G. Amsel; **all in SMNK.**

6 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Khoy to Ghotur road, Esteran vill., Alt. 1637 m, N 38°27’ 03.1’’, E 44°44’33.6’’, 1.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi, g. preps (♀) 0727, 0730/2020 D. Wanke; 2 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Urmia to Seru road, after Eshke–Su, Alt. 1915 m, N 37°45’ 50.1’’, E 44°48’46.4’’, 30.vi.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 1 ♂/♀, Iran, prov. Azarbayjan–e–Shargi, S Sahand Mt., 2431 m, 30.vi.2013, N 37°35’41’’, E 46°27’18.4’’, leg. J.U. Meineke, H. Rajaei, B. Hafezi; 2 ♂/♀, Iran, Zanjan prov., E Zanjan, road to Gilvan, Alt. 1889 m, N36°45’21.8’’, E48°49’20.7’’, 6.vii.2013, leg. H. Rajaei, J.–U. Meineke, B. Hafezi; 2 ♂/♀, Iran, Ghazwin–Alamut road, after Gardane Alamut, sandy road to Khanjar Bolagh village N 36°24’11’’; E50°12’52’’, 2024 m, 1.–2.vii.2009, H. Rajaei, J.–U. Meineke A. Hofmann; 2 ♂/♀, Iran, Khorasan Shomali, Babaaman, near Bojnurd, 26.vi.2016, leg. Sh. Feizpour; 1 ♂/♀, Iran, Azerbaijan–e Gharbi prov., 15 km W Jolfa, Sint–Stepanus Church, Alt. 951 m, N 38°58’ 43.2’’, E 45°28’24.0’’, 3.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 4 ♂/♀, Iran, Azerbaijan–e Sharghi prov., S Ghareh Aghaj, after Argsnay–Sufla Alt. 2020 m, N 36°50’16.5’’, E 46°58’07.5’’, 4.vii.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi; 1 ♂, Iran, Lorestan, Dorud, Astaneh door, 1801 m, 33°24’48.1’’N, 49°08’42.5’’E, 25.vii.2016, leg. Sh. Feizpour, g. prep. 0706/2020 D. Wanke; 1 ♂/♀, Iran, Khorasan Razavi, 65 km Kalat road, Khor, 1431m, 36°38’15.1’’N, 59°54’04’’E, 16.vi.2016, leg. Sh. Feizpour; 1 ♂/♀, Iran, Prov. Golestan, Shahrud–Golestan road, Shahkuh, 2585 m, 36°38’36’’N, 54°31’31’’E, 16.vii.2015, leg. Sh. Feizpour; 1 ♂, Iran, Mazandaran prov., Noor, Sisangan Foresty Park, 35 m, N 36°32’09.3’’, E 052° 04’55.8’’, 24.vi.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi, g. prep. 0725/2020 D. Wanke; 8 ♂/♀, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248m, 12.v.2010, Leg. G. Petrányi, P. Hentschel; 2 ♂/♀, Iran, prov. Fars, Ardakan (Sepidan), 2400–2500m, 08–11.v.2010, Leg. G. Petrányi, P. Hentschel; 2 ♂/♀, Iran, prov. Yazd, Sir Kuh, near Sanij, 2634m, 07.v.2010, Leg. G. Petrányi, P. Hentschel; 8 ♂/♀, Iran, prov. Hamedan, Nehavand, 1855m, 13.v.2010, Leg. G. Petrányi, P. Hentschel; 12 ♂/♀, Iran, prov. Golestan, Azad Sahr, 483m, 18.v.2010, Leg. G. Petrányi, P. Hentschel; 24 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, Leg. G. Petrányi, P. Hentschel; 9 ♂/♀, Iran, prov. Kordestan, Askaran, 1374m, 14–16.v.2010, Leg. G. Petrányi, P. Hentschel; 5 ♂/♀, NW–Iran, Kaleibar, 1700m, 3.viii.1977, leg. W. Thomas; **all in SMNS.**

1 ♂/♀, Nord–Iran, Schahkuh, West–abhg. Geröllzone, 1800–2000 m, Juni, Exp. Wernicke; 1 ♂/♀, Nordost–Iran, Kuh i Mirabi, Waldzone, 1600–1900m, Juli, Exp. Wernicke; 2 ♂/♀, Persia sept. [Iran], Elburs mts.c.s., Särdab

Tal–Vandarban, 19–2200 m, 1.–3.vii.[19]37, E. Pfeiffer & W. Forster München leg.; **all in ZFMK.**
1 ♂/♀, Iran, Lorestan prov., Z. Zagros, W. Nar Abad, ca. 1900 m, 11.–20.v.2001, leg. G. Müller; 1 ♂/♀, Iran, Golestan, Jahan Nama, 1800 m, 20.–21.x.2003, 36'40.36,6/54'18.34,6, leg. Ch Wieser; 1 ♂, Iran, Esfahan, 57 km S Borujen, 3 km S Dorahan, 31°36'N, 51°12'E, 8.vi.1997, 1950 m, leg. A. Hofmann & P. Kautt, coll N. Pöll; **all in ZSM.**

Scopula luridata distracta
1 ♂, 1 ♀, [Israel], Jaffa, 3.x., g. preps (♂) 1239 (♀) 1240/2021 D. Wanke; **in SMNS.**
1 ♀, W–Saudi Arabia, env. Taif, Al–Hada, 1950 m, 19–26.xi.1992, g. prep. 1292/2022 D. Wanke; 1 ♀, South Yemen, P. D. R. Y, Lahej Governorate, 7km N.W. Al Dhala, Jihafi Mountaine, As Sareer, 2200 m, 12.vi.1987, leg. Bernd Müller, g. prep. 1293/2022 D. Wanke; 1 ♂/♀, South Yemen, P. D. R. Y, Lahej Governorate, Labos, 2100 m, 26.vi.1987, leg. Bernd Müller; 1 ♂/♀, Republik of Yemen, prov. San'a, 15°35N, 43°47'E, mountains WSW Amran, Masaani–Gummama, 30.x.1996, 3000 m, Li[cht], leg. Bischof, Hacker, Schreier; 1 ♂, 1 ♀, Syria sept., Taurus, Marasch, 1928, E. Pfeiffer München, g. preps (♂) 1295 (♀) 1294/2022 D. Wanke; **all in ZSM.**

Scopula immutata
1 ♂, 1 ♀, Hungary, Bükkösd, 15 km WNW Pécs, 8.vi.1992, LF, leg. K.–R. Beck, g. preps (♂) 1246 (♀) 1247/2021 D. Wanke; **in SMNS.**

Scopula flaccidaria
6 ♂/♀, Iran, Gilan, Siakhal via Deilaman, Kaspiswald, 500 m, 16.vii.2006, leg. J.U. Meineke, H. Rajaei; 2 ♂/♀, Iran, Mazandaran, Chalmardi, Kaspiswald, 220 m, 2.vi.2008, leg. J.U. Meineke, H. Rajaei; **all in PCJM.**
1 ♀, Iran, Teheran, 40 km E Parchin, 26.v.2005, 1300 m, leg. M. Fibiger & R. Zahiri, g. prep. 0818/2020 D. Wanke;
1 ♀, N–Iran, Bandar Pahlavi, 28.ix.1970, 20 m, leg. Ebert, g. prep. 1054/2021 D. Wanke;
1 ♂, N–Iran, Masandaran, Schasavar envir., 0 m Zone, 21.v.1973, leg. Ebert, g. prep. 1053/2021 D. Wanke; 2 ♂/♀, same data as before, 27.v.1973; 1 ♂/♀, S–Iran, Bandar Abbas, km 107 der Strasse nach Sirdjan, 850 m, 7.iii.1973, leg. G. Ebert; **all in SMNK.**

Scopula minorata
1 ♂, 1 ♀, Gran Canaria, Las Palmas, x.[19]57, leg. Pinker, g. preps. (♂) 1248, (♀) 1249/2021 D. Wanke; **in SMNS.**
1 ♀, Iran, Golestan, Ala Gol, 17 m, 37'22.465/54'34.581, 16.–17.v.2001, leg. Ch Wieser, g. prep. ZSM G 12911; 1 ♀, Republik of Yemen, prov. San'a, 15°04'N, 43°39'E, 60 km SW San'a, Makaban, Naqil Manakhah (Westside), 2.xi.1996, 1900 m, Li[cht], leg. Bischof, Hacker, Schreier, g. prep. 1304/2022 D. Wanke; 1 ♂/♀, Republik of Yemen, prov. Hadramaut, 15°24'N, 48°21'E, Wadi Daw'an, Khar Sowdan, 10 km S Al Huraydah, 13.xi.1996, 900 m, TF/Li[cht], leg. Bischof, Hacker, Schreier, g. prep. ZSM G 12462; 1 ♀, UAE, 5 km S Huwaylat, 250 m, 11.xi.2007, 24°52'59''N, 56°8'20''E, leg. C. & FK. Gielis, g. prep. 1306/2022 D. Wanke; **all in ZSM.**

Scopula adelpharia
2 ♀, Sudan, Ed Damer, Hudeiba, 5.ii.1962, leg. R. Remane, g. preps 1268, 1269/2022 D. Wanke; 1 ♀, same data but 11.iii.1962, g. prep. 1270/2022 D. Wanke; 1 ♀, same data but 15.iii.1962, g. prep. 1271/2022 D. Wanke; 1 ♂, Iran, prov. Hormozgan. Sirik, 50 m, 11.–20.iii.2001, leg. G. Müller, g. prep. 1309/2022 D. Wanke; 1 ♂, Iran, prov. Baluchestan. Konarak, 50 m, 1.–10.iii.2001, leg. G. Müller; **all in ZSM.**

Scopula albiceraria
1 ♂, Mongolia, Selenge aimag, near Orchon, 774 m, 20–21.viii.2010, leg. B. Benedek & K. Székely, g. prep. 1305/2022 D. Wanke; 1 ♀, SW Mongolia, Gobi–Altai aimak, Mongolian Altai Mts., Khasgt–Khaikhan Mts., 17 km SSW Zhargalan, 46°48'N, 95°49'E, 2500–2900 m, 19.–21.vii.2010, leg. R. Yakovlev, Guskova, g. prep. 1301/2022 D. Wanke; **all in ZSM.**

Scopula immistaria
3 ♂/♀, Iran, Chaharmahal–va–Bakhtiyari, Shar–e Kord vic., Sibak, 2600–2900 m, 19./20.vi.2009, leg. A. Hofmann,

J.–U. Meineke, H. Rajaei; 1 ♂/♀, Iran, Alborz, Theran NW, Azadbar vic., 2900 m, 22.vii.2006, leg. A. Hofmann, J.–U. Meineke; 1 ♂/♀, Iran, Golestan, Sharud W, Kash, Kuh–e Shavar, 2900 m, 19.vii.2003, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, Esfahan, Chonsar vic., Kuh–e–Derrebid, 2700 m, 15.vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; 1 ♂/♀, Iran, Esfahan, Fereidun Shar vic., Kuh–e Sibak, 2500 m, 17./18. vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; 1 ♂/♀, Iran, Esfahan, Kuh–e–Derre Bid, 2700–2900 m, 26.vi.2001, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, Theran, Firuzkuh 20 km E, 2200 m, 05.vi.2008, leg. J.–U. Meineke, W. Kramer; 1 ♂/♀, Iran, Lorestan, Dorud, Kuh–e Osturan, 2400 m, 22.–24.vi.2009, leg. A. Hofmann, J.–U. Meineke, H. Rajaei; 2 ♂/♀, Iran, Zagros, Esfahan Umg., Fereidun Shah, 2200 m, 9.vii.1999, leg. A. Hofmann, J. Meineke; 2 ♂/♀, Iran, Boyer Ahmad–Va–Kohgiluyeh, Gardaneh, Meymand, 2450–2800 m, 14./15.vi.2001, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 1 ♂/♀, Iran, prov. Hamadan, Hamadan NNE, Razan N, Gardaneh Avaj, 2100–2150 m, 19.vi.1998, leg. A. Hofmann, J.–U. Meineke; 1 ♂/♀, Iran, Zanjan, Zanjan–Gilvan, Gargovol Dag, 2500m, 26./27.6.2001, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, Zanjan, Zanjan–Gilvan, Gargovol Dag, 2500m, 9.vi.2001, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 1 ♂/♀, Iran, Zanjan, Takht–e Suleiman, Barbar Naza, 2462 m, 5.vii.2013, N36°33'49.0'', E 47°17'57.7', leg. J.U. Meineke, H. Rajaei, B. Hafezi; 1 ♂/♀, Iran, Elburs, Zanjan, Zanjan Umg., Gargovoldag, 2500m, 3./4.vi.2001, leg. A. Hofmann, J.–U. Meineke, W.G. Tremewan; 5 ♂/♀, Iran, Kerman, Jiroft W, Shingera, 2800 m, 26./27.v.2004, leg. A. Hofmann, J.–U. Meineke, G. Tremewan; 2 ♂/♀, Iran, Kerman, Jiroft NW, Gardaneh, Sarbishan, Shingara vic., 2700–2900m, 3./4.vi.2002, leg. J.–U. Meineke, A. Hofmann, A. Kallies *et al.*; **all in PCJM.**

4 ♂/♀, Iran, prov. Mazandaran, Elburs mts., S Shah Kuh–e Bala, 19.vii.2003, lux, 2400 mNN, N 36°33', E 54°36', leg. G. Ebert & R. Trusch; 2 ♂/♀, N–Iran, Masandaran, Lar–Tal, NW Polur, 2200–2500 m, 20.vii.1975, leg. Müller; 6 ♂/♀, W–Iran, Lorestan, Dorud, 4 km SE Saravand, "Nermyeh'', 4.–6.viii.1975, 2400 m, leg. Ebert & Falkner, g. preps (♂) 0829, (♀) 0836/2020 D. Wanke; 4 ♂/♀, W–Iran, Lorestan, Dorud, 28 km E Borudjerd, 27.vii.1975, 2300 m, leg. Ebert & Falkner; 2 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 86 km SE Baneh, 5.vii.1975, 1950 m, leg. Ebert & Falkner; 3 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 23 km NE Baneh, 2.vii.1975, 1800 m, leg. Ebert & Falkner;

2 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 1950 m, 30.[vi.]–2.vii.1975, leg. Ebert & Falkner; 3 ♂/♀, N–Iran, Elburs mts., prov. Tehran, 15 km E Gatschsar, 5.viii.1972, 2600 m, leg. Ebert; 4 ♂/♀, same data, 2800m, 7.viii.1972, g. prep. (♀) 0831/2020 D. Wanke; 5 ♂/♀, Iran, prov. Tehran, Elburz mts. 3 km NNW Shemshak, N36°02' E051°28', 24.vii.2003, 2860 mNN, lux, leg. G. Ebert & R. Trusch, E–Lep 213, g. preps (♀) 0832, 0833/2020 D. Wanke; 1 ♀, [Iran], Fars, Kazeroun, Mian–Kotal, 11.vi.1972, 1900 m, leg. Ebert & Pazouki, g. prep. 0835/2020 D. Wanke; 1 ♂/♀, Iran, Boyerahmad–va–Kohgiluyeh, Shahr–e Kord N, Ben W, 24.vi.2005, 2490 – 2550 m, leg. A. Hofmann;

1 ♂/♀, Iran, Boyerahmad–va–Kohgiluyeh, Yasuj E, Abnar Region, Kakari – Baba Hasan, 24.vi.2005, 2550 – 2800 m, leg. A. Hofmann; 1 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, Kuh–e–Dena, 5 km SW of Sisakht, 04.–05.vi.2005, 2450 m, leg. P. Gyulai & A. Garai; 1 ♂/♀, Iran, prov. Esfahan S Fereydunshahr, Fereydun–shahr–Sibak, 2 km to Sibak, N 32°54'07'', E 50°04'48'', 19.–20.vi.2009, 2622 m, leg. H. Rajaei, J.–U. Meineke A. Hofman SMNK, E–Lep 259; 1 ♂/♀, Nordiran, Elbursgebirge östl. Shemshak, 50km nördl. Teheran, 2100 – 2500 m, 8–24. vi.1973, leg. G. Junge; 1 ♂/♀, Iran, Qazvin, 30 km N Qazvin, Sutehkesh (Paßhöhe), 3.vi.2005, 2200 m, leg. W. ten Hagen; 1 ♂, N–Iran, Elburs–Mts, Masandaran, Polur, Damavand, 2500m, 7.–10.vii.1972, leg. Ebert & Falkner, g. prep. (♂) 0830/2020 D. Wanke; 1 ♂/♀, same data, 29.vii.1972; 1 ♂, N–Iran, Masandaran, Golestan–Wald, 60 km E Gonbad Qabus, 8.vii.1972, 510 m, leg. Ebert & Falkner; 1 ♂/♀, S–Iran, Fars, Kaserun, Mian–Kotal, 1900 m, 11.vi.1972, leg. Ebert & Falkner; 1 ♀, N–Iran, Elburs–Mts., prov. Tehran, Arangeh, 25 km N Karadi, 4.vii.1972, 1550 m, leg. Ebert & Falkner, g. prep. (♀) 0834/2020 D. Wanke; 1 ♂/♀, N–Iran, Elburs–Mts., S–Rand, Tehran–Evin, 24.vii.1972, 1600 m, leg. G. Ebert; 1 ♂/♀, same data, 27.viii.1972; 1 ♂/♀, S–Iran, Khusestan, 15 km SE Yassudj, 2250 m, 13./14.vi.1972, leg. Ebert & Falkner; 1 ♂/♀, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 17.viii.1972, 2800 m, leg. Ebert;

1 ♂/♀, Pers.[ia] [Iran], Elbursgeb[irge], Kendevanpass, 2800 m, 3.–8.vii.[19]36, [leg.] Schwingenschuss; 1 ♂/♀, same data, 2600 – 3100 m; 1 ♂/♀, Persia s. [Iran], Kendevan, ca. 3000 m, 3.–9.vii., Coll. Wagner, Wien; 1 ♂, Iran, prov. Esfahan, Zagros mts., Feridun Shar, Kamaran, val., 2770 m, N 32°45', E 49°59', 12.vii.2003, lux, leg. G. Ebert & R. Trusch; **all in SMNK.**

4 ♂/♀, Iran, prov. Esfahan S Fereydunshahr, Fereydun–shahr–Sibak, 2 km to Sibak, N32°54'07'', E50°04'48'', 2622 m, 19.–20.vi.2009, leg. H. Rajaei, J.U. Meineke, A. Hofmann; 2 ♂/♀, Iran, prov. Kordestan, Saghez–Baneh

road, 10 km to Baneh Garnadeh–Khan, N 36°04’13’’, E 45°59’31’’, 1976 mNN, 26–27.vi.2009, leg. H. Rajaei, J.U. Meineke & A. Hofmann; 1 ♂/♀, Iran, prov. Lorestan, Oshtorankuh, Dorud–Gahar, lake road, before Cheshmeh, Khorram, 2360 mNN, N 33°22’41’’, E 49°11’13’’ 22.–24.vi.2009, leg.H. Rajaei, J.U. Meineke & A. Hofmann; 2 ♂/♀, Iran, Azerbaijan–e Gharbi prov., Khoy to Ghotur road, Esteran vill., Alt. 1637 m, N 38°27’ 03.1’’, E 44°44’33.6’’, 1.vii.2013, leg. H. Rajaei, J. U. Meineke, B. Hafezi; 2 ♂/♀, Iran, Lorestan, Dorud, Gahar road, 2281 m, 33°22’32.1’’N, 49°11’34.8’’E, 27.vii.2016, leg. Sh. Feizpour; 11 ♂/♀, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248m, 12.v.2010, Leg. G. Petrányi, P. Hentschel; 44 ♂/♀, Iran, prov. Fars, Ardakan (Sepidan), 2400–2500m, 08–11.v.2010, Leg. G. Petrányi, P. Hentschel; 14 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, Leg. G. Petrányi, P. Hentschel; 1 ♂/♀, Iran, Elburs, Shemshak, 2700 m, 10.–11.viii.1978, leg. W. Thomas; 1 ♂/♀, Iran, Tabris, Azar Shahr, südl. Tabris, vii.1976, leg. Czipka; 1 ♂/♀, Iran, Elburs, vic. Kendevan, 21.–25.viii.1978, 2300–2800 m, leg. W. Thomas; **all in SMNS.**
1 ♂, Iran, Kerman, 5 km S Deh Bakri, 2300–2400 m, 28°59’N, 57°55’E, 31.v.–1.vi.1997, leg. A. Hofmann & P. Kautt, coll N. Pöll, g. prep. ZSM G 10726; **in ZSM.**

Scopula lactarioides
1 ♀, Iran, (Makran), Chahbar Küste, 21.–24.iii.1954, [leg.] Richter u. Schäuffele, g. prep. 0879/2020 D. Wanke; **in SMNK.**

Scopula diffinaria
1 ♂, 1 ♀, Asia min. c. [Turkey], Akschehir, 16.–30.vi, coll. Wagner, Wien, g. preps (♂) 0574, (♀) 0575/2020 D. Wanke; 1 ♂, Asia min. c. [Turkey], Akschehir, 3.–15.vi, coll. Wagner, Wien; 1 ♂, Asia min. c. [Turkey], Anatolia c., Akschehir Sultan Dagh, 15.–30.viii.[19]34, coll. E. Pfeiffer München; 3 ♀, W–Iran, Kordestan, Straße Zandjan–Bijar, 53 km S Zandjan, 28.–29.vi.1975, 1700 m, leg. Ebert & Falkner, g. preps 0647, 0648/2020 D. Wanke; 1 ♂, 2 ♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 1950 m, 30–2.vii.1975, leg. Ebert & Falkner, g. preps (♀) 0650, 0653/2020 D. Wanke; 3 ♂/♀, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 1600 m, 10.x.1972, leg. Ebert & Falkner; 3 ♂/♀, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 1600 m, 30.vi.–5.vii.1972, leg. Ebert & Falkner; 1 ♀, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 1600 m, 24.ix.1972, leg. G. Ebert, g. prep. 0686/2020 D. Wanke; 1 ♀, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 1600 m, 27.viii.1972, leg. G. Ebert; 1 ♂, 1 ♀, N–Iran, Elburs–Mts, Masandaran, Polur, Damavand, 11.vii.1972, 2200 m, leg. Ebert & Falkner, g. prep. (♀) 0597/2020 D. Wanke; 1 ♂, N–Iran, Elburs–Mts., Prov. Tehran, Arangeh 25 km N Karadj, 1550 m, 1.–6.vi.1972, leg. Ebert & Falkner; 2 ♂, N–Iran, Elburs–Geb., Polour, 1600 m, 21.vi.1969, leg. H. G. Amsel, g. preps 0533, 0688/2020 D. Wanke; 1 ♀, N–Iran, E–Elburz mts., N. Shahrud, 5 km E Tash, Kuh–e Shawar, 2800 mNN, N36°35’’06’ E054°43’3.9’’, 25.vii.2006, LF, leg. R. Trusch, g. prep. 1165/2021 D. Wanke; 7 ♂/♀, Iran, Derbend, 25 km N v. Teheran, 2000 m, 7.–15.vi.1963, leg. Kasy & Vartian, g. preps (♂) ZSM HM 3753, (♀) 0583, 0601, 0602/2020 D. Wanke; 2 ♂/♀, Iran, Derbend, 25 km N v. Teheran, 2000 m, 1.–10.vii.1962, E. & A. Vartian, g. prep. (♀) 0576/2020 D. Wanke; 1 ♀, Nordiran, Elbursgebirge östl. Shemshak, 50 km nördl. Teheran, 2100–2500 m, 8.–24.vi.1973, leg. G. Junge, g. prep. 0522/2020 D. Wanke; 1 ♀, N–Iran, Salzsee, 90 km s. Teheran, 800 m, 18/23.vi.1969, leg. H. G. Amsel, g. prep. 0543/2020 D. Wanke; 2 ♀, NW–Iran, 15 km westl. Rezoiyeh, 1400 m, Artemisia–Steppe, 11.vi.1975, leg. H. G. Amsel, g. preps 0523, 0655/2020 D. Wanke; 1 ♂, NW–Iran, 15 km sö. Maku, 1050 m, 3.vi.1975, leg. H. G. Amsel; 1 ♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel; 1 ♂, Iran, prov. Tehran, Elburz mts. 3 km NNW Shemshak, N36°02’ E051°28’, 2860 m, 24.vii.2003, (lux), leg. G. Ebert & R. Trusch, g. prep. 0753/2020 D. Wanke; 1 ♀, E–Iran, NE Birjand, prov. Ostan–e Khorasan, S Haji Abad Gomenj vic., Kuh–e Mirza–e Arab, N 33°16’08’’, E 60°06’58’’, 2040 m, 7.iv.2007 leg. R. Trusch, g. prep. 0842/2020 D. Wanke; 1 ♀, Iran, prov. Mazandaran, Elburz mts., S Shah Kuh–e–Pain, 2750 m, N36°33’ E054°26’, 18.vii.2003, (lux), leg. G. Ebert & R. Trusch, g. prep. 0521/2020 D. Wanke; 1 ♀, Iran, prov. Mazandaran, Elburs Mts., S Shah Kuh–e Bala, 2400 m, N 36°33’, E 54°36’, 19.vii.2003, leg. G. Ebert & R Trusch (lux), g. prep. 1175/2021 D. Wanke; 1 ♀, N–Iran, Masandaran, Lar–Tal, NW Polur, 2200–2500 m, 20.vii.1975, leg. Müller, g. prep. 0531/2020 D. Wanke; 1 ♀, [Iran], Tehran, Karadj, Arangueh, 1550m, 15.6.1972, leg. Mirz., Abai., Kav.Ghaz, g. prep. 0524/2020 D. Wanke; 1 ♂, W–Iran, Kermanshahan, Surkhe Dizeh, 56 km NW Schahabad, 1320 m, 14.vii.1975, leg. Ebert & Falkner, g. prep. 0660/2020 D. Wanke; 5 ♂/♀, Iran, Fars, Straße, Ardekan–Talochosroe [Ardakan–Talle Khosrow], Comé [Komehr], 2600 m, viii.1937, coll. Brandt, g. preps (♀) 0577, 0578/2020 D. Wanke; 1 ♀, Iran, Fars, Straße Kazeroun–Bouchir Tchouroum, ca. 1000 m, 28.iii.1937, coll. Brandt, g. prep. 0582/2020 D. Wanke; 2 ♂, S–Iran, prov. Fars, Tange

Surkh, 50 km NW Ardekan, 2250 m, 12.–15.vi.1975, leg. Ebert/Falkner, g. prep. 0592/2020 D. Wanke; 1 ♀, S.W. Iran, Fars, Dasht–E–Bam, 4.v.[19]50, 4000 ft., [leg.] E.P. Wiltshire, g. prep. 1150/2021 D. Wanke; **all in SMNK.**
2 ♀, Iran, Kohkiluye va Boyerahmad, Yasuj, Sisakht, Dena, 2799 m, 30°57'23.6''N, 51°23'28.9'', 30.vii.2016, leg. Sh. Feizpour, g. preps 0713, 0734/2020 D. Wanke; 1 ♂/♀, Iran, Ghazwin–Alamut road, after Gardane Alamut, sandy road to Khanjar Bolagh village N 36°24'11''; E50°12'52'', 2024 m, 1.–2.vii.2009, H. Rajaei, J.–U. Meineke A. Hofmann; 2 ♂/♀, Iran, Azerbaijan–e Sharghi prov., S Ghareh Aghaj, after Argsnay–Sufla Alt. 2020 m, N 36°50'16.5'', E 46°58'07.5'', 4.vii.2013, leg. H. Rajaei, J.U. Meineke, B. Hafezi, g. prep. (♂) 0728/2020 D. Wanke; 3 ♂/♀, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248m, 12.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. (♂) 0747, 0748/2020 D. Wanke; 1 ♂, Iran, prov. Esfahan, near Qamsar, 1781m, 06.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. 0744/2020 D. Wanke; 1 ♂, Iran, prov. Fars, Ardakan (Sepidan), 2400–2500m, 08–11.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. 0746/2020 D. Wanke; **in SMNS.**
3 ♂/♀, N–Iran, S. Elburs, Varamin, 700 m, semidesert, 11.–21.vii.1996, leg. Müller; **in ZSM.**

Scopula sacraria ariana
4 ♂/♀, S–Iran, prov. Fars, Tange Surkh, 50 km NW Ardekan, 12.–15.vi.1975, 2250 m NN, leg. Ebert & Falkner; 42 ♂/♀, S–Iran, prov. Khuzestan, Yasudj, Sisakht, 50 km NW, 15.–18.vi.1975, leg. Ebert & Falkner, g. preps (♂) 0598, 0599/2020 D. Wanke; 1 ♂, N–Iran, Elburs–Mts. S–Rand, Tehran–Evin, 25.–28.vi.1972, 1800 m, leg. Ebert & Falkner, g. prep. 0683/2020 D. Wanke; 1 ♀, same data, but 24.ix.1972, 1600 m, leg. Ebert & Falkner, g. prep. 0684/2020 D. Wanke; 1 ♂/♀, same data, but 29.ix.1972, 1600 m; 3 ♂/♀, same data, but 30.vi.–5.vii.1972, 1600 m; 1 ♀, same data, but 30.–31.vi.1972, 1600 m; 1 ♂/♀, N–Iran, 70 km s. Teheran, 29.v.1969, 1300 m, leg. Ebert; 3 ♂/♀, Iran, Derbend, 25 km N v. Teheran, 1.–10.vi.1962, 2000 m, E. & A. Vartian, g. prep. (♂) 0608/2020 D. Wanke; 1 ♀, Iran, prov. Hamadan, 8 km S of Arak, 02. – 03.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0807/2020 D. Wanke; 57 ♂/♀, Iran, prov. Boyerahmad–va–Kohgiluyeh, SE–Zagros, 35 km SE of Yasuj, 06.–07.vi.2005, 2600 m, leg. P. Gyulai & A. Garai, g. preps (♂) 0506, 0509, 0555, 0556, 0557, (♀) 0507, 0508, 0754, 0755/2020 D. Wanke; 24 ♂/♀, W–Iran, Lorestan, Dorud, 5 km SE Saravand, "Kohyeh", 29–30.vii.1975, 2300 m, leg. Ebert & Falkner, g. preps (♂) 0561, 0693/2020 D. Wanke; 8 ♂/♀, W–Iran, Lorestan, 28 km E Borudjerd, 2300 m, 27.7. 1975, leg. Ebert & Falkner, g. preps (♀) 0691, 0692/2020 D. Wanke; 3 ♂/♀, W–Iran, Lorestan, Dorud, 4 km SE Saravand, "Nermyeh", 4.–6.viii.1975, 2400 m, leg. Ebert & Falkner; 5 ♂/♀, W–Iran, Lorestan, 14 km E Dorud, 6.viii.1975, 1990 m, leg. Ebert & Falkner; 4 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 86 km SE Baneh, 5.vii.1975, 1950 m, leg. Ebert & Falkner, g. preps (♂) 0643, (♀) 0644/2020 D. Wanke; 6 ♂/♀, W–Iran, Kordestan, Straße Baneh–Marivan, 25 km E Baneh, 4.vii.1975, 1950 m, leg. Ebert & Falkner, g. prep. (♀) 0649/2020 D. Wanke; 7 ♂/♀, W–Iran, Kordestan, Straße Saghez–Baneh, 21 km NE Baneh, 1950 m, 30–2.vii.1975, leg. Ebert & Falkner; g. preps (♂) 0651, (♀) 0652/2020 D. Wanke; 2 ♂/♀, W–Iran, 51 km westl. Kermanshah, 1500 m, Quercetum, 17.vi.1975, leg. H. G. Amsel; 3 ♂/♀, W–Iran, Kermanshahan, Ghalladje Pass, 40 km S Schahabad, 1880 m, 13.vii.1975, leg. Ebert & Falkner, g. prep. (♀) 0659/2020 D. Wanke; 5 ♂/♀, NW–Iran, 100 km Straße Mahabad–Sardascht, 1300 m, Quercetum, 13.vi.[19]75, leg. H. G. Amsel, g. prep. (♂) 0659/2020 D. Wanke; 2 ♂/♀, W–Iran, Kordestan, 95 km N Kermanschah, Straße nach Sanandaj, 11.vii.1975, 1350 m, leg. Ebert & Falkner, g. prep. (♂) 0645/2020 D. Wanke; 3 ♂/♀, W–Iran, Kordestan, Ariz, 27 km W Sanandaj, 10.vii.1975, 2200 m, leg. Ebert & Falkner, g. prep. (♂) 0646/2020 D. Wanke; 2 ♂/♀, W–Iran, 15 km nördl. Kermanshah, 1350 m, 16.vi.1975, leg. H. G. Amsel, g. prep. (♂) 0657/2020 D. Wanke; 2 ♂/♀, W–Iran, 60 km nördl. Kermanshah, 1400 m, 18.vi.1975, leg. H. G. Amsel, g. prep. (♀) 0656/2020 D. Wanke; 5 ♂/♀, W–Iran, W–Azarbaijan, 2 km W Sardasht, 1650 m, 3.vii.1975, leg. Ebert & Falkner, g. prep. (♂) 0656/2020 D. Wanke; 17 ♂/♀, S–Iran, Straße Shiraz–Kazerun, Imam Sade, 1200 m, 3.vi.1969, leg. G. Ebert, g. preps (♀) 0689, 0690/2020 D. Wanke; 101 ♂/♀, S–Iran, Miyan Kotal, 4.–7.vi.1969, 1900 m, östl. Kazerun, 51°40' öL., 29°30' nB., leg. G. Ebert, g. prep. (♀) 0600/2020 D. Wanke; 32 ♂/♀, S–Iran, Fars, Kaserun, Mian–Kotal, 1900 m, 11.vi.1972, leg. Ebert & Falkner, g. preps (♂) 0633, 0634 (♀) 0632, 0635, 0636/2020 D. Wanke; 6 ♂/♀, Iran, prov. Fars, S–Zagros, 40 km SW of Sivand, 09.–10.06. 2005, leg. P. Gyulai & A. Garai, g. prep. (♂) 0537/2020 D. Wanke; 3 ♂/♀, Iran, Fars, Shiraz ESE, Darab N (Pass), 1850 – 2100 m, 19.v.2005, leg. T. & A. Hofmann, g. preps (♂) 0541, (♀) 0750/2020 D. Wanke; 1 ♂, Iran, prov. Fars, Shiraz–Kazerun road, 5 km before Dashte Arjan, N 29°40'34'', E 052°02'18'', 2158 m, 23.v.2009, leg. Hossein Rajaei, g. prep. (♂) 0550/2020 D. Wanke; 1 ♂/♀, Iran, Fars, Umgebung von Chiraz, 10.iv.1937, ca. 1600 m, coll. Brandt; 2 ♀, Iran, Fars, Straße Chiraz–Kazeroun, Fort Sine–Sefid, ca. 2200 m, 4.ix.1937, coll. Brandt, g. preps 0581, 0590/2020 D. Wanke; 1 ♂, [Iran], Fars, Kazeroun, Mian–Kotal, 1900 m, 11.vi.1972, Mi.Li, leg. Ebert & Pazouki, g. prep. 0681/2020 D. Wanke;

1 ♂, S–Iran, Khusestan, Yassudj, Sisakht, 2250 m, 13./14.vi.1972, leg. Ebert & Falkner, g. prep. 0680/2020 D. Wanke; 6 ♂/♀, 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. prep. (♀) 0756/2020 D. Wanke; 1 ♂/♀, NE–Iran, prov. Ostan–e Khorasan, Kopet Dagh, NW Mashad, N Tschenaran, N Radkan, Dolmeh Olia, N 36°55'56.6'', E 59°02'18.6'', 8.v.2008, 1.560 mNN, lux, leg. R. Trusch M. Falkenberg & B. Müller; 10 ♂/♀, same data, but 9.v.2008, g. preps (♂) 0512, (♀) 0749/2020 D. Wanke; 24 ♂/♀, same data, but 10.v.2008, g. preps (♂) 0511, 0513, 0514, 0515/2020 D. Wanke; 9 ♂/♀, same data, but 11.v.2008, g. prep. (♂) 0517/2020 D. Wanke; 4 ♂/♀, Iran NE, Kopet Dagh, prov. Khorasan, ca. 50 km N Bojnurd, S Izmansufla, N 37°44'20'', E 57°25'53'', 1.240 mNN, 17.v.2005, leg. Trusch, Petschenka, Müller, g. preps (♂) 0529, (♀) 0530/2020 D. Wanke; 1 ♂/♀, Iran, prov. Tehran, Elburz mts. 3 km NNW Shemshak, N36°02', E051°28', 2860 mNN, 24.vii.2003 (lux), leg. G. Ebert & R. Trusch; 1 ♀, Iran, prov. Hamadan, 8 km S of Arak, 02–03.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0540/2020 D. Wanke; 2 ♂, Iran, prov. Hamadan, 8 km S of Arak, 02–03.vi.2005, leg. P. Gyulai & A. Garai, g. prep. 0544, 752/2020 D. Wanke; 1 ♀, Iran N, prov. Semnan, 30 km NW Damghan, Cheschme Ali, N 36°15'07'', E 54°04'20'', 1560 mNN, 23.v.05, leg. Trusch, Petschenka, Müller, g. prep. 0532/2020 D. Wanke; 1 ♂, Iran, prov. Lorestan, Oshtorankuh, Dorud–Gahar, lake road, before Cheshmeh Khorram, 2360 mNN, N33° 22'41'', E49°11'13'', 22.–24.vi. 2009, leg. H. Rajaei, J.U. Meineke & A. Hofmann, g. prep. 0551/2020 D. Wanke; 1 ♂, Iran, prov. Kohkiluyeh–va–Boyer–ahmad, 30 km S Yassuj, road Abshare–Tange–Tamoradi, 8km before Abshar [=waterfall], N30°31'53''; E51°25'11'', 2254 mNN, 24.v.2009, leg. Hossein Rajaei, g. prep. 0552/2020 D. Wanke; 2 ♂/♀, S–Iran, 160 km n. Shiraz, 1900 m, s. Didegan, 8.vi.1969, leg. G. Ebert, g. prep. (♂) 0658/2020 D. Wanke; 1 ♂, [Iran], Fadiheh–T–H, 20.7.1971, leg. Paz., Ayat., g. prep. 0562/2020 D. Wanke; 1 ♀, N–Iran, Elburs–Mts., prov. Tehran, Arangeh 25 km N Karadj, 1550 m, 1.–6.vi.1972, leg. Ebert & Falkner, g. prep. 0687/2020 D. Wanke; 2 ♂/♀, NW–Iran, 17 km nw. Maku, 1400 m, 4.vi.1975, leg. H. G. Amsel, g. prep. (♀) 0661/2020 D. Wanke; 1 ♀, NW–Iran, 15 km sö. Maku, 1050 m, 3.vi.1975, leg. H. G. Amsel, g. prep. 1143/2021 D. Wanke; 2 ♂/♀, Iran–Centr., Prov. Yazd, N Yazd, Chak Chak, N 32°20' 07.8'', E 54°22'58.0'', 1.550 mNN, 10. – 11.iv.2007, leg. R. Trusch, SMNK E–Lep. 234, g. prep. (♀) 0545/2020 D. Wanke; 1 ♀, N–Iran, Elburs Mts., Prov. Tehran, 15 km E Gatschsar, 17.viii.1972, 2800 m, leg. Ebert, g. prep. 1164/2021 D. Wanke; 1 ♂/♀, [Iran], Karkas, 9.vi.1970, [leg.] Mirz. & Abai; 1 ♂, [Iran], Darrehgaz, 3.vii.1971, [leg.] Paz. & Abai, g. prep. 1147/2021 D. Wanke; **all in SMNK.**

3 ♂/♀, Iran, prov. Kohkiluyeh–va–Boyer–ahmad, 30 km S Yassuj, road Abshare–Tange–Tamoradi, 8km before Abshar [=waterfall], N30°31'53''; E51°25'11'', 2254 mNN, 24.v.2009, leg. Hossein Rajaei, g. preps (♂) 0714, 0715/2020 D. Wanke; 4 ♂/♀, Iran, prov. Lorestan, Oshtorankuh, Dorud–Gahar, lake road, before Cheshmeh Khorram, 2360 mNN, N 33°22'41'', E 49°11'13'' 22.–24.vi.2009, leg.H. Rajaei, J.U. Meineke & A. Hofmann, g. prep. (♂)0724/2020 D. Wanke; 1 ♂/♀, Iran, Shahrud, Shahkouh, Tash, Ayoub Hosseini region, 2588m, 36°37'18''N, 54°33' 42.6''E, 11.07.2016, leg. Sh. Feizpour; 1 ♂, Iran, prov. Chaharmahal–va–Bakhtiyari, Dehnau, 2248m, 12.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. 0747/2020 D. Wanke; 1 ♂, Iran, prov. Esfahan, near Qamsar, 1781m, 06.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. 0745/2020 D. Wanke; 4 ♂/♀, Iran, prov. Hamedan, Nehavand, 1855m, 13.v.2010, Leg. G. Petrányi, P. Hentschel, g. prep. (♂) 0743/2020 D. Wanke; 8 ♂/♀, Iran, prov. Zanjan, Ab Bar, 1053m, 17.v.2010, Leg. G. Petrányi, P. Hentschel, g. preps (♂) 0739, (♀) 0738, 0740/2020 D. Wanke; **all in SMNS.**

2 ♂/♀, N–Iran, S. Elburs, Varamin, 700 m, semidesert, 11.–21.vii.1996, leg. Müller; **in ZSM.**

Scopula chalcographata

70 ♂/♀, Iran, Balutschestan, Khasch, 11 km NE Karvandar, 1300 m, 13.v.1972, leg. Ebert & Falkner, g. preps (♂) 0618, 0620, 0631, (♀) 0619, 0625, 0628, 0629, 0630/2020 D. Wanke; 1 ♂, 1 ♀, Iran, Baloutchistan, Straße Tchahbahar–Iranchar, Tahte–Malek, 750 m, Anfang April 1938, coll. Brandt; g. preps (♂) 0589, (♀) 0588/2020 D. Wanke; 3 ♂/♀, Iran, Balutschestan, Khasch, Guscheh, Kuhe Taftan, W–exp., 2000 m, 21.v.1972, leg. Ebert & Falkner, g. prep. (♀) 0677/2020 D. Wanke; 1 ♀, Iran, Balutschestan, Khasch, 3 km SE Eskal–Abad, 1700 m, 12.v.1972, leg. Ebert & Falkner, g. prep. 0676/2020 D. Wanke; 1 ♂, S–Iran, 100 km s. Abadeh, n. Didegan, 2000 m, 9.vi.1969, leg. G. Ebert, g. prep. 0678/2020 D. Wanke; 1 ♂, S–Iran, Issin, 240 m, Periplocaaphylla Steppe, 5.iv.1973, leg. H. G. Amsel, g. prep. 0679/2020 D. Wanke; 9 ♂/♀, Iran, Balutschestan, Nikschar, Tange–Sarheh, 1100m, 16.5.1972, leg. Ebert & Falkner, g. prep. (♀) 0566/2020 D. Wanke; 2 ♂/♀, Iran, Balutschestan, Khasch, 18 km NE Karvandar, 1400 m, 14.v.1972, leg. Ebert & Falkner; 6 ♂/♀, Iran, Balutschestan, Khasch, Kuhe Taftan, E–exp., 1800 m, 20.v.1972, leg. Ebert & Falkner, g. prep. (♂) 0573/2020 D. Wanke; 2 ♂/♀, S–Iran, Straße Shiraz–Kazerun, Imam Sade, 1200

m, 3.vi.1969, leg. G. Ebert; 9 ♂/♀, S–Iran, Bandar–Abbas, km 107 d. Strasse nach Sirdjan, 850 m, 7.iii.1973, leg. G. Ebert, g. preps (♂) 0667, 0668, (♀) 0593/2020 D. Wanke; 20 ♂/♀, S–Iran, Bandar–Abbas, Kuhe Genou, S–exp. 550 m, 1.u.5.iii.1973, leg. G. Ebert, g. prep. (♀) 0528/2020 D. Wanke; 1 ♂, S–Iran, Bandar–Abbas, 35 km N Minab, 60 m, 4.3.1973, leg. G. Ebert, g. prep. 0641/2020 D. Wanke; 1 ♂/♀, S–Iran, Fars, Kaserun, Mian–Kotal, 1900 m, 11.vi.1972, leg. Ebert & Falkner; 1 ♂/♀, S–Iran, Miyan Kotal, 4.–7.vi.1969, 1900 m, östl. Kazerun, 51°40' öL., 29°30' nB., leg. G. Ebert; 2 ♂/♀, S–Iran, Miyan Kotal, 4.–7.vi.1969, 1900 m, östl. Kazerun, 51°40' öL., 29°30' nB., leg. Vartian; 1 ♂/♀, S–Iran, Fars, Daschte Ardjan, Kotal–Pireshan, 2000 m, 18.vi.1982, leg. Ebert & Falkner; 1 ♀, S–Iran, 1600m, 2.6.1969, Persepolis, leg. G. Ebert, g. prep. 0536/2020 D. Wanke; 3 ♂, 1♀, Persia [Iran], [Fars], Shiraz, Rockysteppe, 14.v.1950, [leg.] E.P. Wiltshire, g. preps. (♂) 1148, 1149, 1154 (♀) 1152/2021 D. Wanke; 1 ♂, [Iran], Deh Bakri, S.W. Bam, Paßhöhe, Nachtfang, g. prep. 1153/2021 D. Wanke; **all in SMNK.**
1 ♂/♀, Iran, Khorasan Razavi, 65 km Kalat road, Khor, 1431m, 36°38'15.1''N, 59°54'04''E, 16.vi.2016, leg. Sh. Feizpour; 3 ♂/♀, Iran, Hormozgan, Bandar Abbas, Genu, 2128 m, 27°25'02''N, 56°10'160'', 01.v.2016, leg. Sh. Feizpour, g. preps (♂) 0707, 0709/2020 D. Wanke; 1 ♂, Iran, Kerman, Bam–Jiroft road, Kuhe Dehbakri, 2152m, 28°48'01''N, 57°56'05''E, 27.vi.2016, leg. Sh. Feizpour, g. prep. 0718/2020 D. Wanke; 1 ♂, Iran, Kerman, Sarbishan, Shingara, 2789m, 3°17'26''N 55°27'17''E, 28.vi.2016, leg. Sh. Feizpour, g. prep. 0719/2020 D. Wanke; 1 ♀, Iran, Sistan and Balouchistan, Zabol, Research field, 564 m, 31°05'07''N, 61°25'51''E, 24.05.2016, leg. Sh. Feizpour, g. prep. 0716/2020 D. Wanke; **all in SMNS.**
1 ♂/♀, S. Iran, Hormozgan, Beshagerd Mts. Angollran vill., 26°34'N, 57°54'E, 25.iii.–5.vi.2000, leg. Victor Siniaev; 1 ♀, Iran, Kerman, 5 km S Deh Bakri, 2300–2400 m, 28°59'N, 57°55'E, 31.v.–1.vi.1997, leg. A. Hofmann & P. Kautt, coll N. Pöll, g. prep. ZSM G 10725; **all in ZSM.**

Scopula gracilis
16 ♂/♀, Iran, Balutschestan, Nikschar, Tange–Saheh, 1100 m, 16.v.1972, leg. Ebert & Falkner, g. preps (♂) 0568, (♀) 0567, 0569/2020 D. Wanke; 2 ♂, 2♀, Iran, Balutschestan, Khasch, 11 km NE Karvandar, 1300 m, 13.v.1972, leg. Ebert & Falkner, g. preps (♂) 0622, 0624, (♀) 0621, 0623/2020 D. Wanke; 1 ♂/♀, Iran, Balutschestan, Khasch, 18 km NE Karvandar, 1400 m, 14.v.1972, leg. Ebert & Falkner; 1 ♂, Iran, Baloutchistan, Bender Tchahbahar, 24.ii.1938, coll. Brandt, g. prep. (♂) 0580/2020 D. Wanke; 1 ♂/♀, Iran, Baloutchistan, Bender Tchahbahar, 6.i.1938, g. prep. 62, 5.xi.1961 Dr. Issekutz; 1 ♀, Iran, Baloutchistan, Bender Tchahbahar, 3.i.1938, g. prep. 0579/2020 D. Wanke; 5 ♂/♀, Iran, Balutschestan, Bandar Tschabahar Tis, 10 m, 17.v.1972, leg. Ebert & Falkner, g. preps (♂) 0674, (♀) 0675/2020 D. Wanke; 1 ♂, Iran, Belutschistan, Jranshar, 11.–21.v.1954, 800 m, leg. Richter u. Schäuffele, g. prep. 0542/2020 D. Wanke; 30 ♂/♀, S–Iran, Bandar–Abbas, 35 km N Minab, 60 m, 4.iii.1973, leg. G. Ebert, g. preps (♂) 0571, 0638, (♀) 0570, 0637, 0639, 0640, 0642/2020 D. Wanke; 16 ♂/♀, S–Iran, Bandar–Abbas, Kuhe Genou, S–exp., 1.u.5.iii.1973, 550 m, leg. G. Ebert; 6 ♂/♀, S–Iran, Bandar–Abbas–Minab, 200 m, *Acacia arabica*–Steppe, 3.iv.1973, leg. H. G. Amsel, g. preps (♂) 0666, (♀) 0672/2020 D. Wanke, No. 3794 ZSM Hausmann; 6 ♂/♀, S–Iran, Bandar–Abbas, 10 km N Minab, 30 m, 3.iii.1973, leg. G. Ebert, g. preps (♀) 0595, 0596, 0694/2020 D. Wanke; 6 ♂/♀, S–Iran, Bandar Abbas, km 107 der Strasse nach Sirdjan, 850 m, 7.iii.1973, leg. G. Ebert, g. preps (♂) 0594, (♀) 0572/2020 D. Wanke; 4 ♂/♀, S–Iran, Bandar–Abbas–Sirjan, km 40, 300 m, 30.iii.1973, leg. H. G. Amsel, g. prep. (♀) 0671/2020 D. Wanke; 1 ♂, S–Iran, Bandar–Abbas–Sirjan, km 70, 500 m, 2.iv.1973, leg. H. G. Amsel, g. prep. 0669/2020 D. Wanke; 2 ♂/♀, S–Iran, Bandar–Abbas–Sirjan, km 24, 250 m, 2.iv.1973, leg. H. G. Amsel;
2 ♂/♀, S–Iran, [Bushehr], Dalaki–Brücke, 300 m, 21.iii.1973, leg. H. G. Amsel, g. prep. (♀) 0673/2020 D. Wanke; 1 ♂, S–Iran, Persepolis, 2.vi.1969, 1600 m, leg. G. Ebert, g. prep. 0751/2020 D. Wanke; **all in SMNK.**
1 ♂, 1 ♀, S. Iran, Hormozgan prov., Sirik, 50 m, 11.–20.iii.2001, leg. G. Müller, g. preps. (♂) 1308, (♀) 1307/2022 D. Wanke; 1 ♂/♀, S. Iran, Hormozgan, Beshagerd Mts., 600 m, Davari, 26°34'N, 57°54'E, 6.–11.vi.2000, leg. Siniaev & Plutenko, ex coll. A Schintlmeister; **all in ZSM.**

Scopula alfierii
2 ♂/♀, Republik of Yemen, 14°46'N, 49°18'E, 25 km NNE Al Mukalla, Al Ain 20 km NNW Ar Rayyan, 14.xi.1996, 150 m, TF/Li, leg. Bischof, Hacker, Schreier, g. prep. (♂) 1296/2022 D. Wanke; 2 ♀, Republik of Yemen, Gulf of Aden, 14°01'N, 48°18'E, 45 km WSW Al Mukalla, coastal dunes 2 km w Bir Ali, 15.xi.1996, 10 m, Li[cht], leg. Bischof, Hacker, Schreier, g. preps 1297, 1298/2022 D. Wanke; **all in ZSM.**