The Pterophoridae fauna of Mali
(Insecta: Lepidoptera)

Petr Ya. Ustjuzhanin, Vasily N. Kovtunovich, Alexey M. Prozorov, Mohamed M. Traore & Günter C. Müller

Abstract

Nine species of Pterophoridae are recorded for the Republic of Mali. All species except *Exelastis pumilio* (Zeller, 1873) are recorded for the fauna of the country for the first time.

**Keywords:** Insecta, Lepidoptera, Pterophoridae, new records, Mali.

Resumen

Se han registrado nueve especies de Pterophoridae para la República de Malí. Todas las especies, excepto *Exelastis pumilio* (Zeller, 1873), se registran por primera vez en la fauna del país.

**Palabras clave:** Insecta, Lepidoptera, Pterophoridae, nuevos registros, Malí.

Introduction

The Republic of Mali (Figure 1), with an area of 1.2 million square kilometers, is the second largest country in West Africa after Niger (UN, 2022). The territory of Mali is spread over 1600 km from north to south and includes five ecoregions (Figure 2; Dinerstein et al. 2017); the vast South Sahara Desert in the northern part of the country (Figure 2A), Sahelian *Acacia* savanna in the central part (Figure 2B), West Sudanian savanna in the southern part (Figure 2C), smaller West Saharan montane xeric woodlands in the north-eastern Kidal Region (Figure 2D), and inner Niger Delta flooded savanna in the central Mopti Region, which is along the River Niger (Figure 2E). Three seasons are distinguished: 1) a dry season from March to June with maximum day temperatures often exceeding 40º C, relative humidity slightly above 20% and almost no rainfall; 2) a rainy season from July to September with daily maximum temperatures exceeding 30º C, relative humidity above 70% and plenty of rain; and 3) an off-season from October to February with cooler nights (Nicholson, 2018). Annual precipitation varies broadly from 100 mm and less in the north to 1500 mm in the extreme south, while the overall rainfall in the whole West Africa tending to decrease (Tano et al. 2023). Annual maximum day temperatures, above 30º C, tending to grow up from decade to decade caused by climate change (Sylla et al. 2016). Reduced rainfall and growing temperatures contribute to desertification spreading southwards from the Sahara Desert resulting in the steady decrease of fertile areas (Nicholson, 2000; Nicholson, 2001; Thomas & Nigam, 2018).
Figures 1-2. 1. Situation of Mali in Africa and the satellite view over it: star marks Bamako. A. Ouronina and Kenieroba. B. Bandiagara (Figure 1). 2. Ecoregions in Mali. A. vast South Sahara Desert. B. Sahelian Acacia savanna. C. West Sudanian savanna D. West Saharan montane xeric woodlands. E. inner Niger Delta flooded savanna.
Mali with a fast-growing population, above 21 million people, is the fifth most populated country in West Africa after Nigeria, Ghana, Ivory Coast, and Niger (UN, 2022). Around 65% of the population lives in the rural areas and are involved in crop and livestock production, which represents around 35% of Gross Domestic Product (Wani et al. 2018). Forests near the villages are slowly replaced with fields as the forest wood is used for charcoal production (Morton, 2007). Agriculture areas expand over time to increase the ability to produce larger amounts of crops due to worsening climate conditions (Akumaga & Tarhule, 2018; Raza et al. 2019). This leads to a decrease of natural habitats and a loss of biodiversity.

No special insect biodiversity surveys have been conducted in Mali except for those devoted to the control of human disease vectors (e.g. Goodwin, 1982). The Pan African tsetse and trypanosomiasis eradication campaign in Mali reported only an unstated number of unidentified species from three Rhopalocera genera (*Colias*, *Lycaena*, *Limenetis*) collected between 2005 and 2013 (DNEF, 2014). Larsen stated that documented data on the Rhopalocera fauna of the country “would be helpful in determining the northern and western limits of certain species” (Larsen, 2005). Altogether 197 taxa of Heterocera (De Prins & De Prins, 2011-2023) were recorded for the country.

Fauna of the family Pterophoridae of some West African countries have been published: Republic of Côte d’Ivoire (Bigot, 1962, 1970; Bigot & Boireau, 2002, 2006), Ghana (Ustjuzhanin & Koptunovich, 2015), Liberia (Ustjuzhanin et al. 2017), Sierra Leone (Ustjuzhanin et al. 2020), and Republic of Guinea (Ustjuzhanin et al., 2022a). While no species except for *Exelastis pumilio* (Zeller, 1873) was known from Mali (Gielis, 2003). Eight out of the nine forementioned species are reported for the first time for the fauna of Mali, none of them is new to science.

**Figure 3.** Collecting sites: A. valley near Ouronina (June 2021). B. valley from uphill near Ouronina (October 2022). C. the Niger Riverbank near Kenieroba (January 2023). D. Malaise trap set on the Niger Riverbank near Kenieroba (January 2023).
Materials and methods

The material of the present study was obtained from by-catches from long-term malaria research conducted from 2008 to 2023 by the University of Sciences, Techniques, and Technologies of Bamako, Mali (USTTB). Adults were collected with Malaise traps, UV-CDC traps, and different types of larger UV traps (Kline et al. 2011; Sheikh et al. 2016) around the following localities: Kenieroba and Ouronina in the Koulikoro Region (Figures 1A, 3A-D), and Bandiagara on the Dogon Plateau (Figure 1B). The collected material was identified and stored partially in the first author’s collection and collection of the USTTB.

List of the Pterophoridae species of the Republic of Mali

_Deuterocopus socotranus_ Rebel, 1907

Type locality: W Socotra [YEMEN].


_Titanoptilus serrulatus_ Meyrick, 1935

Type locality: NIGERIA N, Azare.

Material examined: MALI, Ouronina Camp, N 12º6’, W 8º24’, 1 δ, 10-30-IX-2015, Sáfián Sz. leg.; MALI, 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 δ, X-2022, the USTTB field team leg.


_Stenoptilodes taprobanes_ (Felder & Rogenhofer, 1875)

_Amblyptilia taprobanes_ Felder & Rogenhofer, 1875. _Reise Novara_, pl. 140, fig. 54

Type locality: CEYLON, [SRI LANKA].


Type locality: Hawaii, [USA].

= _Amblyptilia seeboldi_ Hofmann, 1898. _D. ent. Zeit. Iris, 11(1),_ 33

Type locality: Akbès, Syria.

= _Platyptilia terlizzii_ Turati, 1926. _Atti della Società Italiana di Scienze Naturali e del Museo Civico di Storia Naturale di Milano, 65(1),_ 67

Type locality: Derna, Cyrenaica, [Libya].

= _Amblyptilia zavatterii_ Hartig, 1953. _Bollettino della Società entomologica italiana, 83, 67

Type locality: Zannone Island, Italy.


Type locality: Mahé, Beau Vallo, SEYCHELLES.


Type locality: Anara, ca 14 miles NNE of Kaduna, N NIGERIA.

Material examined: MALI, Dogon Plateau, at light, 9 ex. XI-2010, V. Kravchenko leg; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 δ, 01-05-IX-2021, R. & L. Yakovlev, A. Prozorov leg.; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 9, 18-IX-2021, the USTTB field team leg.; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 4 ex, X-2022, the USTTB field team leg.; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 4 ex, X-2022, the USTTB field team leg.
leg.; Kangaba Distr., 25 km NW Kangaba, 100 km W Bamako, Mature deciduous Forest Savanah Mosaic, 1 ♀, IX-2012, the USTTB field team leg.

Distribution. Widespread throughout tropical and subtropical regions (Ustjuzhanin et al. 2022b).

New species for Mali.

_Megalorhipida leucodactylus_ (Fabricius, 1794)

_Pterophorus leucodactylus_ Fabricius, 1794. *Ent. syst.*, 3(2), 346

Type locality: Americae meridionalis [VIRGIN ISLANDS].


Type locality: SIERRA LEONE.


Type locality: South Hindostan [INDIA].


Type locality: Ceylon [SRI LANKA].


Type locality: Uooluolu, Maui, Hawaii Islands [USA].

= _Trichoptilus ochroductylus_ Fish, 1881. *Can. Ent.*, 13, 142

Type locality: Texas, USA.


Type locality: Port Moresby, NEW GUINEA.


Type locality: St. Vicent, CAPE VERDE ISLANDS.


Type locality: Carnarovon, AUSTRALIA.

= _Trichoptilus ralumensis_ Pagenstecher, 1900. *Zoologica*, 29, 239

Type locality: Ralum, BISMARCK ISLANDS.


Type locality: Galapagos Islands ECUADOR.


Type locality: Palestine, Jerusalem [ISRAEL].

Material examined: MALI, Dogon Plateau, at light, 2 ♀, XI-2010. V. Kravchenko leg; Ouronina Camp, N 12º6’, W 8º24’, 1 ♂, 10-30-IX-2015, Sáfián Sz. leg.; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 ♂, X-2022, the USTTB field team leg.

Distribution. Widespread throughout tropical and subtropical regions. (Ustjuzhanin et al. 2022).

New species for Mali.

_Pritchotilus tara_ Ustjuzhanin & Kovtunovich, 2011


Type locality: Uzuzu Hill, Manizimu Forest Reserve, 25 km E of Mangochi, Mangochi District, MALAWI.


Type locality: Kibiriizi, Kigoma District, TANZANIA.

Material examined: MALI, 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 ♂, 18-IX-2022, R. and L. Yakovlev, A. Prozorov leg.; Kangaba Distr., 25 km NW Kangaba, 100 km W Bamako, Mature deciduous Forest Savanah Mosaic, 1 ♂, IX-2012, the USTTB field team leg.; 80 km SW of Bamako, near Ouronina, N 12º6’, W 8º24’, 1 ♂, X-2022, the USTTB field team leg.

Distribution: Malawi, Tanzania (Kovtunovich et al. 2014), Mali. New species for Mali.

_Sphenarches anisodactylus_ (Walker, 1864)


Type locality: SRI LANKA.
Type locality: AUSTRALIA.

Type locality: NEW HEBRIDES.

*Platyptila pygmaeana* Strand, 1913. Archiv für Naturgeschichte, 78(A) (1912) (12), 30-84, pls 1-2
Type locality: Benitogebiet [EQUATORIAL GUINEA].

*Sphenarches chroesus* Strand, 1913. Archiv für Naturgeschichte, 78(A) (12), 66
Type locality: Alén, Benitogebiet, [Equatorial Guinea].

*Megalorhipida rishwani* Makhan, 1994. SHILAP Revista de lepidopterología, 22, 353
Type locality: SURINAME.

Material examined: MALI, 80 km SW of Bamako, near Ouronina, N 12°6’, W 8°24’, 1 ♂, 1 ♀, X-2022, the USTTB field team leg.

Distribution: Nepal, Japan, China, Sri Lanka, India, Taiwain, Thailand, Cambodia, Vietnam, Malaysia, Indonesia, Solomon Islands, New Guinea, Bismarck Islands, Australia, Cameroun, Seychelles, Reunion Island, Madagascar, Kenya, Tanzania, Zaire, Gambia, Guinea, Nigeria, Tchad, Malawi, Swaziland, Cote d’Ivoire, Ghana, USA, Brazil, Dominica, Grenada, Panama, Virgin Islands, Bahamas, St. Thomas, Puerto Rico, Peru, Paraguay, Fiji Islands, New Hebrides, Tonga Islands, New Caledonia, Palau, Bonin Island, Guam (De Prins & De Prins, 2023), Mali. New record for Mali.

**Exelastis pumilio** (Zeller, 1873)

Type locality: Dallas, Texas, USA.

= *Marasmarcha liophanes* Meyrick, 1886. Trans. ent. Soc. Lond., 1886, 19
Type locality: Saint-Denis, RÉUNION ISLAND [FRANCE].

Type locality: St. Croix, VIRGIN ISLANDS [USA].


**Hellinsia aethiopicus** (Amsel, 1963)

Type locality: Gembí, ETHIOPIA.

Material examined: MALI, Dogon Plateau, at light, 1 ♂, XI-2010, V. Kravchenko.

Distribution: Democratic Republic of the Congo, Ethiopia, Ghana, Nigeria, South Africa (De Prins & De Prins, 2023), Mali. New record for Mali.

**Hellinsia namizimu** Kovtunovich & Ustjuzhanin, 2014

Distribution: Zambia, Malawi (De Prins & De Prins, 2023), Mali. New species for Mali.
Acknowledgements

We are grateful to the late Prof. Dr. Vasily D. Kravchenko (Tel Aviv University, Israel / USTTB, Bamako, Mali) for his dedicated entomological work in Mali: operating trapping systems, training local entomologists, and taking care of the collected material in harsh conditions. We are thankful to the USTTB which allowed us to use their field station near Ouronina, numerous village councils that approved our activities, and citizens of the surrounding villages that kindly tolerated our activities in their land.

References


Crops Adaptation and Strategies to Tackle Its Outcome: A Review. Plants, 8(2), 34. https://doi.org/10.3390/plants8020034 PMid:30704089 PMCid:PMC6409995


*Petr Ya. Ustjuzhanin
Altai State University
Lenina, 61
RUS-656049 Barnaul
RUSIA / RUSSIA
E-mail: petrust@mail.ru
https://orcid.org/0000-0002-5222-2241

Vasily N. Kovtunovich
Moscow Region
Odintsovsky Distr.
RUS-143039 Moscow
RUSIA / RUSSIA
E-mail: vasko-69@mail.ru
https://orcid.org/0000-0001-5091-4263

y / and

Biological Institute
Tomsk State University
Lenina Prospekt, 36
RUS-634050 Tomsk
RUSIA / RUSSIA
THE PTEROPHORIDAE FAUNA OF MALI

Alexey M. Prozorov
University of Sciences, Techniques and Technologies of Bamako
BP 1805 Bamako
MALI / MALI
E-mail: alexeymprozorov@gmail.com
https://orcid.org/0000-0002-5668-0741

Mohamed M. Traore
University of Sciences, Techniques and Technologies of Bamako
BP 1805 Bamako
MALI / MALI
E-mail: mohamedmoumine@gmail.com
https://orcid.org/0000-0002-0586-6706

Günter C. Müller
University of Sciences, Techniques and Technologies of Bamako
BP 1805 Bamako
MALI / MALI
E-mail: guntercmuller@hotmail.com
https://orcid.org/0000-0002-7024-0179

*Autor para la correspondencia / Corresponding author

(Recibido para publicación / Received for publication 12-XI-2023)
(Revisado y aceptado / Revised and accepted 25-XII-2023)
/Publicado / Published 30-VI-2024)