

## Additional records of Pterophoridae from the Cape Verde Islands, with description of a new species of *Agdistis* Hübner

CEES GIELIS<sup>1</sup> & OLE KARSHOLT<sup>2</sup>

<sup>1</sup> Nationaal Natuurhistorisch Museum Naturalis, Department of Entomology, P.O. Box 9517, NL-2300 RA Leiden, The Netherlands; email: C.Gielis@net.hcc.nl

<sup>2</sup> Zoological Museum, Natural History Museum of Denmark, Universitetsparken 15, DK-2100 Copenhagen Ø, Denmark; email: okarsholt@snm.ku.dk

**Abstract.** This paper deals with Pterophoridae collected in the Cape Verde Islands in December 2002. Among the six species recognized one new species, *Agdistis notabilis* sp. n. is described and figured, and one species *Stenoptilodes taprobanes* (Felder & Rogenhofer, 1875) is recorded from the Cape Verde Islands for the first time. An overview of the Pterophoridae of the Cape Verde Islands is given in a table.

**Resumo.** Este trabalho trata de micro lepidópteros da família Pterophoridae colhidos em Dezembro de 2002 nas Ilhas de Cabo Verde. De entre as seis espécies reconhecidas, uma espécie nova, *Agdistis notabilis* sp. n. é descrita e ilustrada, e outra espécie *Stenoptilodes taprobanes* (Felder & Rogenhofer, 1857) é registada pela primeira vez para estas ilhas. Na tabela 1 apresentamos os Pterophoridae actualmente dados como existentes nas Ilhas de Cabo Verde, assim como a sua distribuição por ilha.

### Introduction

The Cape Verde Archipelago consists of nine inhabited and six uninhabited islands, altogether 4033 km<sup>2</sup>, situated in the Atlantic Ocean about 600 km west of Senegal. They are of volcanic origin and have not been connected to mainland Africa. The climate is very dry, with low average rainfall and long periods of drought. Along the coasts and in the mountains the vegetation benefits from some humidity brought by the wind from the ocean.

The islands were uninhabited when they were first visited by Europeans in 1456. The composition of the original vegetation is unknown, since the influence of man over the last 500 years (especially grazing from goats) has had an enormous impact on the vegetation (see Lobin & Ohm 1987 for further details). The number of higher plant species is only 724, 65 of which are considered endemic (Arechavaleta et al. 2005).

The position of the Cape Verde Islands made them a natural stepping-stone on the sea route between Africa (for example during the slave-trade era) or Europe to the New World, and during the 19<sup>th</sup> century several naturalists participating in expeditions used the opportunity during stops at the islands to collect specimens, including Lepidoptera, which they brought back to Europe. It was, however, not until the 1950s that more specific collections by Finnish entomologists resulted in the first overview of the Lepidoptera fauna of the Cape Verde Islands (e.g. Nyström 1958). In the 1980s German entomologists (especially Bernd Traub) stayed for several years on the islands as part of development programs during which they collected Lepidoptera. Based on this extended knowledge Harten (1993) published a checklist of terrestrial arthropods of the Cape Verde Islands. An updated checklist comprising all terrestrial animals and plants has recently been completed (Arechavaleta et al. 2005). The number of Lepidoptera recorded from the islands is still only 188 species, and even though the archipelago is

low in diversity due to its isolated position and dry climate the number will certainly grow considerably when more detailed studies, particularly of its microlepidoptera are undertaken.

The checklist by Harten (1993: 275) included only three species, and the one by Báez & García (2005: 89) only four species of Pterophoridae. Recently Arenberger (2006), based on new material collected by E. & U. Aistleitner, recorded 10 species of Pterophoridae from the archipelago, two of which were identified only to genus. During two weeks of holiday in late December 2002 the second author collected Lepidoptera from the four islands of Sal, Santo Antão, Santiago, and São Vicente. The Pterophoridae, which were identified by the first author, included six species, including an undescribed species of *Agdistis*, which is described below.

### Abbreviations

CG	Collection of Cees Gielis
Gent	Genitalia slide
ZMUC	Zoologisk Museum, Natural History Museum of Denmark

## Species treatments

### *Agdistis tamaricis* (Zeller, 1847)

**Material.** 1♀, Santiago, Tarafal, sea level, 29-30.xii.2002 (O. Karsholt), gent CG 5225 (ZMUC).

### *Agdistis bifurcatus* Agenjo, 1952

**Material.** 1♀, Santo Antão, Ponta del Sol, 100 m, 25.xii.2002 (O. Karsholt), larva on *Limonium* sp. (ZMUC), 7♂, 4♀, same locality but 26.xii.2002 (O. Karsholt), gent CG 5222 (♂), 5221 (♀) (ZMUC, CG).

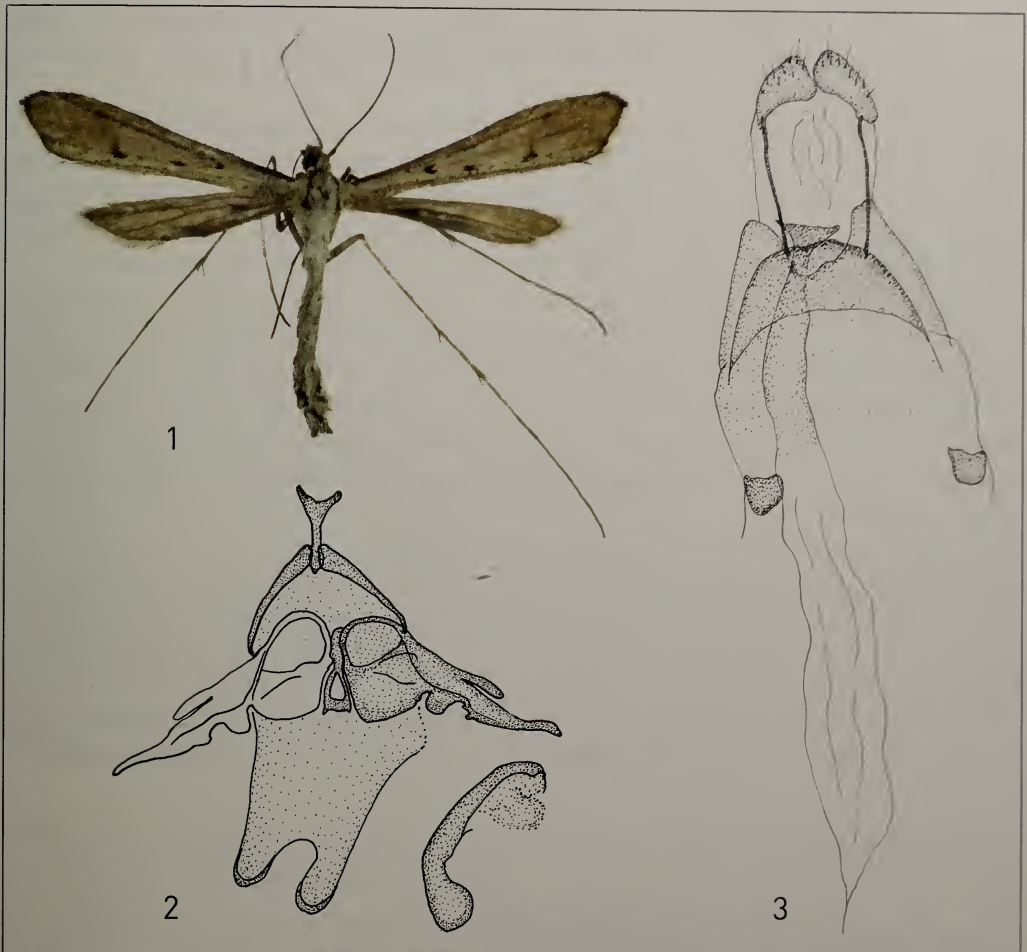
**Biology.** The locality is a north facing slope close to the sea. The adult specimens were caught at night, with the help of a pan-lamp, over *Limonium* sp. (Plumbaginaceae). The larva is recorded as feeding on *Limonium ferulaceum* L. in southern Spain (Huertas Dionisi 1999). This species does not occur in the Cape Verde Islands, but three other *Limonium* species are recorded from Santo Antão (Arechavaleta et al. 2005: 49).

### *Agdistis notabilis* sp. n.

(Figs 1–3)

**Material.** Holotype ♂: "Cape Verde Islands, Santiago, Tarafal, sea level, 29-30.xii.2002, O. Karsholt" (ZMUC). – Paratypes: 2♂, 3♀, same locality and date, genitalia slide CG 5224 (♂), 5223 (♀) (ZMUC, CG).

**Diagnosis.** *Agdistis notabilis* is among the smaller *Agdistis* species. It resembles *A. piccolo* Gielis from Namibia but the markings are less distinct and with fewer individual dark scales on the wing. The female genitalia has a simpler antrum, and the lamina antevaginalis is arched (furcate in *A. piccolo*). The valvae in the male genitalia have an almost triangular shape. A similarly shaped structure is also present in *A. unguica* Arenberger from the Republic of South Africa, but that species has the tip of the valvae



**Figs 1–3.** *Agdistis notabilis* Gielis & Karsholt, sp. n. 1. Adult. Holotype male, Cape Verde Islands, Santiago, Tarafal, sea level, 29–30.xii.2002 (O. Karsholt) (ZMUC). 2. Male genitalia, gent CG 5224 (ZMUC). 3. Female genitalia, gent CG 5223 (ZMUC).

serrated and a pronounced double uncus. The smaller Palaearctic species *A. salsolae* Walsingham and *A. pseudocanariensis* Arenberger have complicated male (valvae and saccular processes) and female genitalia structures (antrum and lamina antevaginalis).

**Description** (Fig. 1). Male, female. Wingspan 12–14 mm. Head appressedly scaled, pale brown-grey. Palps curved up, as long as eye-diameter, pale brown-grey. Antennae 2/3 of wing length, brownish grey. Thorax, mesothorax, tegulae, and abdomen pale brown-grey. Dorsum of abdomen with some small groups of brown scales. Hind legs brown-grey. Spur pairs of unequal length, medial spurs slightly longer than lateral spurs.

Forewings brown-grey, naked field (see Remarks) grey-brown. A small brown spot at 2/3 of costal margin of naked field, another spot at base of naked field, and spots on dorsal margin of naked field at 1/4 and at 2/3. Fringes brown-grey, with narrow basal fringe line along termen. Underside grey-brown. Hindwings and fringes brown-grey.



Underside brown-grey. Venous scales in complex structure, with small black scales along the vein reaching 2/3 wing length; basally long brown-grey scales create 'roof' covering small black scales.

**Male genitalia** (Fig. 2). Symmetrical. Valva gradually narrowing and ending in acute tip. Basal part of valva blister-like, enlarged; mid section with longitudinal cucullar projection and saccular blister; saccular process followed by spiny extension of margin of valva. Tegumen simple. Uncus forked. Saccus simple, triangular. Sternite VIII shaped as bluntly forked plate. Phallus moderately curved, with vesicular extension at tip.

**Female genitalia** (Fig. 3). Ostium flat. Antrum funnel-shaped, extending into tubular ductus bursae. Ductus bursae gradually extending into bursa copulatrix. Lamina antevaginalis arched and covering plate-like sternite VIII. Sternite VIII medially notched at apex. Sternite VII with two laterally positioned small lobes. Apophyses anteriores absent. Apophyses posteriores 1.5X papillae anales. Papillae anales simple.

**Biology.** The moth flies in December. The type series was collected at light. The host plant is unknown.

**Distribution.** Only known from the Cape Verde Islands.

**Remarks.** Arenberger (2006: 69) recorded an "*Agdistis spec.*" from Ilha da Brava based on a single female specimen. The photograph (*loc. cit.* p. 74) of its genitalia resembles that of *A. notabilis*, though the antrum may be differently shaped, and it is possible that this female may belong to *A. notabilis*.

The naked field of the forewing is the triangular area with the tip at the discus reaching towards the termen. This field has fewer and smaller scales than the remaining part of the wing.

**Etymology.** The name reflects the notable spots along the dorsal margin of the naked field of the forewing.

### *Lantanophaga pusillidactyla* (Walker, 1864)

**Material.** 1♀. Santo Antão, Ponta del Sol, 100 m, 25.xii.2002 (O. Karsholt) (ZMUC).

### *Stenoptilodes taprobanes* (Felder & Rogenhofer, 1875)

**Material.** 1♂, 3♀. Santo Antão, Ponta del Sol, 100 m, 25.xii.2002 (O. Karsholt) (ZMUC, CG).

**Remarks.** Recorded for the first time from the Cape Verde Islands.

### *Megalorhipida leucodactylus* (Fabricius, 1794)

**Material.** 2♂. Santo Antão, Ponta del Sol, 100 m, 26.xii.2002 (O. Karsholt) (ZMUC); 1♂, São Vicente, Mindelo Airport, 50 m, 27.xii.2002 (O. Karsholt) (ZMUC).

## Discussion

With ten named and one unidentified species of Pterophoridae this family is well represented in the Cape Verde Islands. Even though this proportion may become smaller when more microlepidoptera become identified, very few other faunas have a represen-

**Tab. 1.** Distribution of Pterophoridae in the Cape Verde Islands. No species of this family has yet been recorded from the island of São Nicolau or from any of the smaller islands.

species	Santo Antão	São Vicente	Sal	Boavista	Maio	Santiago	Fogo	Brava	Island not specified	Endemic	Mainland Africa
<i>Agdistis tamaricis</i> (Zeller, 1847)		X		X		X					X
<i>Agdistis bifurcatus</i> Agenjo, 1952	X										X
<i>Agdistis notabilis</i> sp. n.						X		?		X	
<i>Hellinsia aistleitneri</i> Arenberger, 2006							X			X	
<i>Megalorhipida leucodactyla</i> (Fabricius, 1794)	X	X	X			X	X	X			X
<i>Sphenarches anisodactylus</i> (Walker, 1853)									X		X
<i>Hepalastis pumilio</i> (Zeller, 1873)						X		X			X
<i>Exelastis atomosa</i> (Walsingham, 1886)							X				X
<i>Lantanophaga pusillidactyla</i> (Walker, 1864)	X							X			X
<i>Stenoptilodes taprobanes</i> (Felder & Roggenhofer, 1875)	X										X
<i>Stenoptilia</i> sp.							X			?	

tation of Pterophoridae of about 5% of all Lepidoptera. Only in the Galapagos Islands does the number of Pterophoridae represent about 5% of the total Lepidoptera fauna (B. Landry, in litt.), and this family is generally well represented in oceanic islands. The distribution of Pterophoridae within the Cape Verde Islands is still imperfectly known as can be seen in Table 1. Most species are still known from only one island, and even smaller samples than that used in the present study may include new and little known species. Table 1 also shows that the Pterophoridae of Cape Verde Islands, as with the rest of the Lepidoptera fauna of this archipelago, belong with the Afro-tropical fauna.

### Acknowledgements

Antonio M. F. Aguiar, Camacha, Madeira translated the abstract into Portuguese, Geert Brovad, ZMUC, Copenhagen, Denmark photographed the moth, Bernard Landry, Geneva, Switzerland improved the manuscript, and Paul Sokoloff, UK corrected the English language. We are grateful to all for their help.

### References

- Archavaleta, M., N. Zurita, M. C. Marrero & J. L. Martín (eds) 2005. Lista preliminar de especies silvestres de Cabo Verde (hongos, plantas y animales terrestres). – Consejería de Medio Ambiente y Ordenación Tenerife. 155 pp. [Available on the Internet on: <http://www.gobcan.es/emayot/interreg/atlantico/documentos/LPESCaboVerde.pdf>].
- Arenberger, E. 2006. Pterophoridae von den Kapverden (Lepidoptera). – Zeitschrift der Arbeitsgemeinschaft Österreicher Entomologen 58: 67–76.

- Báez, M. & A. García 2005. Lepidoptera. Pp. 87–90. – *In*: Arechavaleta, M., N. Zurita, M. C. Marrero & J. L. Martín (eds). Lista preliminar de especies silvestres de Cabo Verde (hongos, plantas y animales terrestres). – Consejería de Medio Ambiente y Ordenación Tenerife.
- Gielis, C. 2003. Pterophoroidea & Alucitoidea. – *World Catalogue of Insects* **4**: 1–198. Apollo Books, Stenstrup.
- Harten, A. van 1993. Terrestrial Arthropods of the Cape Verde Islands. A check-list. – *Courier Forschungs-Institut Senckenberg* **159**: 235–309.
- Huertas Dionisio, M. 1999. Estados inmaturos de *Lepidoptera* (X). Seite especies del género *Agdistis* Hübner, [1825] en el suroeste de la Península Ibérica. – *SHILAP Revista de Lepidopterologia* **27**: 149–171.
- Lobin, W. & P. Ohm 1987. Forschungsreisen in ein Entwicklungsland. Biologen arbeiten auf den Kapverdischen Inseln. – *Natur und Museum, Frankfurt am Main* **117**: 301–333.
- Nyström, V. 1958. Macrolepidoptera from the Cape Verde Islands. – *Commentationes biologicae* **17** (7): 1–35.