METAMORPHOSIS

LEPIDOPTERISTS' SOCIETY OF AFRICA

Volume 36: 21–31

ISSN 1018–6490 (PRINT)
ISSN 2307–5031 (ONLINE)

New species of *Opogona* Zeller, 1853 from St Helena Island (Lepidoptera: Tineidae: Hieroxestinae).

urn:lsid:zoobank.org:pub:39DC689C-757D-48EE-882D-8ED6E921ACF1
Published online: 29 April 2025
DOI: https://dx.doi.org/10.4314/met.v36i1.5

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Abstract: Thirty-three species of *Opogona* Zeller, 1853 are known from St Helena, a remote island in the South Atlantic Ocean. Thirty-one of these species are endemic, showing the important radiation within this genus, unique to this island in the Atlantic Ocean. Comprehensive field work in 2017 and 2018 led to the discovery of further unknown species. The most distinctive are described in this paper: *O. pallidimargo* **sp. nov.**, *O. duttonae* **sp. nov.**, *O. barnensis* **sp. nov.**, *O. cairnswickseorum* **sp. nov.**, *O. fowlerella* **sp. nov.**, *O. gigantea* **sp. nov.**, *O. keyorum* **sp. nov.**, *O. beardae* **sp. nov.** This increases the number of species of *Opogona* on St Helena to forty-one. Illustrations of adults, genitalia and habitats are given.

Key words: Endemic species, habitats, morphological descriptions.
Citation: Karisch, T. 2025. New species of *Opogona* Zeller, 1853 from St Helena Island (Lepidoptera: Tineidae: Hieroxestinae). Metamorphosis **36**: 21–31.
Peer reviewed

INTRODUCTION

St Helena is a small island, remotely situated in the mid-Atlantic. It is of volcanic origin, being an ancient hotspot of the Mid-Atlantic Ridge. It is quite an old island, having risen above the sea around 14 million years ago. Two large volcanoes formed the maiden island, one in the northeast, the other in the south. Volcanic activity resumed about 7 million years ago and the island drifted with the African plate eastward. Erosion has led to the current shape of the island with steep cliffs on most sides, a hilly landscape in the centre and some rough crests as the remains of the former volcanoes. The island has an area of approximately 128 km^2 now (Ashmole & Ashmole 2000; Fig. 1). Vegetation and fauna have evolved over several million years, resulting in numerous unique, endemic species (Key, Fowler & Pryce 2021).

Figure 1 – Full view of St Helena, from the south (photo: T. Karisch, 2017).

Received: 29 January 2025
Accepted: 06 March 2025

The island was discovered by the Portuguese sailor Joan da Nova in 1502. In the following centuries St Helena was an important stopping place for vessels going around the Cape of Good Hope. Reports indicate that the island was densely covered by woodland. Freshwater was available and livestock, fruit and vegetables were established to provide food for sailors. Trees were cut to repair ships and construct the first buildings. Goats, along with sheep and cattle have had a significant influence on the vegetation of the island. By the 17th century herds of hundreds of goats were reported across the island. As the first reliable reports on the flora and fauna of the island date from around 200 years ago, the overall loss of specialist endemic plants and insects cannot be estimated, but it is known that even bird species have disappeared (Ashmole & Ashmole 2000).

John Charles Melliss (1835–1910) reported the first Lepidoptera species from the island. These were collected before 1875 and sent to Francis Walker (1809–1874) for identification and description (Melliss 1875). Melliss also invited Thomas Vernon Wollaston (1822–1878), a famous Coleopterist, to visit the island. Wollaston was accompanied by his wife Edith (1849–1911). Edith collected moths during her stay from 1875 to 1876 and published the results of her observations and collections in 1879 (Wollaston 1879). This publication was a splendid work, with many descriptions and valuable information on the habitats and (sometimes) biology of the 27 species known at that time, and formed the basis of the knowledge on Lepidoptera for more than 100 years. Although the Musée Royal de l'Afrique Central in Tervuren (Belgium) undertook two big expeditions to St Helena in 1965 – 1967, and the participants collected a huge number of insects, the moths were not exhaustively studied. With exception of some descriptions by Berio (1972) and one by Hampson (1905) nothing was published on this group until 2001 (Karisch, 2001), although Arthur Loveridge (1891–1980), a retired Reptile expert, collected a number of specimens from the end of 1950 until 1970.

In 1995, the author collected a few specimens of *Opogona*. Additional material was collected by Annalea Beard, Philip & Myrtle Ashmole and Howard Mendel at the beginning of the 21st century. These more recently collected specimens were identified by Gaden Sutherland Robinson (1949–2009) from NHMUK (Robinson, 2009), but the identification of the earlier material from 1995 was not possible due to insufficient knowledge at that time.

The DarwinPlus-project 00040 started a new period of comprehensive insect investigations, and through this project several hundred *Opogona* specimens have been collected and were mounted immediately after collecting. Such high-quality material is allowing for the advanced study of this group. Four species have already been described (Karisch, Fowler, Stevens & Dutton 2020; Karisch 2022), and additional descriptions are now published here.

METHODS AND MATERIALS

Examinations are based on material which was collected by the author in 2017 and 2018. The material was collected using a light trap: a 250-W Mercury Vapour bulb was operated by a generator. Most of the specimens were pinned and set immediately after collecting to avoid damaging scales and fringes and to enable barcoding. From each species or "morpho species" and locality, a sample was sent for barcoding to the Center for Biodiversity Genomics, University of Guelph (CCDB), Canada (Ratnasingham & Hebert 2007). The sequencing of the mitochondrial COI-gene was performed by using standard procedures (de Waard *et al.* 2008). A neighbour joining tree was constructed using the tools provided by BOLD (2025) (Kimura 2 parameter, Fig. 2). Likelihood values were not set in the nodes in the constructed tree. Species or "morpho species" with a distance of 1% or more, and in a sufficient condition, were separated and compared with the collection of E. Wollaston in the NHMUK. If there were obvious differences in colouration and pattern to described species, the species was considered a new species and chosen for description. Specimens of most of the species were dissected following the procedure published by Robinson (1976) and the genitalia were embedded in Euparal. Genitalia were photographed using a Zeiss Axioscope 5 microscope with Axiocam 305 colour camera. If details were difficult to recognise, the genitalia were drawn by using a plotter fixed at a Zeiss Stemi SV11 stereo microscope. Photos of the moths were taken using a Canon EOS 600D with 100 mm Macro or an Olympus Tough TG-7 in the laboratory. An Olympus tough TG-806 was used to photograph the different habitats surveyed.

The material referred to is stored in the following collections:

MNVD: Museum for Natural History and Prehistory, Dessau, Germany
NHMUK: Natural History Museum, London, UK
SHNT: St Helena National Trust, Jamestown, St. Helena
SDEI: Senckenberg Deutsches Entomologisches Institut

For the description of genitalia and external morphology, the nomenclature follows Davis (1978). Plant names follow Lambdon (2012) and the International Plant Names Index (2025).

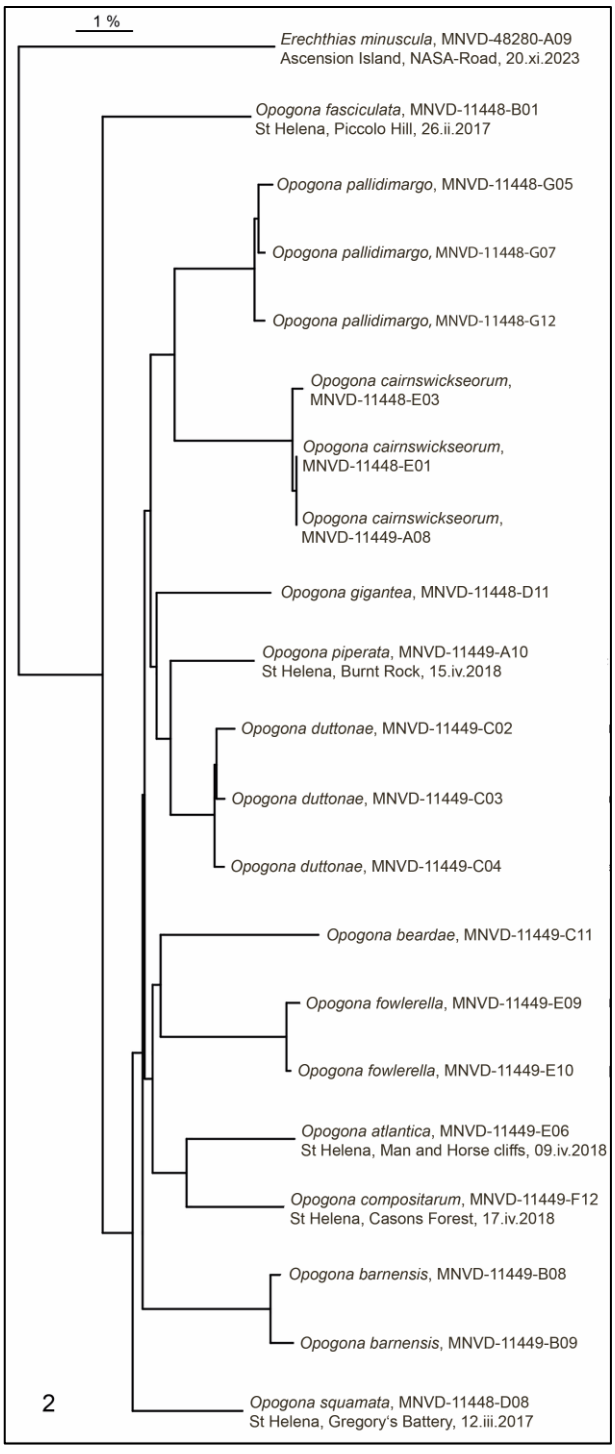


Figure 2 – Taxon ID tree (BOLD Aligner; Kimura 2 Parameter model; derived from BOLD, 2025).

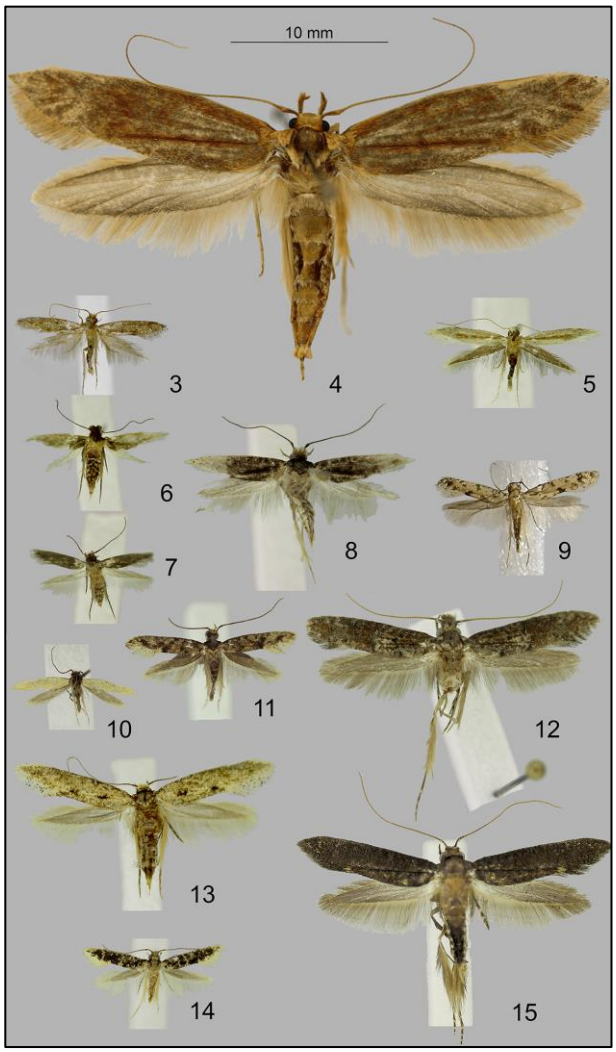
RESULTS

Descriptions

***Opogona gigantea* sp. nov.** (Fig. 4)
urn:lsid:zoobank.org:act:D6135D99-89D9-46DD-A281-9AF569CEE398
Holotype ♀: "ST. HELENA Island 760m, slopes 0.1 km E Mt. Actaeon, *Dicksonia*-thicket, scarce *Melanodendron*, 15°58'19.0"S, 5°42'4.1"W, 08.III.2017 LF (250 W HQL), T. Karisch legit" , "HOLOTYPE ♀, *Opogona gigantea*, Karisch, des. Karisch, 2025" [red label], "Barcoding

CCDB-11448, Sample MNVD-11448-D11" [yellow label]. In SDEI.

Wingspan: ♀: 38 mm
Head and frons cinnamon; brush with short hairs between eyes pale yellowish, antenna monochrome cinnamon; thorax cinnamon brown, 3rd tergit more yellowish, legs greyish-beige, outside more or less cinnamon; forewing beige, densely covered with greyish-brown scales, along costa, fold at A1 and on M2 and M3 before marginal area cinnamon; in marginal area veins covered with cinnamon-brown and grey scales; fringes yellowish and cinnamon.
Hindwing: pale greyish-ochre, veins grey; fringes yellowish.
Female genitalia: not studied.



Figures 3–15 – Adults of *Opogona*: **3** – *Opogona compositella*, ♂; **4** – *Opogona gigantea* **sp. nov.**, ♀, holotype; **5** – *Opogona atlantica*, ♂; **6** – *Opogona barnensis* **sp. nov.**, ♀, paratype; **7** – *Opogona barnensis* **sp. nov.**, ♂, holotype; **8** – *Opogona pallidimargo* **sp. nov.**, ♀, paratype; **9** – *Opogona piperata*, ♂; **10** – *Opogona keyorum* **sp. nov.**, ♂, paratype; **11** – *Opogona cairnswickseorum* **sp. nov.**, ♂, holotype; **12** – *Opogona fasciculata*, ♂; **13** – *Opogona beardae* **sp. nov.**, ♀, holotype; **14** – *Opogona duttonae* **sp. nov.**, ♂, paratype; **15** – *Opogona fowlerella* **sp. nov.**, ♂, paratype.

Diagnosis: By far the largest *Opogona* on the island, therefore due to its size and the cinnamon colour very distinctive.

Biology and habitats: The first instars are unknown, but the larva likely feed in wood or detritus because of its assumed large size. The adult is on the wing in March. Habitat is the cloud forest vegetation (with *Pladaroxylon leucadendron* Hook, *Melanodendron integrifolium* DC., *Dicksonia arborescens* L'Hér.) with enclosed cliffs (Fig. 16).

Etymology: Giganteus = gigantic.

Figure 16 – Habitat of *Opogona gigantea* **sp. nov.** in the cloud forest near the summit of Mt. Actaeon (photo: T. Karisch, 2017).

***Opogona barnensis* sp. nov.** (Figs 6, 7, 17, 18)
urn:lsid:zoobank.org:act:F37AB809-68A0-4C70-9DE1-AE0F756AF358
Holotype ♂: "ST. HELENA Island, The Barn, near summit, 08.IV.2018 TF, T. Karisch legit", "Barcoding CCDB-11449, Sample MNVD-11449-B08" [yellow label], "Gen.-Präp. 4202, präp. Karisch, 2023", "HOLOTYPE ♂, *Opogona barnensis*, Karisch, des. Karisch, 2025" [red label]. In SDEI.
Paratype: 1 ♀, ST. HELENA Island, The Barn, near way down, 08.IV.2018 TF, T. Karisch legit; Barcoding CCDB-11449, sample MNVD 11449-B09, gen.-slide 4203, präp. Karisch, 2023 (SDEI).

Wingspan: ♂ 7.5 mm, ♀ 8.0 mm
Head greyish-brown, frons greyish-beige, between the eyes a brush of hairy greyish-brown scales; palpi of ♂ brown, two times as long as the diameter of the eye, palpi of ♀ pale ochreous grey, 2 ½ times as long as the diameter of the eye; thorax greyish, abdomen greyish-beige, legs pale greyish-beige.
Forewing of male somewhat rectangular (Fig. 7), forewing of female vestigial (Fig. 6), elliptical, with an elongated tip; greyish-brown; in female outer half more greyish-beige; fringes pale greyish-brown.
Hindwing pale beige, greyish dusted.
Male genitalia (Fig. 17): Uncus broad; lobes widely separated, circular, with strong spines in the outer half; vinculum broad, short; saccus very broad, about ¾ of the length of the valve; valve rather narrow, with a slender, elongated cucullus, broadened towards the end, but rounded at the end, sacculus quite narrow, distal bulge with a slight tip, processus digitate, stout.

Phallus straight and rather long, basal broad, tapered towards the apex, but apex itself slightly broadened.
Female genitalia (Fig. 18): Oviscapt broad, stout; apophyses posteriores nearly 1 ½ as long as apophyses anteriores, slender; apophyses anteriores very strong; ductus bursae broad and short, broadened towards the membranous bursa copulatrix; signum a well sclerotized, broad band, divided into two sclerotized tips at the proximal end.

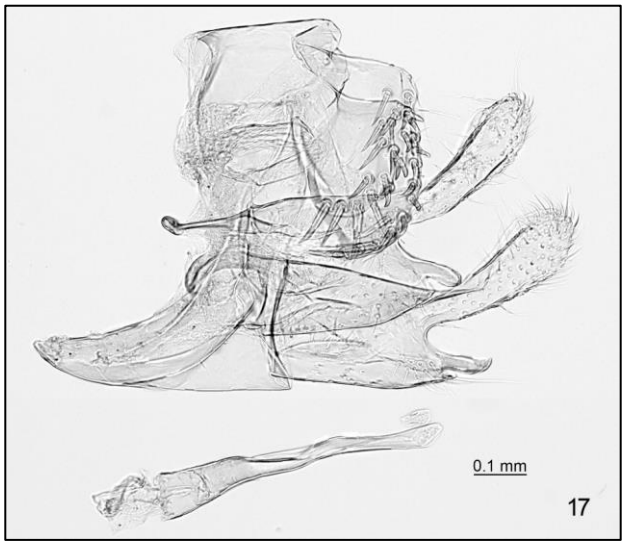


Figure 17 – *Opogona barnensis* **sp. nov.**, ♂-genitalia.

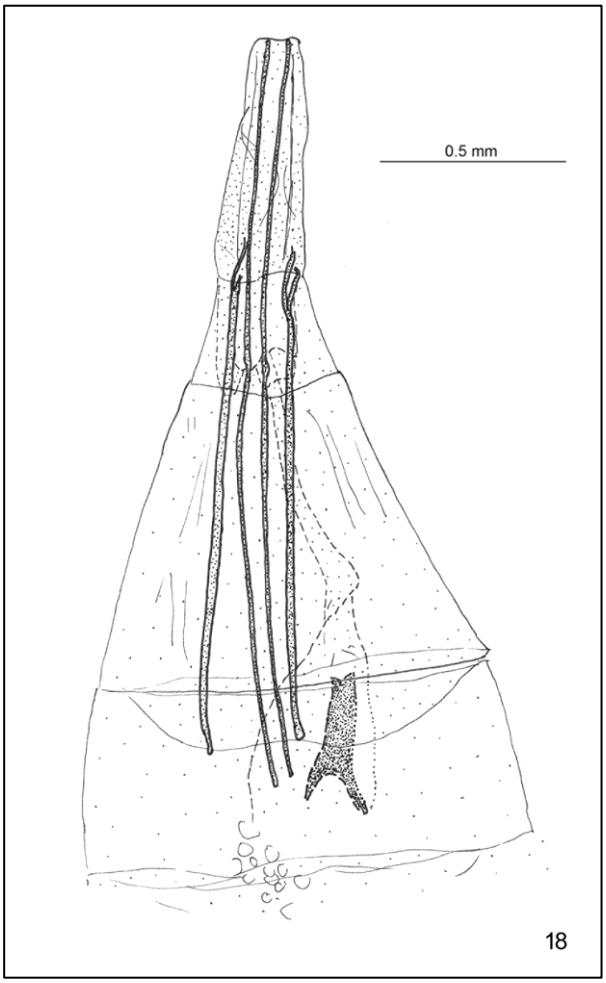


Figure 18 – *Opogona barnensis* **sp. nov.**, ♀-genitalia.

Diagnosis: The male is reminiscent of *O. compositella* (Fig. 3), but is smaller and the wings more brown than blackish-brown. The female of *O. barnensis* **sp. nov.** is similar in forewing colour to males of *O. squamata* Karisch & Stevens, 2020, but the latter has scattered blackish dots on the forewing and the hair-brush between the eyes is ochreous grey instead of greyish-brown and the head greyish-brown instead of brass-coloured.

Biology and habitats: The specimens were found at the beginning of April resting under stones on the Barn, an exposed, large rock on the north-eastern side of the island. The surface is laced with lichen covered stones. Extensive areas are overgrown with introduced *Carpobrotus edulis* (L.) N.E.Br. and scattered unidenified shrubs (Fig. 19). The weather conditions are unfavourable for moths because of regular mist and strong wind. This might be why females show wing reduction, as do some species from the semi-desert at the eastern side of the island. *Opogona barnensis* **sp. nov.** is an interesting example of the differentiation of a species, inhabiting an isolated locality on an isolated island.

Figure 19 – Habitat at The Barn of *Opogona barnensis* **sp. nov.**; view to the cone pile forming the summit of this mountain; yellow, orange and red coloured creeper *Carpobrotus edulis*.

Etymology: The species is named after the type locality, The Barn.

***Opogona pallidimargo* sp. nov.** (Figs 8, 20, 21)
urn:lsid:zoobank.org:act:AABCA3A1-496F-46A1-A605-3872029BC0CE
Holotype ♂: "ST. HELENA Island 240m, Sandy Bay Valley, Baptist's Church, Cliffs with scattered Lantana, Sch. terebint., Juniperus, 15°59'8.0"S, 5°42'56.1"W, 19.III.2017 LF (250 W HQL), T. Karisch legit", "Gen.-Präp., 4143, präp. Karisch, 2023", "Barcoding CCDB-11448, sample MNVD-11448-G12" [yellow label], "Holotypus ♂, *Opogona pallidimargo*, Karisch, des. Karisch, 2025" [red label]. In SDEI.
Paratypes: 9 ♀♀, same data as the holotype, 1 ♀ gen.-slide 4136 (Karisch), 1 ♀ barcoding sample MNVD-11448-G07, 1 ♀ barcoding sample MNVD-11448-G05. 1 ♀ in SHNT, 1 ♀ in NHMUK, 1 ♀ in MNVD, the others in SDEI.

Wing span: ♂ 12.5 mm; ♀♀ 9.0 – 14.0 mm

Head with blackish-brown scales at vertex and a large brush of ochre scales on frons, palpi yellowish-grey, 2½ times as long as the diameter of the eye, antenna basal blackish-brown, segments blackish-brown and yellow annulated; thorax blackish-brown; abdomen pale yellowish-grey; forewing beige, at basis and in the middle densely covered with blackish-brown scales, less in outer third; fringes greyish, intermixed with pale-yellowish scales with dark grey tips.
Hindwing whitish-beige, slightly dusted with grey; fringes pale greyish-beige.
Male genitalia (Fig. 20): Uncus broad; lobes widely separated, ovoid, with very strong spines, covering nearly the half of the width, apical spines weaker; saccus elongated, about ¾ as long as valva, broad v-shaped, arms broad; valve broad, cucullus elliptical, rounded at the end, sacculus divided distally, with a broad bulge ventrally and an cone-like and strongly sclerotized dorsal end.
Aedoeagus quite short, slender, with narrow ends, broadened at the middle.

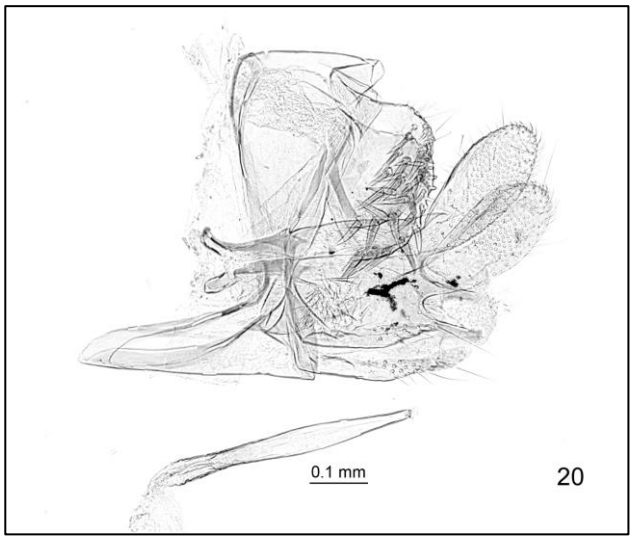


Figure 20 – *Opogona pallidimargo* **sp. nov.**, ♂-genitalia.

Female genitalia (Fig. 21): Oviscapt very elongate; apophyses posteriores about twice as long as apophyses anteriores, slender; lamella antevaginalis slightly stronger sclerotized, trapezoid, broadened apically; ductus bursae very slender, broadened towards the membranous bursa copulatrix; signum a sclerotized, broad band, with two wings proximally, leading into a bulge and a two-armed hook at the end.

Diagnosis: *Opogona pallidimargo* **sp. nov.** might be mistaken for *O. compositarum* (E. Wollaston, 1879) males (Fig. 3), but is larger. *Opogona compositarum* males have a blackish-brown colour on the whole forewing without brightening towards the apex, but a similar ochreous brush of hair-like scales on frons. Females of *O. compositarum* are very different with pale forewings with a black dot in the apex (Karisch, 2022).

Biology and habitats: The moths were collected in March in an open, rocky area, with scattered *Schinus terebinthifolia* Raddi, *Lantana camara* L. and *Juniperus bermudiana* L. shrubs (Fig. 22). Stones and rocks are often covered with lichens.

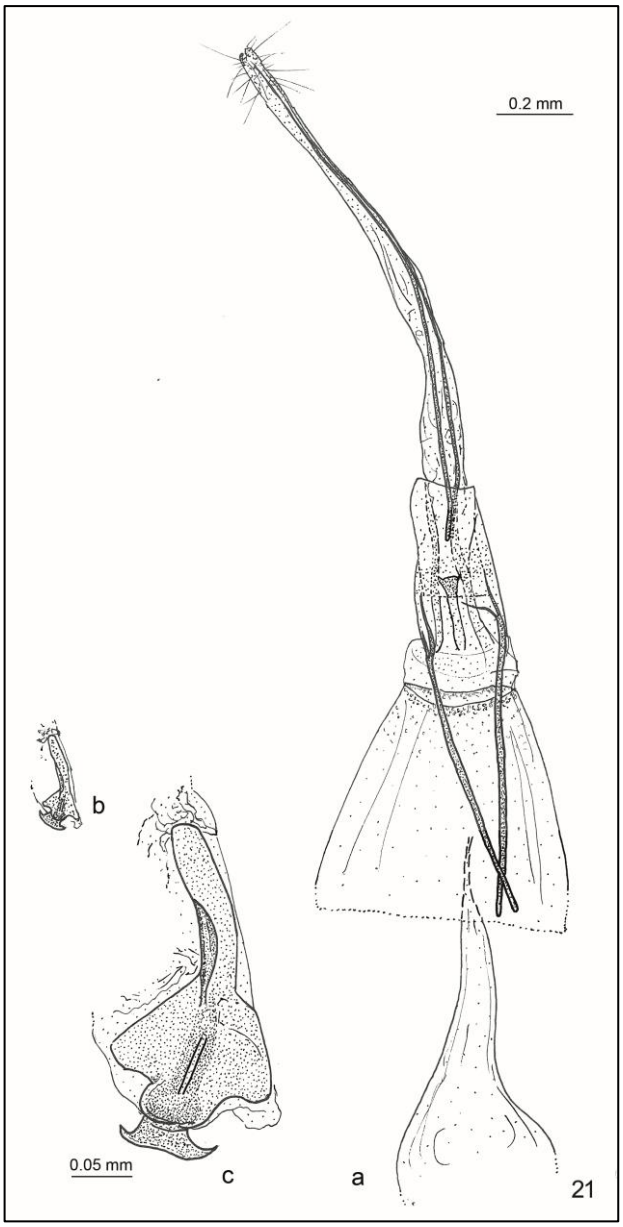


Figure 21 – *Opogona pallidimargo* **sp. nov.**, ♀-genitalia.

Figure 22 – Habitat of *Opogona pallidimargo* **sp. nov.** in Sandy Bay Valley near Baptist's church, in the middle the phonolithic rock called 'Lot', in the background left 'Lot's Wife' (photo: T. Karisch, 2017).

***Opogona keyorum* sp. nov.** (Figs 10, 23, 24)
urn:lsid:zoobank.org:act:471D7AC5-E2AD-4BBB-8337-7FCB2865DE17
Holotype ♂: "St Helena Island 600m, Teutonic Hall, windowsill, 29.x.2022, R. S. Key & R. J. D. Key", "Gen.-Präp. 4241, präp. Karisch, 2023"; "HOLOTYPE ♂, *Opogona keyorum*, Karisch, des. Karisch 2025"[red label]. In SDEI.
Paratypes: 3 ♂♂ (1 ♂ gen.-slide 4259), same data as the holotype, NHMUK, MNVD.

Wingspan: ♂♂: 7.5 – 8 mm
Head, frons and palps pale yellowish, palps 1½ diameter of the eyes; head between antennae and dorsum dark brown; antenna blackish-brown, with whitish or yellowish hairs; thorax blackish brown inclusive collar and tegulae; abdomen greyish-brown, intermixed with whitish or yellowish; forewing whitish-yellowish or yellowish, with irregular and pale brown or orange patches, often obsolescent, costa small blackish-brown from basis to ¼ to ⅓ towards the middle, occasionally with small brown dots in costal field in the middle; fringes whitish or yellowish; hindwing greyish, with whitish or pale yellowish fringes.
Male genitalia (Fig. 23): Uncus, tegumen and vinculum quite broad; lobes widely separated, large, ovoid, pointed ventrally, covered with strong spines in the outer half, the spines inside the lobus more slender; saccus broad, about ⅔ of the length of the valve, U-shaped at end; valve broad, with an elliptical, slender cucullus, sacculus very broad, strong, with a coarse tip, processus stout, broadened towards the end.
Phallus straight, rather short, stout, constricted at ⅓ of the length.
Female genitalia: unknown.

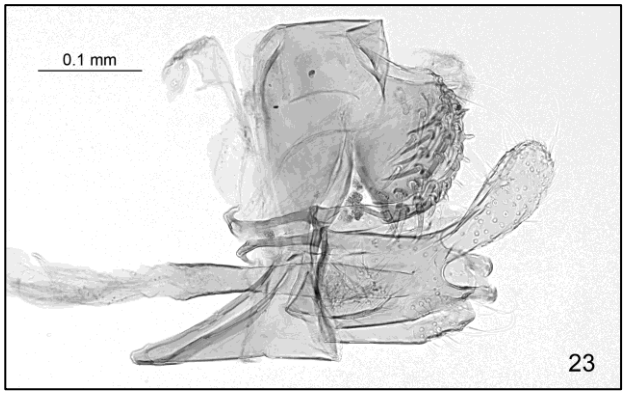


Figure 23 – *Opogona keyorum* **sp. nov.**, ♂-genitalia.

Diagnosis: Similar to O. atlantica (E. Wollaston, 1879) (Fig. 5), but males with yellowish thorax and without brownish dots on the forewings, but with a greyish longitudinal stripe.

Remarks: R. S. & R. Key also collected a female of a small *Opogona*, which could be the female of *O. keyorum* **sp. nov.** because of the distinctive yellow colour of the forewings. But this female does not have the black thorax and the blackish-brown head, which might be sexual dimorphism. To answer the question, the barcoding of male and female is necessary.

Biology and habitats: The species is only known from the type locality (Fig. 25), where it was collected from the windowsill after dying from a pesticide. The surroundings of Teutonic Hall are covered by non-endemic phanerogam vegetation, but the larva might feed on cryptogams.

Etymology: The species is named after Dr Roger S. Key and Rosy Key, Bedale, UK, keen researchers of the invertebrate fauna of St Helena and discoverers of the new species.

Figure 24 – *Opogona keyorum* **sp. nov.**, adult ♂ in situ (photo: R.S. Key, 2022).

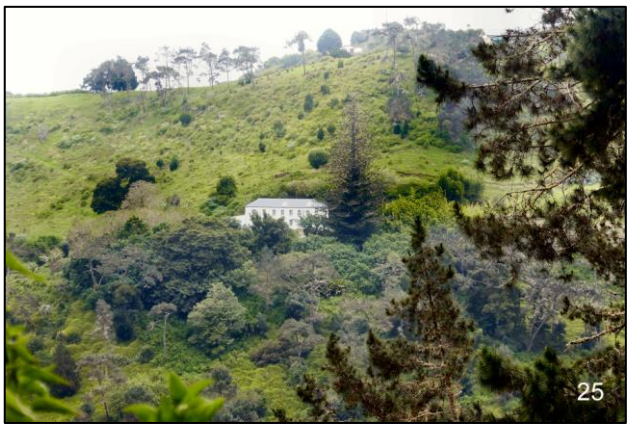


Figure 25 – *Opogona keyorum* **sp. nov.**, view to Teutonic Hall (photo: R.S. Key, 2022).

***Opogona cairnswickseorum* sp. nov.** (Figs 11, 26, 27)
urn:lsid:zoobank.org:act:091ACB04-A5E9-4CD5-8C91-0972FAEBE117
Holotype ♂: "ST. HELENA Island 565m, Peak Dale, Commidendrum robustum-woodland, near Eucalyptus forest, 15°59'16.1"S, 5°44'9.8"W, 01.III.2017 LF (250 W HQL), T. Karisch legit", "Barcoding CCDB-11449, sample MNVD-11449-A08" [yellow label]; "HOLOTYPE ♂, *Opogona cairnswickseorum*, Karisch, des. Karisch, 2025" [red label]. SDEI.
Paratypes: ST. HELENA Island 565m, Peak Dale, *Commidendrum robustum*-woodland, near *Eucalyptus* forest, 15°59'16.1"S, 5°44'9.8"W, 1 ♂ (gen.-slide 4128; barcoding MNVD-11448-E01) 17.III.2017 LF (250 W HQL), T. Karisch legit (MNVD); ST. HELENA Island 240 m a.s.l., Sandy Bay Valley, Baptist's Church, cliffs with scattered *Lantana*, *Sch[inus] tereb[inthifolia]*, *Juniperus*, 2 ♀♀ (1 ♀ gen.-slide 4129; barcoding MNVD-11448-E03) 15°59'8.0"S, 5°42'56.1"W, 19.III.2017 LF (250 W HQL), T. Karisch legit (SHNT, SDEI).

Wingspan: ♂♂ 10.5 – 11 mm ♀♀ 9.5 – 10.0 mm
Head pale ochre with some blackish-brown scales; thorax fuliginous; abdomen pale greyish-yellow; forewing pale

yellowish, dusted with many blackish or brownish scales, a blackish dot in anal angle and some parts where fuliginous scales are arranged to small patches; outer third of the wing less fuliginous intermixed, with a more or less expressed brownish fascia before margin and some blackish-brown scales in the apex; fringes pale yellowish; hindwing grey, more pale yellowish towards the tip; fringes pale yellowish.
Male genitalia (Fig. 26): Uncus very broad, with a triangular tip; lobes rather small, more triangular, with long and strong spines in the outer half; vinculum narrow; saccus broad, about ¾ of the length of the valve, rectangular shaped at the end; valve rather narrow, with an ovoid cucullus, broadened towards and rounded at the end, sacculus broad, distal bulge with a rounded, short tip, processus digitate, quite long, strait.
Phallus slender and quite short, slightly sigmoid.

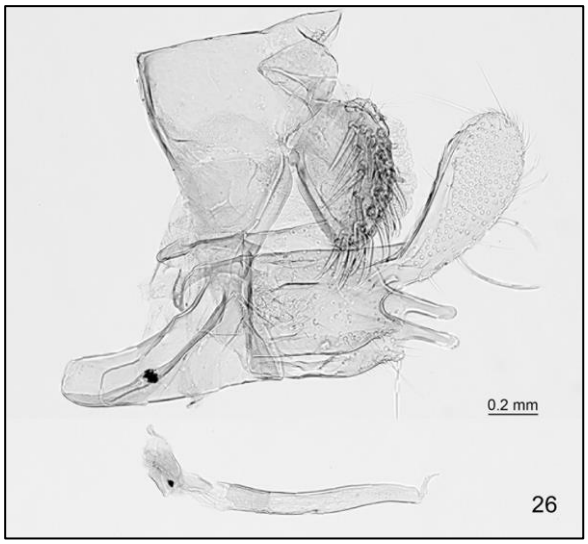


Figure 26 – *Opogona cairnswickseorum* **sp. nov.**, ♂-genitalia.

Female genitalia (Fig. 27): Oviscapt slender, elongated; apophyses posteriores nearly three times as long as apophyses anteriores, very slender; apophyses anteriores slender; ductus bursae slender, long, hardly broadened towards the membranous bursa copulatrix; signum a well sclerotized, broad band, with a tip in the middle and two acute prolongations at the proximal end.

Diagnosis: The species is very similar to *O. piperata* (E. Wollaston, 1879) **comb. nov.** (Fig. 9), but in general with a darker appearance; pattern and dots on forewing not as clearly distinct as in *O. piperata*, hindwing more grey instead of pale yellowish-grey in *O. piperata*. Worn specimens often with a pale yellowish outer third of the forewing without any dots or patches, in *O. piperata* greyish brown dots and patches along margin and in apical area.

Biology and habitats: The moth was collected in March in Gumwood areas (*Commidendrum robustum* (Roxb.) DC.) and open scrubland (Fig. 28) in the area of the former Sandy Bay Crater.

Etymology: Named after Dr Rebecca Cairns-Wicks, Mt Pleasant, St Helena, who has dedicated her life to the conservation of the endemic flora and the restoration of the indigenous vegetation types, and her husband Gregory Cairns-Wicks, who supports Rebecca in all her activities. At the time of the publication, Rebecca Cairns-Wicks leads the St Helena Research Institute in Jamestown.

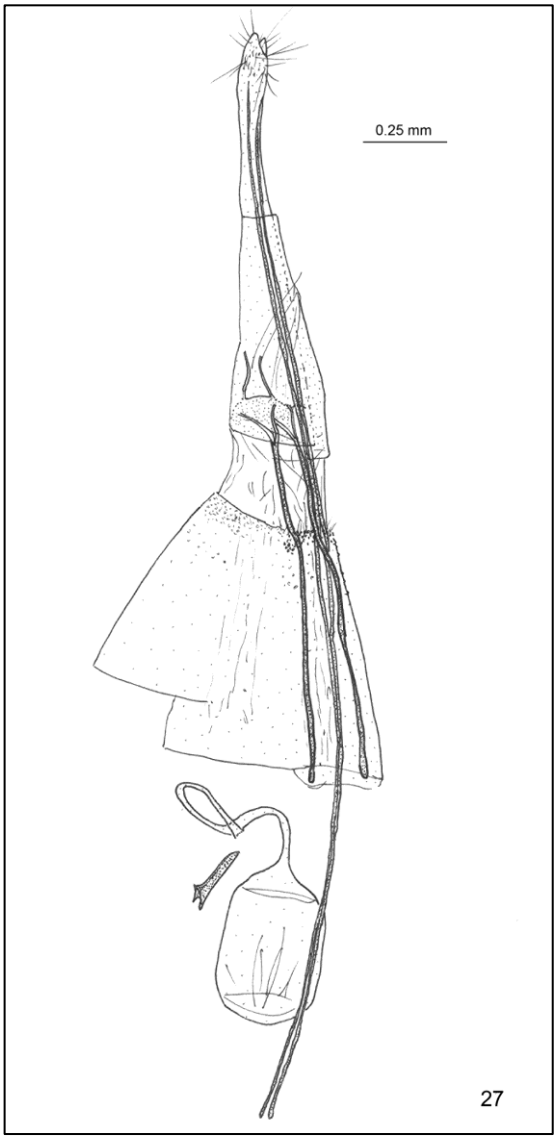


Figure 27 – *Opogona cairnswickseorum* **sp. nov.**, ♀-genitalia.

Figure 28 – *Opogona cairnswickseorum* **sp. nov.**, habitat in Sandy Bay Valley, Baptist's church in foreground (photo: T. Karisch, 2017).

***Opogona beardae* sp. nov.** (Fig. 13)
urn:lsid:zoobank.org:act:F20A4DF4-5080-4FA8-AB93-A10256AB2873
Holotype ♀: "ST. HELENA Island 540m, Napoleon's Tomb, mixed non-native forest, 15°57'28.4"S, 5°41'54.6"W, 11.IV.2018 LF, T. Karisch & A.-J. Dutton leg."; "HOLOTYPUS ♂, *Opogona beardae*, Karisch, des. Karisch, 2025" [red label], "Barcoding CCDB-11449, Sample MNVD-11449-C11" [yellow label]. In SDEI.

Wingspan ♀: 11,5 mm
Head, frons and palps yellowish grey, palps 2 times diameter of the eyes; head between antennae and dorsum with yellowish brush; antenna blackish-brown and yellowish annulated, basal segment blackish-brown; Thorax yellowish-grey, scapulae yellow with blackish-brown scales; Forewing greyish, intermixed with brown scales, two blackish-brown patches on each wing, one below the half of the cell, the other just above the anal angle. Fringes greyish-white, with some broader scales with grey or blackish-brown heads.
Hindwing greyish, with greyish-white fringes.
Genitalia: unknown.

Diagnosis: By its size, the greyish forewings with two blackish patches and the dark-headed scales in the fringes of the forewing, it is a very distinctive species with no similar ones known from St Helena.

Biology and habitats: The specimen was collected in April in a forest consisting of non-native tree species and a few *Lachanodes arborea* (Roxb.) B.Nord. (Fig. 29).

Etymology: Named after Dr Annalea M. Beard, Melrose, UK, who started to study moths of St Helena at the beginning of 21st century. She is responsible for the author continuing his studies on Lepidoptera of St Helena after the initial publications (Karisch 2001, 2003, 2007).

Figure 29 – Habitat of *Opogona beardae* **sp. nov.** at the path to Napoleon's tomb in a forest composed by non-indigenous trees (photo: T. Karisch, 2017).

***Opogona duttonae* sp. nov.** (Figs 14, 30, 31)
urn:lsid:zoobank.org:act:3FB34619-39AA-4266-9B7B-14428ED74647
Holotype ♂: "ST. HELENA Island 540m, Napoleon's Tomb, mixed non-native forest, 15°57'28.4"S, 5°41'54.6"W, 11.IV.2018 LF, T. Karisch & A.-J. Dutton leg.", "Holotype ♂, *Opogona duttonae*, Karisch, des. Karisch, 2025" [red label]. In SDEI.

Paratypes: 2 ♂♂, 7 ♀♀, same data as the holotype, 1 ♂ gen.-slide 4137 (Karisch), 1 ♀ gen.-slide 4134 (Karisch), 1 ♀ gen.-slide 4135 (Karisch), barcoding sample MNVD-11449-C02; 1 ♂ 1 ♀ SHNT, 1 ♀ NHMUK, 1 ♀ MNVD, others SDEI; 1 ♂, St. Helena Island, Casons Forest near Hardings spring, *Podocarpus* forest, 15°58'10.8"S, 5°43'24.8"W, 17.IV.2018, at light, leg. Karisch, Isaac & Stevens, barcoding sample MNVD-11449-C03, MNVD; 1 ♀ St. Helena Island, High Peak, 750m, Restoration area, nr. Ginger patch, 15°58'47.3"S, 5°44'7.6"W, 17.IV.2018, at light, leg. Karisch, Isaac, Stevens, barcoding sample MNVD-11449-C04, SDEI.

Wingspan: ♂♂ & ♀♀: 7 – 8 mm
Head colourful, yellow scales between the eyes, towards scapulum white, frons blackish, with a brush of long, hairlike scales, the upper dark yellow, the lower blackish; palps two times as long as the diameter of the eye, blackish brown with a whitish tip of each segment; antenna blackish-brown and white annulated, basal segment blackish-brown with a white tip; thorax blackish, tergit III more yellowish, first two pairs of legs: whitish, tibia blackish, with whitish band, spurs white, tarsi black, white at the end; abdomen yellowish-grey; forewing yellow, covered with blackish scales, that only small yellow dots and lines are left; fringes yellow.
Hindwing pale greyish-yellow, fringes yellowish-grey.
Worn specimens with less blackish scales on the forewing, that more yellow colour becomes visible.
Male genitalia (Fig. 30): Uncus broad; lobes separated, somewhat triangular, with spines along and close to the outer edge; saccus short, rounded, u-shaped; valve broad, cucullus elliptical, rounded at the end, sacculus with an acute, sclerotized processus and bulged ventrally.
Phallus quite short and broad, straight.

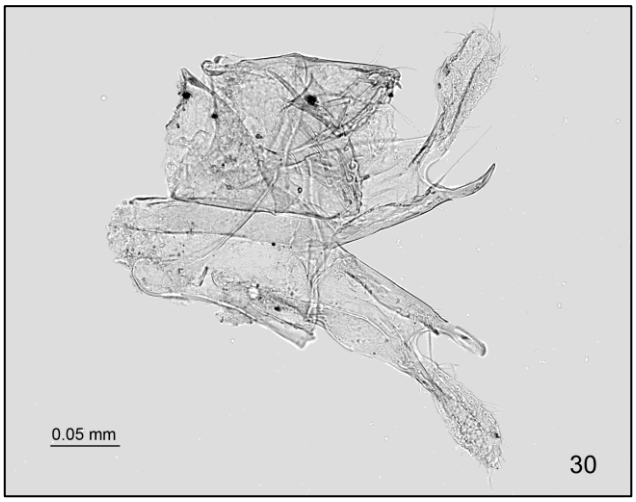


Figure 30 – *Opogona duttonae* **sp. nov.**, ♂-genitalia.

Female genitalia (Fig. 31): Oviscapt elongate, but comparatively short; apophyses posteriores more as twice as long as apophyses anteriores, very slender; apophyses anteriores stronger; ductus bursae very slender, hardly broadened towards the membranous bursa copulatrix; signum a sclerotized, trapezoid plate, bent distally and with a median crest.
Distinctive species.

Biology and habitats: The moths were collected in April in various habitats on the island, mainly in or close to forests in middle or higher altitude.

Etymology: Named after Amy-Jayne Dutton, Kingsley, a former Head of Terrestrial Conservation of the St Helena National Trust, to honour the participation in the field work activities on St Helena and her ongoing help in the author's works.

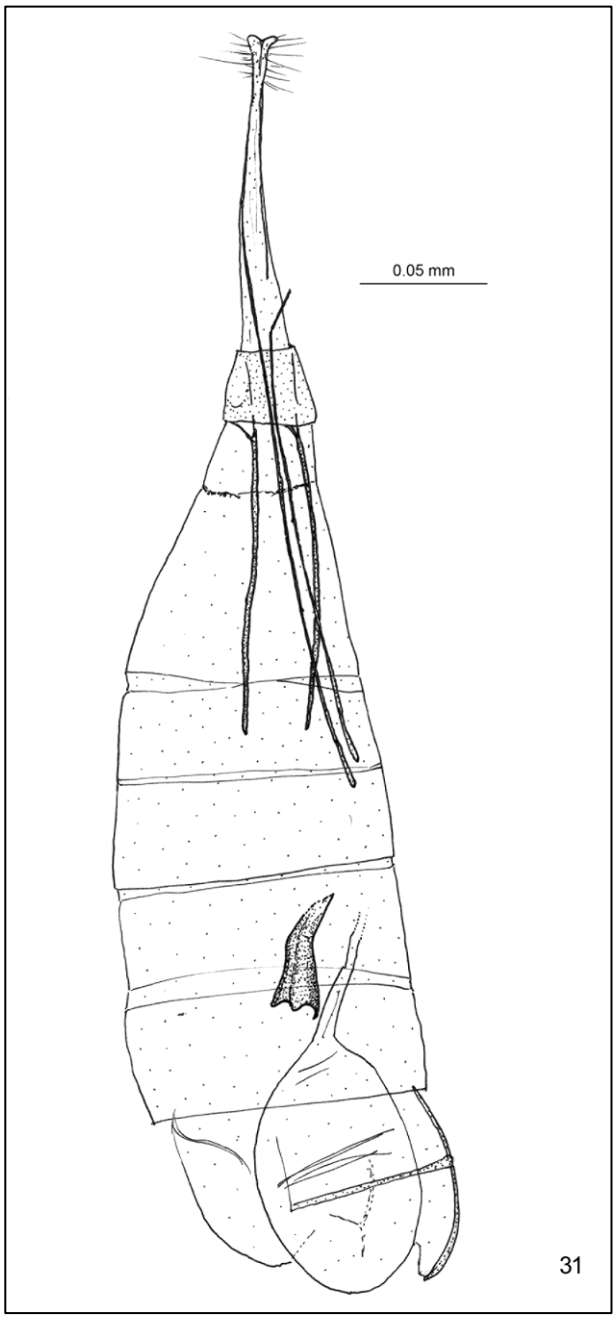


Figure 31 – *Opogona duttonae* **sp. nov.**, ♀-genitalia.

***Opogona fowlerella* sp. nov.** (Figs 15, 32, 33, 34)
urn:lsid:zoobank.org:act:D3295F4D-B7E1-4722-BC1F-17C76190D266
Holotype ♂: "ST. HELENA Island, 565m, Peak Dale, *Commidendrum robustum* woodland, near *Eucalyptus* forest, 15°59'16.1"S, 5°44'9.8"W, 13.IV.2018 LF (250 W HQL), Karisch, Fowler & Stevens legit"; "Holotypus ♂, *Opogona fowlerella*, Karisch, des. Karisch, 2025" [red label]. In SDEI.
Paratypes: ST. HELENA Island, Peak Dale, 565m, C*ommidendrum robustum* woodland, near *Eucalyptus* forest, 15°59'16.1"S, 5°44'9.8"W, 15 ♂♂ 1 ♀ (1 ♂ gen.-slide 3577, barcoding MNVD-11448-D10; 1 ♀ gen.-slide 3579, barcoding MNVD-11448-D18), 4 ♀♀ 01.III.2017, at light, Karisch; same data, 21 ♂♂ 1 ♀ 17.III.2017, at light, Karisch; same data, 21 ♂♂ (1 ♂ barcoding MNVD-11449-E09) 1 ♀ (gen.-slide 4133) 13.IV.2018, Karisch, Fowler & Stevens; Thompson's Wood, 550m, *Commidendrum robustum* and *Acacia-Juniperus* forest, 15°59'43.3"S, 5°44'46.6"W, 1 ♂ (barcoding MNVD-11449-E10) 06.IV.2018, at light, Karisch & Dutton (SDEI, MNVD, NHMUK, SHNT).

Wingspan: ♂♂ 15 – 25.5 mm, ♂♂ 21.5 – 23.5 mm
Head blackish-brown; brush between antenna not as long as in other species, hairs brown, grey at the tips; frons greyish beige to yellow, antenna basal greyish, towards the end brown; palpi greyish-brown outside, yellowish-grey inside; legs greyish; thorax dark greyish-ochre; abdomen greyish-ochre. Forewing dark grey-brown, sometimes scales a bit pink tinged at the basis; some of the scales are lifted that they form transversal lines and bands (Fig. 34), a small yellowish dot at the dorsum near the anal angle; fringes grey-brown.
Hindwing greyish-beige, brightened towards the basis; fringes greyish-beige, darker grey on costa and at apex.
Male genitalia (Fig. 32): Uncus, tegumen and vinculum broad; lobes well separated, rather small, ovoid, densely covered with stronger, but slender spines in the outer half; saccus broad, about ¾ of the length of the valve, the arms forming a V on the inner side; valve narrow, with an elliptical cucullus, rounded at the end, sacculus broad, sclerotized processus small and pointed, positioned ventrally at the sacculus, end of sacculus triangular, with a rounded tip.
Phallus long, slender, straight, slightly broadened at the basis.

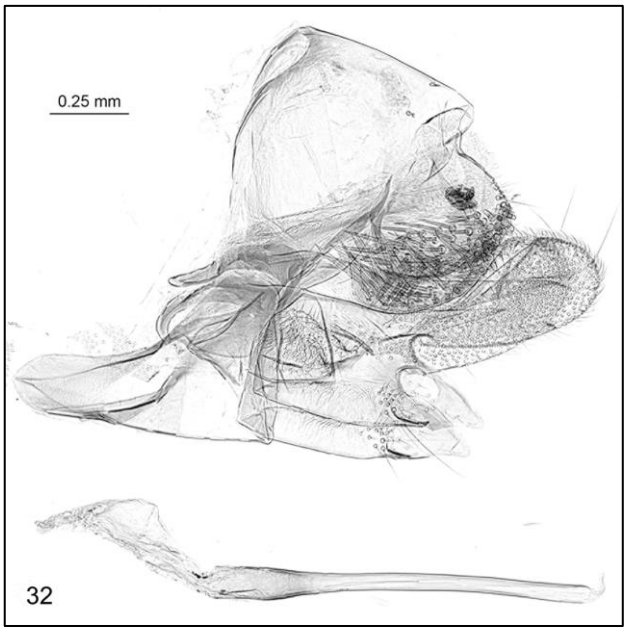


Figure 32 – *Opogona fowlerella* **sp. nov.**, ♂-genitalia.

Female genitalia (Fig. 33): Oviscapt slender, elongated; apophyses posteriores more than two times as long as apophyses anteriores, slender; apophyses anteriores strong; ostium bursae surrounded by lambent sclerotizations, which are connected by a broad sclerotized plate, tapering

towards the ductus bursae; ductus bursae slender, but quite short, gradually broadened towards the membranous bursa copulatrix; signum a small, short band with two acute prolongations at the proximal end.

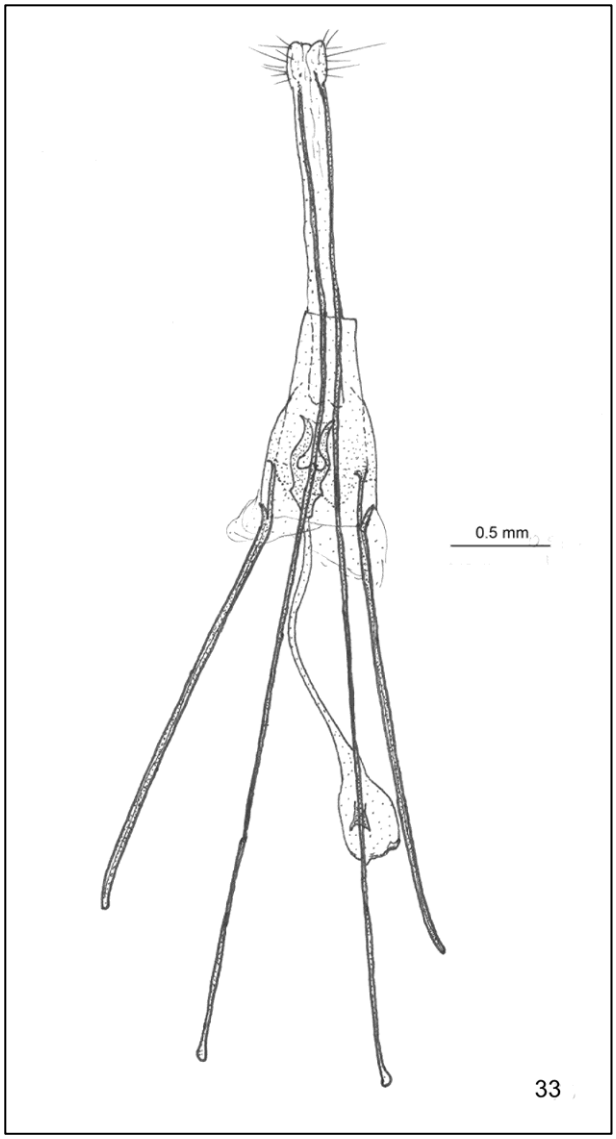


Figure 33 – *Opogona fowlerella* **sp. nov.**, ♀-genitalia.

Figure 34 – *Opogona fowlerella* **sp. nov.**, adult sitting at light (Peak Dale, photo: T. Karisch, 2017).

Diagnosis: *Opogona fowlerella* **sp. nov.** is similar to *O. fasciculata* (E. Wollaston, 1879) (Fig. 12). Most of the specimens are considerably larger as those of the latter; brushes on head of *O. fasciculata* much more pronounced, formed by pale yellowish hairy scales with brown tips; antenna basal covered with hair-like grey scales; tegulae and thorax dark greyish-ochre in *O. fowlerella* **sp. nov.**, beige-grey in *O. fasciculata*, with a broad pale beige margin towards abdomen. Forewing of *O. fowlerella* **sp. nov.** unicolorous, of *O. fasciculata* pied with grey, brown and beige; lifted scales forming on *O. fasciculata* not bands but also patches or semi-circles.

Biology and habitats: The population centre is the Gumwood Forest at Peak Dale (Fig. 35), where the specimens were found quite common in March and April. A single specimen was also collected at another old Gumwood site (Thompson's Wood), some more in 2025 at Piccolo Hill in the eastern part of the island. However, foodplants and biology of the larva are still unknown.

Etymology: The species is named after Liza Fowler, Burnt Rock, St Helena, Invertebrate Officer of the St Helena National Trust, who is very much involved in the invertebrate research on the island and assisted the author during his studies on the island and beyond. The name is a noun in apposition, combined of the surname and the suffix –ella.

Figure 35 – Habitat of *Opogona fowlerella* **sp. nov.**, in old Gumwood Forest at Peak Dale (photo: T. Karisch, 2017).

DISCUSSION

The studies in 2017 and 2018, and the previous investigations by P. & M. Ashmole in 2003, resulted in the description of twelve new *Opogona* species (Karisch, Fowler, Stevens & Dutton 2020; Karisch 2022). The barcoding revealed the existence of at least ten more species, which cannot be described at the moment due to the lack of sufficient material or the worn condition of the specimens. Taking the 27 already known endemic *Opogona* species on the island into account, there should be at least 50 or 60 species for this genus. This is an excitingly high number showing the outstanding radiation of this group on this small island. Unfortunately, the ecology and the biology of the species are poorly understood, but further investigations will show the diversity of specialisation of the *Opogona* larvae. The numbers of endemic Tineidae on other South Atlantic islands is much lower (data derived from De Prins & de Prins 2011–2025, Rafael *et al.* 2020, Robinson 2009 and Wakeham-Dawson 2014): Ascension Island: three species; Tristan da Cunha and Gough: none; Sao Tome, Principe: two (?); Annobon: not yet sufficiently studied; Falklands: none; Fernando de Noronha: none; and Darwins Rock: one.

However, this is not the only example of an island radiation within Lepidoptera, as other islands show radiations in other families, such as *Galagete* Landry, 2002 (Autostichidae) on Galapagos (Landry 2002), or *Hyposmocoma* Butler, 1881 (Cosmopterigidae) on Hawaii (Haines, Schmitz & Rubinoff 2014), and multiple examples on the very old island of Madagascar.

ACKNOWLEDGEMENTS

The field work received funding from DarwinPLUS040 project "Securing the future for St Helena's endemic invertebrates" funded by UK government. The author thanks Jeremy Harris, Amy-Jayne Dutton, Liza Fowler, David Pryce, Martina Peters, Natasha Stevens (formerly or currently St Helena National Trust), Howard Mendel (formerly The Natural History Museum London), Dr Rebecca Cairns-Wicks (St Helena Research Institute) for their support during the field work. The research was undertaken with the relevant permissions from St Helena Government (Isabel Peters, EMD; Julie Balchin, ANRD). Dr. D. Lees was kind enough to allow the author access to the Collections in the Natural History Museum in London and to borrow material. I also thank the team of the Canadian Centre for DNA Barcoding, Guelph, for the barcoding of the adults. Amy-Jayne Dutton helped to improve the text linguistically, and Daniella Sherwood, London, provided advice in naming the moths. The author also thanks the two reviewers for their valuable suggestions.

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