

A new *Scopula* from mid-Atlantic Ascension Island (Lepidoptera, Geometridae)

With 11 figures

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Abstract

The authors report the rediscovery of a *Scopula* species on Ascension Island. After comprehensive comparison work, it was found to be a species new for science. It is described here as *Scopula ascensionis* spec. nov. Information on the habitat, larva and pupa are given.

Taxonomic acts

Scopula ascensionis spec. nov. – urn:lsid:zoobank.org:pub:6CA2D311-B23A-4000-9A0A-B0D04EAC27C8

Key words

Scopulinae, *Scopula*, new species, larva, pupa, Ascension Island

Zusammenfassung

Die Autoren berichten über das Wiederauffinden einer *Scopula*-Art auf der Insel Ascension. Nach umfangreichen Vergleichen stellte sich diese *Scopula* als neu heraus und wird als *Scopula ascensionis* spec. nov. beschrieben. Informationen zum Habitat sowie zu Raupe und Puppe der Art werden gegeben.

Schlüsselwörter

Scopulinae, *Scopula*, neue Arten, Larve, Puppe, Ascension Island

Introduction

Ascension is a British Overseas Territory in the middle of the South Atlantic between North Angola and Brazil. It is a very remote island, about 1600 km away from

the African Continent and about 2220 km from South America. St. Helena is the closest landmass in a distance of nearly 1300 km.

Ascension is a young volcanic island consisted mainly by lava fields and ash cones. The climate is tropical, with high median temperatures between 23 °C and 27 °C. The island receives very sparse precipitation of about 140 mm per year. Originally the island was covered by a very scarce vegetation, composed by a few endemic species and many lichens. The botanist Joseph Dalton Hooker initiated the planting of trees and shrubs from various places of the world. So now the island is covered with woods in the highest parts of the Green Mountains (between about 500 and 859 m) and some other alien shrubs, such as Mexican Thorn (*Prosopis juliflora*) and Bermuda Cedar (*Juniperus bermudiana*) are widespread in adjacent areas (Fig. 1).

The Lepidoptera fauna is poor and insufficiently known. To date about 39 species are reported (ROBINSON & KIRKE 1990; DAVIS & MENDEL 2013). After a few older publications, the first list of moths in the 20th century was published by DUFFEY (1964). He reported also *Scopula lactata* WALKER, but it is an invalid name. ROBINSON & KIRKE (1990) referred to this species, but they were not able to locate the material in the collection of The Natural History Museum in London. *Phalaena lactata* HAWORTH, 1809 is a synonym of *Scopula floslactata* (HAWORTH, 1809), a European species, and there is another *Scopula* in Africa with a similar name, *Scopula lactaria* (WALKER, 1861).

In 2017 the first author collected a female *Scopula* species at the headlights of a car near Devil's Ashpit (Fig. 2) in the Eastern part of Ascension Island. In the course of the rearrangement of the Geometridae collection in London, J. CHAINEY found the specimen referred to in the record by DUFFEY (1964). Both specimens belong to the same species, which is different from all other described *Scopula* in Europe and Africa (HAUSMANN, 2004, JANSE, 1933–1935, collections of The Natural History Museum London (NHMUK), Museum national d'histoire naturelle Paris, Termesztudományi Múzeum Budapest, Musée Royal de l'Afrique Centrale Tervuren, Ditsong Museum of Natural History Pretoria). For one individual a DNA sequencing was performed (see KARISCH, KRAMP & PETERS, 2018 for details). The barcode of the sequenced individual was compared with sequences available in BOLD (The Barcode of Life Data System) but did not match any.

The hitherto unknown species from Ascension Island is described here.

Description

Scopula ascensionis spec. nov.

urn:lsid:zoobank.org:pub:6CA2D311-B23A-4000-9A0A-B0D04EAC27C8

Holotype ♂: „ASCENSION IS. | E.A.G. DUFFEY, | B.M. 1958-760.“, „NHMUK 010919255“, „Gen.-Präp. 3582 | präp. KARISCH, 2018“. In coll. NHMUK.

Paratypes: Ascension Island, Devil's Ashpit near NASA building, 1 ♀ (gen. prep. 3616, KARISCH) 2017-02-20, at night, leg. T. KARISCH (MNVD); same locality, 1 ♀ 2017-05-31, e. o., leg. T. KARISCH (coll. KARISCH, Demitz-Thumitz).

Description (Figs 3, 4, 5): Frons dark brown. Palps dark brown, as long as the diameter of the eye. Vertex and collar pale ochre.

Antenna of ♂ pale ochre, ventral with cilia, about twice width of flagellum. Ventral side of first segment of thorax dark brown.

Wingspan 18–19 mm. Forewing narrow and elongated. Wings sand coloured, forewing slightly more brown towards costa; no distinct lines, but postmedian indicated as a light shade; minute black discoidal spot on fore and hindwing. Fringes sand coloured.

Underside of the forewing sand coloured, more or less greyish dusted.

Hind tibia of ♂ 2nd pair of legs with two strong spurs at the end; 3rd pair densely covered with white scales, no spurs.

Male genitalia (Fig. 6): Socii of medium length. Fibula narrow, strong, slightly shorter than valvula. Aedeagus slender, without cornuti. Sternum A8 with nearly uniform ceras, longer than mappa.

Female genitalia (Fig. 7): Lamella antevaginalis pyramidal. Antrum comparatively broad, well sclerotized. Corpus bursae oval, with very small scale-like sclerites and two stronger teeth.

Similar species: Compared with available sequences in BOLD, the closest matches were with barcodes from *Scopula minorata* (BOISDUVAL, 1833) (similarity: 98.9 %; sample ID not public) and *S. serena* PROUT, 1920 (similarity: 98.6 %; sample ID: BC ZSM Lep 63796).

In comparison with *S. minorata*, *Scopula ascensionis* spec. nov. does not have the transverse lines on the wings and the black terminal dots. In male genitalia, *S. ascensionis* spec. nov. can be distinguished from *S. minorata* by the broader fibula and the uniform ceras, but this might be variable in *S. ascensionis* spec. nov. too. In female genitalia, *S. ascensionis* spec. nov. is very different in the pyramidal lamella antevaginalis, the broader antrum, the lack of spinules and the strongly sclerotized structure towards the ductus bursae.

S. ascensionis spec. nov. differs from *S. serena* in the absence of brown transverse lines on the wings, the discoidal spots are much smaller and the wings are more narrow than in *S. serena*. The male genitalia of *S. ascensionis* spec. nov. are very similar to those of *S. serena*, but the tegumen is longer and the fibula is more stout. Because these characters are consistent in all three known specimens of *S. ascensionis* spec. nov. we consider that our data supports classification on species-level, and not as a subspecies of *S. serena*.

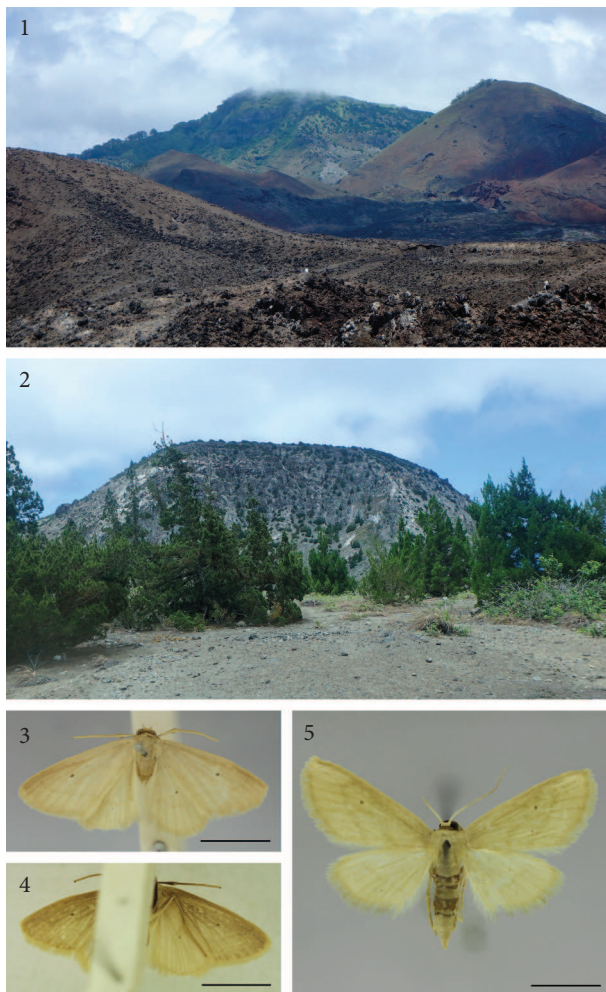


Fig. 1: View from the lava covered Wideawake Fairs to the Green Mountains. The Green Mountains have a dense vegetation of introduced vascular plants, whereas lichens form the dominant vegetation of the lava field. – Fig. 2: At Devil's Ashpit near the former NASA building. The shrubs are mainly *Juniperus bermudianus*, *Psidium guayava*, *Vitex trifolia*, *Lantana camara*, *Cyperus owanii* and *Casuarina equisetifolia* (SIM, in litt. 2018). – Figs 3–5: 4. ♂ Holotype of *Scopula ascensionis* spec. nov., dorsal view; 5. ♂ holotype of *Scopula ascensionis* spec. nov., ventral view; ♀ paratype of *Scopula ascensionis* spec. nov., dorsal view. Scale bar 5 mm.

S. ascensionis spec. nov. differs from *S. lactaria* (WALKER, 1861) in the absence of transverse lines and black terminal dots. The aedaeagus of *S. lactaria* is smaller, the basal part of the fibula elongated and the ceras shorter.

S. separata (WALKER, 1875) an endemic *Scopula* from St. Helena, is easy to distinguish from *S. ascensionis* spec. nov. by the distinct pattern of the wings and the very different male genitalia (female not studied).

Remarks: As mentioned above, a female was caught at the headlights of a car at Devil's Ashpit in 2017. It was placed in a small tube and laid a few eggs. Three larvae hatched, but breeding them was very difficult, because the collector had to leave the island for St. Helena. On St. Helena, the larvae were provided with a variety of different plants. They accepted *Atriplex semibaccata* and

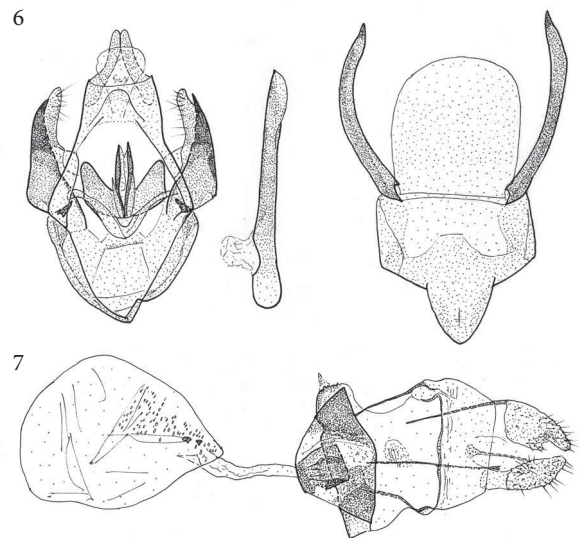


Fig. 6: ♂-genitalia, holotype of *Scopula ascensionis* spec. nov., gen. slide 3582, KARISCH. – Fig. 7: ♀-genitalia, paratype of *Scopula ascensionis* spec. nov., gen. slide 3616, KARISCH.



Fig. 8: Larva of *Scopula ascensionis* spec. nov., lateral view. – Fig. 9: Larva of *Scopula ascensionis* spec. nov., dorsal view. – Fig. 10: Exuviae of *Scopula ascensionis* spec. nov. – Fig. 11: Cremaster of pupa of *Scopula ascensionis* spec. nov.

this plant was used as a food plant during the three weeks stay on the island (on Ascension Island two species of Chenopodioideae occur: *Dysphania ambrosioides* (L.) MOSYAKIN & CLEMANTS and *Chenopodium murale* L., the first one not too far away from the place where the *Scopula* was collected – SIM in litt., 2018). After moving to Cape Town, this food plant was no longer available, and an unidentified *Atriplex* species from a rural locality in the town substituted; as a result, two of the larvae died. The last remaining larva was fed in Germany on another *Atriplex* and pupated at the beginning of May. The moth (a female) hatched on 31st May, indicating that under artificial conditions the development of the species from egg to imago takes about two months.

The larva (Figs 8, 9) is grey with a dark brown median dorsal line, accompanied by a paler brown line on each side; laterally, more or less greyish brown with grey sinuous lines. The head capsule and anal prolegs are chestnut.

Pupa yellowish brown, with the *Scopula*-characteristic diverging pair of cremastral setae (HAUSMANN 2004) (Figs 10, 11).

Etymology: Named after the island, where it occurs.

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