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On the fauna of the plume moths (Lepidoptera: Pterophoridae) of Lesotho

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ABSTRACT

The fauna of the plume moths of Lesotho is reviewed based on existing collections. Four new species are described: *Platyptilia bowkeri*, *P. sochivkoi*, *Hellinsia basuto* and *Merrifieldia innae*. In total, 16 species of Pterophoridae are found in Lesotho, with 15 of them being recorded in the country for the first time.

KEY WORDS: Lepidoptera, Pterophoridae, Afrotropical, Lesotho, plume moths, new species, checklist.

INTRODUCTION

Although the plume moth fauna of southern Africa has being extensively studied over the last few years (Gielis 2008; Kovtunovich & Ustjuzhanin 2009*a*, *b*; Ustjuzhanin & Kovtunovich 2010), no special studies of the plume moths of Lesotho have been carried out. In a monograph by Kopij (2006) on the fauna of the Lepidoptera of Lesotho, only a single species of Pterophoridae is given, *Agdistis pustulalis* Walker. In 2008 and 2010, during our extensive fieldwork in South Africa, we briefly visited Lesotho and collected a few Pterophoridae. The mountainous terrain of the country provides peculiar environmental conditions and is responsible for a variety of habitats that seem suitable for the plume moths. This paper was prompted by finding 12 species, including four species new to science. Our short stay in Lesotho made it impossible to study the Pterophoridae in detail, and many more species will undoubtedly be found in the future.

Very little is known about the biology of the Pterophoridae. The adult moths are predominantly nocturnal, often attracted to light, but can also fly shortly after sunrise and before sundown, or even during the day if disturbed. The larval stage of the majority of Pterophoridae species is associated with herbaceous plants and shrubs, much more rarely with trees. As a rule, they are oligophages, more rarely mono- or polyphages. In southern Africa, no special studies have been undertaken on the phenology of the plume moths. A few species are recognized to be capable of inflicting insignificant damage to cultivated plants, but no species of this kind have ever been recorded in Africa yet.

MATERIAL AND METHODS

This paper is based on the material collected by the authors and their collaborators in 2008 and 2010, the holdings of the Ditsong National Museum of Natural History (formerly the Transvaal Museum, Pretoria; TMSA), and the private collection of Dr D.M. Kroon (Sasolburg, South Africa). The holotypes of newly described species are deposited in the TMSA and in the Natural History Museum (BMNH, London); paratypes are in the TMSA, BMNH, KwaZulu-Natal Museum (NMSA) and in the private collection of P. Ustjuzhanin and V. Kovtunovich (Russia, Novosibirsk, Moscow; CUK).

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The preparation of genitalia is a necessary condition for the identification of Pterophoridae. Normally, the abdomen is boiled in a 10–15% solution of potassium hydroxide until it becomes semitransparent. After this, it is rinsed thoroughly for permanent preparation and further identification. On the mount, genitalia are put in a small drop of Euparal after being rinsed in water and soaked in 100% ethanol. The mount then is covered with a cover glass. In case the genitalia structures are not well sclerotized, they are stained with Chlorazol Black, to give greater contrast. A permanent preparation dessicates for at least two weeks before it can be studied.

TAXONOMY

Family Pterophoridae Zeller, 1841

Subfamily Agdistinae Tutt, 1907

Agdistis arenbergeri Gielis, 1986

Agdistis arenbergeri: Gielis 1986: 49; 2003: 11. (Type locality: South Africa, Bloemfontein)

Material examined: 1♂ 45 km SW of Mokhotlong, 2200 m, 18.i.2008, at light, P. Ustjuzhanin & A. Sochivko.

Distribution: Lesotho and South Africa (Free State, Western Cape).

Remarks: The species was collected in a mountain valley.

Agdistis danutae Kovtunovich & Ustjuzhanin, 2009

Agdistis danutae: Kovtunovich & Ustjuzhanin 2009: 41. (Type locality: Namibia, Aus)

Material examined: 3♂ 3♀ 45 km SW of Mokhotlong, 2200 m, 18.i.2008, at light, P. Ustjuzhanin & A. Sochivko.

Distribution: South Africa and Namibia.

Remarks: The species was collected in a mountain valley.

Agdistis malitiosa Meyrick, 1909

Agdistis malitiosa: Meyrick 1909: 4. (Type locality: South Africa, Pretoria)

Material examined: 2♀ 45 km 45 km SW of Mokhotlong, 2200 m, 18.i.2008, at light, P. Ustjuzhanin & A. Sochivko.

Distribution: Congo (after Gielis 2003), Kenya, Tanzania, Uganda, Namibia, South Africa.

Remarks: The species was collected in a mountain valley.

Agdistis pustulalis Walker, 1864

Agdistis pustulalis: Walker 1864: 927. (Type locality: South Africa, 'Natal')

This species is recorded in Lesotho by Kopij (2006).

Distribution: Zambia, Malawi, Mozambique, Zimbabwe, Namibia, South Africa and Lesotho.

Subfamily Platyptilinae Tutt, 1906

Platyptilia barbarae Ustjuzhanin & Kovtunovich, 2010

Platyptilia barbarae: Ustjuzhanin & Kovtunovich 2010: 693, figs 10, 47, 51. (Type locality: South Africa, Eastern Cape, Amathole Mts)

Material examined: 1♂ Maluti, Ski Chalet, 28°47'S:28°12'E, 3000 m, 13.i.1997, UV light, *Themeda–Festuca* alpine veld, M. Krüger & B. Dombrowsky.

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Distribution: Lesotho and South Africa.

Remarks: The species is probably restricted to the Drakensberg mountains in KwaZulu-Natal and neighbouring areas in Lesotho.

Platyptilia sabia (Felder & Rogenhofer, 1875)

Mimeseoptilus sabius: Felder & Rogenhofer 1875: pl. 157, fig. 60. (Type locality: South Africa, 'Caffraria')

Material examined: 3♂ Maluti, Ski Chalet, 3000 m, 28°47'S:28°12'E, 15.i.1997, UV light, *Themeda–Festuca* alpine veld, M. Krüger & B. Dombrowsky.

Distribution: Congo (after Gielis 2003), Ethiopia, Tanzania and South Africa.

Remarks: An afromontaine species.

Platyptilia bowkeri sp. n.

Figs 1–3

Etymology: The species is named after Col. James Henry Bowker (1822–1900), a South African soldier and naturalist with a special passion for Lepidoptera.

Diagnosis: Externally, the new species is distinguished well by the absence of the costal triangle on the forewing. In male genitalia, it slightly resembles *P. sabia* in the shape of the valvae, but is easily distinguishable from the latter species by the shape of the uncus and saccus, and also by the cutout on the valvae apex. In female genitalia, it is readily distinguishable from other species by a short scyphiform antrum.

Description:

External characters. Forehead smooth, in tightly pressed light grey scales. Labial palps light grey, rather long, 2× as long as eye diameter, broadened towards apex. Antennae thin, brown. Forewing length in holotype 10.5 mm. Wingspan 17–22 mm (holotype, 22 mm). Forewings ash-grey. Costal triangle absent. Dark mark along costal edge of first lobe; short white mark behind it, in apical part. Dark dot in cleft base. Hindwings uniformly ash-grey.

Male genitalia. Valvae are of even width, with small cutout on apex. Uncus simple, narrowed towards apex. Anellus branches extensive, without additional sprouts, narrowed towards apex. Saccus has projecting outer edge; internal edge has deep narrow cutout. Aedeagus arcuate, with long basal projection located transversely to cekum.

Female genitalia. Anal papillae narrow. Rear apophysises rather thick and narrow, slightly broadened towards ends and bent inwards. Vaginal plates in form of 2 disconnected ovals. Front apophysises long. Antrum short, scyphiform, not well sclerotized. Ductus broad at base, long, narrowed towards inflow in bursa. Bursa large, rounded, with 2 narrow pointed signa.

Holotype: ♂ Maluti Mts, Oxbow, 2530 m, 28°45'S:28°40'E, 21.i.1990. D.M. Kroon (TMSA, genit. prep. 16010).

Paratypes: 1♂ nr Maluti Ski, Chalet Mahlasela Hill Pass, 3000 m, 28°50'S:28°45'E, 22.i.1990, D.M. Kroon (TMSA, genit. prep. 16022); 1♀ Valley Mt Masoleng, 10 km N Mafolaneng, 29°10'S:28°52'E, 24.i.1990, D.M. Kroon (CUK, genit. prep. 055); 1♂ 2♀ 45 km SW Mokhotlong, 2200 m, 18.i.2008, at light, P. Ustjuzhanin & A. Sochivko (CUK).

Distribution: Lesotho.

Remarks: An alpine species. The moths are nocturnal.

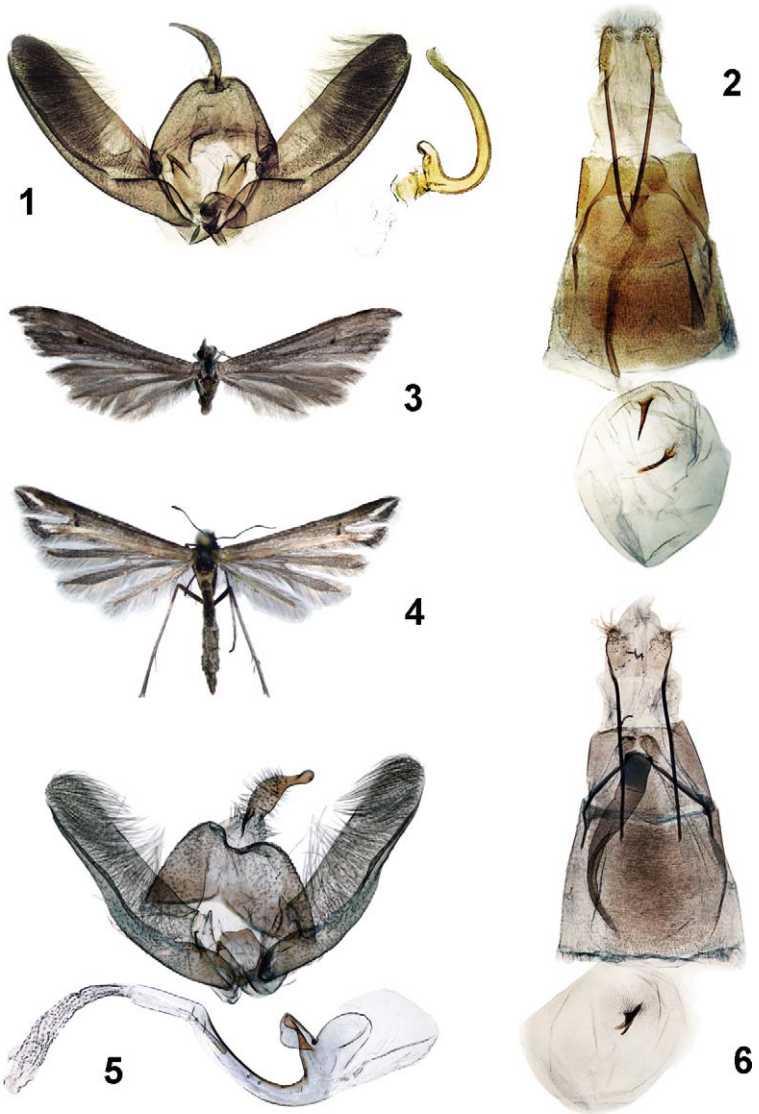
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Platyptilia sochivkoi sp. n.

Figs 4–6

Etymology: The species is named after our colleague Andrey Sochivko (Moscow), who accompanied us on expeditions to South Africa and Lesotho.

Diagnosis: Externally, the new species can be well distinguished by the presence of a bright white mark along the external edge of the first and second lobes of the forewing. In male genitalia, it resembles *Platyptilia periacta* Meyrick, 1910 in the shape of the



Figs 1–6. New *Platyptilia* from Lesotho: (1–3) *P. bowkeri* sp. n., male genitalia (1), female genitalia (2), habitus (3); (4–6) *P. sochivkoi* sp. n., habitus (4), male genitalia (5), female genitalia (6).

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valvae, uncus, and aedeagus, but can be easily distinguished from the latter species by the shape of the saccus and anellus. In female genitalia, it differs well from other South African species by very short signae.

Description:

External characters. Forehead with distinct cone-shaped bundle of brown scales. Labial palps light grey, rather long, 1.5× as long as eye diameter, tapering apically. Antennae thin, brown. Forewing length in holotype 10 mm. Wingspan 16–23 mm (21 mm in holotype). Forewings light brown. Costal triangle indistinct. Cleft base in forewing with elongated dark stroke, sometimes poorly expressed. First and second lobes with distinct white strokes in apical parts (some have strokes on first lobe only). Hindwings uniformly ash-grey. Third lobe with dark brown scales on outer margin from base to midlength.
Male genitalia. Valvae of even width. Uncus simple, with small bulb at apex. Anellus branches narrow and short; additional sprouts not large, narrowed towards apex. Outer edge of saccus has broad hilum, inner edge has deep, wedge-shaped cutout. Aedeagus arcuate, basal projection located obliquely towards cekum.
Female genitalia. Anal papillae narrow, oval. Rear apophysises rather long and thin. Vaginal plates in form of 2 ovals. Front apophysises thin, rather long. Antrum long, narrowed towards inflow to ductus. Bursa large, oval, with 2 small aculeiform signa.

Holotype: ♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, at light, V. Kovtunovich & A. Sochivko (BMNH, № 22894).

Paratypes: 9♂ 6♀ same data as holotype (CUK, except 1♀ in BMNH, № 22895).

Distribution: Lesotho.

Remarks: Alpine species.

Stenoptilia natalensis Ustjuzhanin & Kovtunovich, 2010

Stenoptilia natalensis: Ustjuzhanin & Kovtunovich 2010: 605, figs 38–40. (Type locality: South Africa, KwaZulu-Natal, Howick)

Material examined: 6♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko.

Distribution: Lesotho and South Africa.

Remarks: The species prefers open habitats.

Megalorhipida vivax (Meyrick, 1909)

Trichoptilus vivax: Meyrick 1909: 1. (Type locality: Pretoria, South Africa)

Material examined: 1♂ 45 km SW Mokhotlong, 2200 m, 18.i.2008, at light, P. Ustjuzhanin & A. Sochivko; 1♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko.

Distribution: Gambia, Malawi, South Africa and Lesotho.

Remarks: The species is widely distributed, with few habitat preferences.

Oxyptilus secutor Meyrick, 1911

Oxyptilus secutor: Meyrick 1911: 218. (Type locality: South Africa, Pretoria)

Material examined: 1♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko.

Distribution: Lesotho and South Africa.

Remarks: The species inhabits montane forest.

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Subfamily Pterophorinae Zeller, 1841

Adaina gentilis Meyrick, 1911

Adaina gentilis: Meyrick 1911: 219. (Type locality: South Africa, Pretoria)

Material examined: 5♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko.

Distribution: Lesotho and South Africa.

Remarks: The species prefers montane forests, but also occurs in South African lowlands.

Adaina periarga Meyrick, 1913

Adaina periarga: Meyrick 1913: 267. (Type locality: South Africa, Mpumalanga, Barberton)

Material examined: 1♀ Maluti Ski Chalet, 3000 m, 28°47'S:28°12'E, 15.i.1997, *Themeda–Festuca* alpine veld, UV light, M. Krüger & B. Dombrowsky.

Distribution: Lesotho and South Africa.

Remarks: The species inhabits montane forest.

Hellinsia basuto sp. n.

Figs 7–9

Etymology: The species is named after Basuto, occurring in the state of Lesotho.

Diagnosis: In male genitalia, the new species is close to *Hellinsia pectodactyla* (Staudinger, 1859) in the shape of sacculus on the right valva, but differs from the latter species by a different shape of harpa on the left valva and by the absence of harpa on the right valva. In female genitalia, the new species is similar to *Hellinsia invidiosa* (Meyrick, 1911), from which it differs by a shorter ostium.

Description:

External characters. Forehead smooth, with tightly pressed light yellow scales. Labial palps light yellow, thin, short, 2× shorter than eye diameter. Antennae thin, light brown. Forewing length in holotype 7 mm. Wingspan 14–15 mm (holotype, 15 mm). Forewings yellowish green; barely visible dark dot at cleft base. Hindwings uniformly light grey.

Male genitalia. Valvae asymmetric. Left valva has well-developed harpa with apex, bent at right angle. Sacculus projection on right valva rounds valva apex. Anellus branches slightly bent, equal in length, with small hook at apex. Uncus arcuate, of even thickness, pointed towards apex. Aedeagus short, 2× shorter than valva length; smoothly bent in middle. Cornutus well-developed, located in distal part of aedeagus.

Female genitalia. Anal papillae narrow, prolonged. Rear apophysises long. Sternite 8 rectangular, with legibly tapered angles. Ostium located in left part of sternite 8. Bursa copulatrix oval, without signa.

Holotype: ♂ 45 km SW Mokhotlong, 2200 m, 18.i.2008, P. Ustjuzhanin & A. Sochivko (BMNH, genit. prep. 22868).

Paratypes: 1♂ 2♀ same data as holotype (1♂ 1♀ CUK; 1♀ BMNH, genit. prep. 22869).

Distribution: Lesotho.

Remarks: The species inhabits alpine and mountain forest habitats.

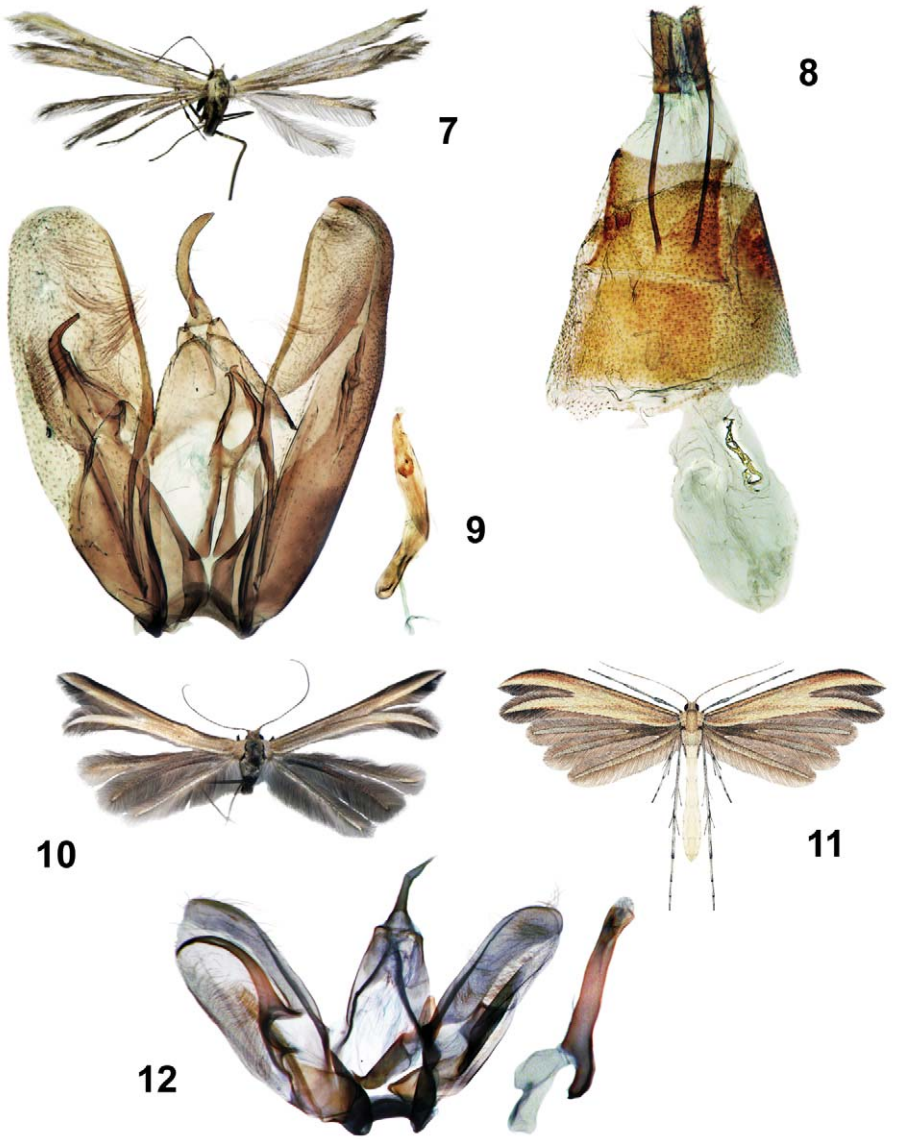
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Merrifieldia innae sp. n.

Figs 10–12

Etymology: The species is named after Inna Kuleshova.

Diagnosis: Outwardly and in the overall habitus of male genitalia, the new species is similar to *Merrifieldia improvisa* Arenberger, described from Kenya, but differs well



Figs 7–12. New plume moths from Lesotho: (7–9) *Hellinsia basuto* sp. n., habitus (7), female genitalia (8), male genitalia (9); (10–12) *Merrifieldia innae* sp. n., habitus, photo (10) and drawing (11), male genitalia (12).

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from the latter by the absence of harpa on the right valva and a larger and bent harpa on the left valva.

Description:

External characters. Forehead smooth, with tightly pressed yellow-brown scales. Labial palps thin, slightly longer than eye diameter. Antennae slender, light brown, slightly indented. Forewing length in holotype 12 mm. Wingspan 18–26 mm (holotype, 25 mm). Forewings yellowish brown; at cleft base is barely noticeable dark dot. Hindwings dull yellow-brown.

Male genitalia. Valvae asymmetric; well-developed sclerotized harpa on left valva, smoothly bent towards upper, outer edge of valva. Outer costal projection of left valva reaches apex. Right valva has similar outer costal projection, but slightly broader than on left. Small triangular ruga in middle of right valva. Uncus slightly curved, pointed towards apex. Aedeagus short, almost straight, with small triangular protrusion at apex.

Holotype: ♂ Valley Mt, Masoleng, 10 km N of Mafolaneng, 29°10'S:28°52'E, 24.i.1990, D.M. Kroon (TMSA, genit. prep. 14807).

Paratypes: LESOTHO: 1♂ Blu Montain Pass, Maloti Mts, 16.i.1973, L. Vari (TMSA, genit. prep. 14720); 2♂ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko. SOUTH AFRICA: *Free State*: 1♂ Golden Gate, GGHNP Survey, 16–25.i.1968, Potgieter & Jones (CUK). *KwaZulu-Natal*: 1♂ Royal Natal Nat. Park, 28°41'20"S:28°56'20"E, 1480 m, 10–12.xii.2004, P. Ustjuzhanin, at light (CUK); 1♂ same data but 8–12.xii.2005, at light, M. Mostovski (NMSA).

Distribution: Lesotho and South Africa.

Notes: The representatives of this genus are mainly distributed in the western Palaearctic. Up to now, only one species, *M. improvisa* Arenberger, has been known from the Afroropics (Kenya; Arenberger 2001). The new species inhabits mountain grassland at the altitude of about 1500 m and higher.

Pterophorus africanus Ustjuzhanin & Kovtunovich, 2010

Pterophorus africanus: Ustjuzhanin & Kovtunovich 2010: 703, figs 77–79.

Material examined: 2♂ Likalaneng, Mohale Dam, 29°27'S:28°05'E 17.i.2008, P. Ustjuzhanin; 1♀ 25 km W Sani Pass, 29°26'S:29°09'E, 17–18.iii.2010, V. Kovtunovich & A. Sochivko.

Distribution: Lesotho and South Africa.

Remarks: The species inhabits grassland and forest at various altitudes.

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REFERENCES

Arenberger, E. 2001. Beitrag zur Pterophordenfauna Kenyas (Lepidoptera). *Zeitschrift der Arbeitsgemeinschaft Österreichischer Entomologen* **53**: 31–36.

Felder, R. & Rogenhofer, A. 1875. Atlas der Heterocera. *In*: *Reise der oesterreichischen Fregatte Novara um die Erde in den Jahren 1857, 1858, 1859 unter den Befehlen des Commodore B. von Wüllerstorf-Urbair*. Zoologischer Teil 2 (2). Wien: Verlag Kaiserlich-königliche Hof- und Staatsdruckerei.

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Terms of Use: https://bioone.org/terms-of-use

GIELIS, C. 1986. *Agdistis arenbergeri* sp. n. from South Africa. *Entomologische Berichten* **46**: 48–51.
———2003. Pterophoroidea & Alucitoidea (Lepidoptera). *In*: *World Catalogue of Insects*. Vol. 4. Stenstrup: Apollo Books.
———2008. Ten new species of Afrotropical Pterophoridae (Lepidoptera). *Zoologische Mededelingen* **82** (6): 43–57.
KOVTUNOVICH, V.N. & USTJUZHANIN, P.YA. 2009*a*. New species and records of plume moths of the genus *Agdistis* Hübner, 1825 (Lepidoptera: Pterophoridae, Agdistinae) from southern Africa. *Amurian Zoological Journal* **1** (1): 37–44.
———2009*b*. New species and records of plume moths of the genus *Agdistis* Hübner, 1825 (Lepidoptera, Pterophoridae: Agdistinae) from Southern Africa. 2. *Amurian Zoological Journal* **1** (3): 216–218.
KOPIJ, G. 2006. Lepidoptera fauna of Lesotho. *Acta zoologica cracoviesia* **49B** (1–2): 137–180.
MEYRICK, E. 1909. Descriptions of Transvaal Micro-Lepidoptera. *Annals of the Transvaal Museum* **2**: 1–28, 8 pls.
———1911. Descriptions of Transvaal Micro-Lepidoptera. *Annals of the Transvaal Museum* **2**: 218–240.
———1913. Descriptions of South African Micro-Lepidoptera. *Annals of the Transvaal Museum* **3**: 267–336.
USTJUZHANIN, P.YA. & KOVTUNOVICH, V.K. 2010. On the fauna of the plume moths (Lepidoptera, Pterophoridae Hübner) of KwaZulu-Natal, South Africa. *Euroasian Entomological Journal* **9** (4): 689–719.
WALKER, F. 1864. *List of the specimens of lepidopterous insects in the collection of the British Museum*. Part XXX. Tineites. London: British Museum (Natural History).

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