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### PLUME MOTHS OF AFGHANISTAN (LEPIDOPTERA, PTEROPHORIDAE)

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New data on *Pterophoridae* from Afghanistan are considered. A checklist of *Pterophoridae* species of the fauna of Afghanistan is presented, as including 32 species of 14 genera. *Merrifieldia tridactyla* is for the first time recorded for the fauna of Afghanistan. The basic literature on the Afghanistan *Pterophoridae* were used in the study.

*Key words:* *Pterophoridae*, plume moths, Afghanistan, fauna, new data.

### INTRODUCTION

Many *Pterophoridae* as *Cossidae* are specific inhabitants of the arid regions of the Palaearctic. Usually deserts are good zoogeographical barriers preventing from mixing the faunas of different zoogeographical regions (Yakovlev & Dubatolov 2013; Yakovlev, 2015; Yakovlev et al., 2015). Until now there were no special publications on *Pterophoridae* from Afghanistan. The first description of a new species of *Pterophoridae*, *Stenoptilia nurollhaki*, from Afghanistan was in the work by Amsel (1967), In a series of works by Ernst Arenberger (1981, 1987, 1995), six new species were described from Afghanistan. In the world catalog of *Pterophoridae* by Gielis (2003), 29 species were indicated for the fauna of Afghanistan. Later Arenberger (2005) in the series 'Microlepidoptera Palaearctica', reported for Afghanistan one more species, *Stenoptilia arida* (Zeller, 1847). Until present, the known fauna of *Pterophoridae* of Afghanistan included 30 species. In this paper, more species are reported basing on collections by I. Pljushtch and his colleagues. *Merrifieldia tridactyla* is for the first time revealed in Afghanistan.

### MATERIALS AND METHODS

This paper is based on specimens of *Pterophoridae* most of which were collected in Bamyan Province of Afghanistan, mainly in the territory of Band-e-Amir National Park. Collections were made in 2010-2013 by the expedition of Ukrainian



entomologists: I. Pljushtch, Ju. Skrylnik, O. Pak. Most of them were captured by light-trap with UV lamp DRV-160, a small portion of specimens was collected in the daytime and twilight with a standard insect net. To identify the species of plume moths we used current literature with the images of genital structures. The diagnostically complicated species were compared with the type specimens stored in the British Museum (BMNH, UK, London).

The preparation of genitalia is a necessary condition for the identification of Pterophoridae. Normally, the abdomen is boiled in 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, a small drop of Euparal is put, followed by genitalia, 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 painted in various dyes, like Chlorozol Black, to reach greater contrast. A permanent preparation desiccates for at least two weeks.

#### List of species

##### *Platyptilia* sp.

**Material.** Bamyan prov., Band-e-Amir, h - 2950 m (Foto 2), 12.07.2013 – 1 male, h - 2950 m, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Note.** This specimen, unidentified to species level, well differs by its appearance from other members of the genus. Because of absence of additional material we cannot make exact identification.

##### *Stenoptilia arida* (Zeller, 1847)

*Pterophorus aridus* Zeller, 1847: 904. (Type locality: Sicily, Messina, Italy).

**Material.** Bamyan prov., Band-e-Amir, 3130 m, 13.07.2013 – 1 male, 1 female, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** South Europe, North Africa; Armenia.

##### *Stenoptilia nurolhaki* Amsel, 1967

*Stenoptilia nurolhaki* Amsel, 1967: 15. (Type locality: Salang – Pass, Hindu Kush, E. Afghanistan).

**Material.** Bamyan prov., Band-e-Amir, h - 2950 m, 12.07.2013 – 4 males, 3 female; h - 3200 m, 14.07.2013 – 1 male; 16 km NW Bamyan town, Akrobat Pass, h – 3400 m (Foto 1), 10.07.2013 – 1 male, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** Afghanistan, Mongolia (Hovd Aimak, Gobi Altai, Sutay Mts.).

##### *Procapperia amira* Arenberger, 1988

*Procapperia amira* Arenberger, 1988: 66. (Type locality: Band-e-Amir, Afghanistan).

**Material.** Bamyan prov., Rokul Valley, h – 3200 m, 05.08.2011 – 1 male, I. Pljushtch.

**Distribution.** Afghanistan, Iran.



Fig. 1. C AFGHANISTAN, prov. Bamyan, Bamyan distr., Qarachaghar Mts., Aq Robot Pass, 4 km N Aq Robot (Akrabat) vill., h=3350m, 34°57'N 67°39'E (photo by Ju. Skrylnik).

*Procopperia kuldschaensis* (Rebel, 1914)

*Oxyptilus kuldschaensis* Rebel, 1914: 272. (Type locality: China, Xinjian).

*Procopperia asiatica* Zagulajev, 1986: 87. (Type locality: Przhevalsk, Kyrgyzstan).

**Material.** Bamyan prov., Band-e-Amir, h - 2950 m, 12.07.2013 – 1 male, 1 female, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** Turkey, Georgia, Kyrgyzstan, Kazakhstan, Uzbekistan, Tajikistan, Mongolia, Southern Siberia (Altai Republic, Kemerovo Province, Tuva Republic), China (Xinjiang), Afghanistan, Pakistan.





Fig. 2. C AFGHANISTAN, prov. Bamyān, Yakawlang distr., 5 km NE Jarukashan vill., Band-e-Amir National Park, Steam, h=3084m, 34°51'N 67°12'E (photo by Ju. Skrylnik).

*Crombrugghia distans* (Zeller, 1847)

*Pterophorus distans* Zeller, 1847: 902. (Type locality: Sicily, Italy).

*Oxyptilus supplementum* Gibeaux, 1997: 432. (Type locality: Parkent, Uzbekistan).

**Material.** Nangarhar prov., 10 km SE Jalalabad, Kabul river bank, h – 600 m, 09.05.2010 – 1male, I. Pljushtch.

**Distribution.** N. Africa, the Canare islands, Europe, Armenia, Georgia, Azerbaijan, Turkey, Iran, Afghanistan, India, Nepal, Uzbekistan, Turkmenistan, Kazakhstan, China (Xinjiang), Southern Siberia.

*Hellinsia chrysocomae* (Ragonot, 1875)

*Leioptilus chrysocomae* Ragonot, 1875: 113. (Type locality: Essonne, France).

*Leioptilus gozmanyi* Bigot, 1970: 285. (Type locality: Central aimak, SE of Somon Bajanzogt, Mongolia).

**Material.** Bamyan prov., Band-e-Amir, h - 2950 m, 12.07.2013 – 4 males, 1 female; h - 3130 m, 13.07.2013 – 1 male; h - 3200 m, 14.07.2013 – 1 male; h - 2900 m, 20.07.2013 – 1 female; I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** Europe, Armenia, Georgia, Kazakhstan, Kyrgyzstan, Southern Siberia, the Far East of Russia, Mongolia, China.

*Wheeleria kabuli* (Arenberger, 1981)

*Pterophorus kabuli* Arenberger, 1981: 21. (Type locality: Kabul, Afghanistan).

**Material.** Kabul prov., Qargha, h-2000 m, 7.05.2010 – 1 male, 15-16.05.2010 – 4 males, 2 females,

I. Pljushtch, O. Pak, E. Ivanova.

**Distribution.** Afghanistan, Azerbaijan, Iran.

*Merrifieldia tridactyla* (Linnaeus, 1758)

*Phalaena Alucita tridactyla* Linnaeus, 1758: 542. (Type locality: Europe).

**Material.** Bamyan prov., Band -e- Amir, h - 2950 m, 12.07.2013 – 1 male, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** N. Africa, Europe, Turkey, Iran, Afghanistan, Kyrgyzstan, Kazakhstan, Southern Siberia, Central Yakutia.

The species is for the first time reported for Afghanistan.

*Merrifieldia alaica* (Caradja, 1920)

*Alucita alaica* Caradja, 1920: 81. (Type locality: Alai Gebirge, Kyrgyzstan).

**Material.** Kabul prov., Paghman-Dara, 2800 m (Foto 3), 02.07.2013 – 1 male, I. Pljushtch.

**Distribution.** Kyrgyzstan, Afghanistan.

*Tabulaephorus thomasi* Arenberger, 1993

*Tabulaephorus thomasi* Arenberger, 1993: 314. (Type locality: Band-e-Amir, Afghanistan).

**Material.** Bamyan prov., Band -e - Amir, h - 2950 m, 12.07.2013 – 1 male, I. Pljushtch, Ju. Skrylnik, O. Pak.

**Distribution.** Afghanistan.





Fig. 3. C AFGHANISTAN, prov. Kabul, Paghman distr., 5 km NW Paghman, Kokh-e-Paghman Mts., h=2650 m, 34°36'N 68°54'E (photo by Ju. Skrylnik).

### Checklist of Pteroporidae of Afghanistan

- Agdistis adactyla* (Hübner, [1823])
- Agdistis ingens* Christoph, 1885
- Agdistis tamaricis* (Zeller, 1847)
- Platyptilia* sp.?
- Stenoptilia arida* (Zeller, 1847)
- Stenoptilia nurolhaki* Amsel, 1967
- Marasmarcha cinnamomeus* (Staudinger, 1870)
- Marasmarcha colossa* Caradja, 1920
- Marasmarcha pulcher* (Christoph, 1885)
- Procapperia amira* Arenberger, 1988
- Procapperia kuldschaensis* (Rebel, 1914)
- Capperia hellenica* Adamczewski, 1951
- Capperia salanga* Arenberger, 1995



- Capperia washbourni* Adamczewski, 1951  
*Crombrugghia distans* (Zeller, 1847)  
*Stangeia siceliota* (Zeller, 1847)  
*Puerphorus olbiadactylus* (Milliere, 1859)  
*Hellinsia chrysocoma* (Ragonot, 1875)  
*Hellinsia distinctus* (Herrich-Schäffer, 1855)  
*Hellinsia pectodactylus* (Staudinger, 1859)  
*Emmelina monodactyla* (Linnaeus, 1758)  
*Tabulaephorus afghanus* (Arenberger, 1981)  
*Tabulaephorus alaica* (Caradja, 1920)  
*Tabulaephorus parthicus* (Lederer, 1870)  
*Tabulaephorus sesamitis* (Meyrick, 1905)  
*Tabulaephorus thomasi* Arenberger, 1993  
*Merrifieldia leucodactyla* (Denis & Schiffermüller, 1775)  
*Merrifieldia malacodactyla* (Zeller, 1847)  
*Merrifieldia tridactyla* (Linnaeus, 1758)  
*Wheeleria kabuli* (Arenberger, 1981)  
*Wheeleria parviflorellus* (Arenberger, 1981)  
*Wheeleria sobeidae* (Arenberger, 1981)

#### **RESULTS AND DISCUSSION**

Thus, 32 species of Pterophoridae are known for Afghanistan to date. The most widely represented genus is *Tabulaephorus* (5 species) and the genera: *Agdistis*, *Marasmarcha*, *Capperia*, *Hellinsia*, *Merrifieldia*, *Wheeleria* (three species in each of them). Most of the species are inhabitants of arid areas. Regarding the area, the plume moths of Afghanistan are more widely represented in the Central Asian region: there are 11 species of them. The South West Palaearctic species are 8. The transpalaearctic species are 7. Two species, *Hellinsia pectodactylus* and *Emmelina monodactyla* are more widespread, they partially inhabit Africa North and America. Three species, *Tabulaephorus afghanus*, *Tabulaephorus thomasi* and *Wheeleria parviflorellus* are endemic in Afghanistan (Fig. 4).

The proposed list of Pterophoridae species is far from being complete. It is more than obvious that in the Afghanistan fauna 10-15 more species will be found. The increase in the number of species is possible due to finding the representatives of genera: *Agdistis*, *Stenoptilia*, *Hellinsia*, *Merrifieldia* and others. The complexity of research in this area nowadays lies in the inaccessibility of this mountainous country, and in the political and economic situation.



Fig. 4. С AFGHANISTAN, prov. Bamyan, Yakawlang distr., Band-e Amir National Park, 3 km E Sabzel vill., h=2910m, 34°47'N 67°10'E, (foto by Ju. Skrylnik).

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