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## ***Mariaeia* DUFRANE, 1945, a lasiocampid genus misplaced in the Chrysopolomidae (Insecta: Lepidoptera)**

**Alexander V. GURKOVICH & Vadim V. ZOLOTUHIN**

### **Abstract**

The genus *Mariaeia* DUFRANE, 1945 with type species *Mariaeia kivensis* DUFRANE, 1945 is transferred from the Chrysopolomidae into the Lasiocampidae and considered to be a synonym of *Philotherma* MÖSCHLER, 1847, comprising a group with 2 included species so far.

The recorded taxonomic act leads to the following new synonymies:

*Philotherma* MÖSCHLER, 1887

= *Mariaeia* DUFRANE, 1945, syn. nov.

*Philotherma (Mariaeia) spargatana* STRAND, 1912

= *Mariaeia kivensis* DUFRANE, 1945, syn. nov.,

= *Philotherma ponera* HERING, 1928, syn. nov.

*Philotherma (Mariaeia) spargata* (HOLLAND, 1893)

= *Philotherma nigratarsis* STRAND, 1912, syn. nov.,

= *Philotherma dentata* AURIVILLIUS, 1906, syn. nov.

Redescriptions of both species included are given.

## Zusammenfassung

Die Gattung *Mariaeia* DUFRANE, 1945 mit der Typus-Art *Mariaeia kivensis* DUFRANE, 1945 wird von den Chrysopolomidae zu den Lasiocampidae gestellt und als ein Synonym von *Philotherma* MÖSCHLER, 1847, betrachtet, welche bisher eine Gruppe mit 2 zugehörigen Arten umfasst.

Der angegebene taxonomische Vorgang führt zu den folgenden neuen Synonymien:

*Philotherma* MÖSCHLER, 1887

=*Mariaeia* DUFRANE, 1945, syn. nov.

*Philotherma (Mariaeia) spargatana* STRAND, 1912

= *Mariaeia kivensis* DUFRANE, 1945, syn. nov.,

= *Philotherma ponera* HERING, 1928, syn. nov.

*Philotherma (Mariaeia) spargata* (HOLLAND, 1893)

=*Philotherma nigratarsis* STRAND, 1912, syn. nov.,

=*Philotherma dentata* AURIVILLIUS, 1906, syn. nov.

Redeskriptionen beider zugehörigen Arten werden gegeben.

Key words: Lepidoptera, Chrysopolomidae, Lasiocampidae, Africa, taxonomy, new synonymy.

## Introduction

Shortly before, an article on a limacodid genus misplaced in the Lasiocampidae was published (ZOLOTUHIN & SOLOVYEV, 2008) and a new genus *Shangrilla* ZOLOTUHIN & SOLOVYEV was there established. Now we are dealing with the contrary situation when a lasiocampid species was described within Chrysopolomidae (later considered as Limacodidae: Chrysopolominae) with subsequent erection of a new genus *Mariaeia* Dufrane, 1945. This work is devoted to a correction of the situation.

The type material used for the study is kept in Koninklijk Belgisch Instituut voor Natuurwetenschappen, Rijksmuseum Stockholm, Carnegie Museum of Natural History, Zoologisches Museum der Humboldt Universität zu Berlin and additional material was also studied from the Museum Royal of African Congo (Tervuren). All museums are stipulated and the following abbreviations are used for them in the text:

CMNH	Carnegie Museum of Natural History (Pittsburgh, PA, U.S.A.);
ISNB	Koninklijk Belgisch Instituut voor Natuurwetenschappen (Bruxelles, Belgique) [Institut royal des Sciences naturelles de Belgique];
MNHN	Museum National d'Histoire Naturelle (Paris, France);
MRAC	Museum Royal of African Congo (Tervuren, Belgium);
RMS	Naturhistoriska Riksmuseet Stockholm (Sweden);
ZMHU	Zoologisches Museum der Humboldt Universität zu Berlin (Germany);
ZSM	Zoologische Staatssammlung München (Germany).

Plates given are produced with CorelPhotoPaint X3; images of the typical specimens have not been digitally altered. All plates for the article were produced by A. GURKOVICH.

## Systematic part

### ***Philotherma* MÖSCHLER, 1887**

Abh. senckenb. naturforsch. Ges. **15**: 80.

Type-species: *Philotherma jacchus* MÖSCHLER, 1887 - Abh. senckenb. naturforsch. Ges. **15**: 81, pl. fig.4, by monotypy.

*Philotherma* was established in the Bombycidae; it was placed in the Lasiocampidae by KIRBY, 1892, Synonymic Cat. Lepid. Heterocera **1**: 816.

=*Mariaeia* DUFRANE, 1945, syn. nov. - Bull. Anns Soc. r. ent. Belg. **81**: 141.

Type-species: *Mariaeia kivensis* DUFRANE, 1945 - Bull. Anns Soc. r. ent. Belg. **81**: 142, by original designation.

*Mariaeia kivensis* DUFRANE, 1945, is a junior subjective synonym of *Philotherma spargatana* STRAND, 1912 - Arch. Naturg. **78**: 114. The synonymy is here established.

The genus *Mariaeia* DUFRANE, 1945, originally was established within the Chrysopolomidae (later was considered in Limacodidae: Chrysopolominae – see FLETCHER & NYE, 1982) with the following remarks: "Genre assez aberrant dans la famille Chrysopolomidae" and "espèce ayant tout à fait l'aspect d'un Lasiocampidae". The type series found in NHMB shows unambiguously that it is a real member of the Lasiocampidae. It was considered so far to belong to the genus *Philotherma* MÖSCHLER, 1887. Therefore, the genus *Mariaeia* DUFRANE, 1945, is transferred from the Chrysopolomidae to the Lasiocampidae with establishment of the synonymy as given above.

The members of the genus are considered here to belong to *Philotherma* MÖSCHLER, 1887, with totally 38 names introduced (some of them infrasubspecific), in the rank of a group of species. Probably the name *Mariaeia* DUFRANE, 1945 can be used to designate a subgenus within the genus, but a complete revision is strongly necessary to define the taxonomic structure of the genus as a whole. Surely, the genus consists of some separate branches, and members of *Mariaeia* occupy an isolated position there because of the unusual appearance of the moths, especially in the slender body of the males and dentate (not straight) medial line on the wings with characteristic spotted pattern (looking like in *Kunugia undans* (WALKER, 1855) from Eastern Asia); females of the branch lost abdominal hair pillow typical for proper *Philotherma*. Male genitalia have not been studied in the members of the complex until now; hence they are not different significantly from those of typical *Philotherma*. This allows us to consider them all within a single complex. The generotypus of *Philotherma* MÖSCHLER, 1887, – *Ph. jacchus* MÖSCHLER, 1887 (described in Abh. senckenb. naturforsch. Ges. **15**: 81, pl. fig. 4, from [Ghana] Goldküste, Aburi) is illustrated for comparison here (pl. fig. 1).

The species of the group are rather large, supposedly sexually dimorphic. Males measure 61-67 mm in wingspan, with slender elegant body. Antennae strong, bipectinated, with long rami. Wings brown of different saturation, with spotted lighter pattern, differently developed in species and sexes. Medial lines well expressed, toothed, sometimes with complicate framed pattern of lighter spots and shadows. External line spotted dark to blackish, irregular, outer margin of the wing undulate to crenulated. Hindwing smaller, rounded, of the same kind of pattern and coloration.

Females (attributed provisorically) larger, with wingspan 86-111 mm, rather robust, with a compact hair tuft on the top of abdomen; outer margin of the wings undulate, all pattern elements and colour saturation more strongly expressed.

Male genitalia. Uncus and gnathos reduced. Tegumen and vinculum slender, fused in a sclerotized ring. Valvae simpliflicated but without additional processes, S-curved, with parallel sides. Distal processes of vinculum rudimentary or absent. Aedeagus tubular with protruded, sometimes pointed apical spur; vesica large, with or without needle-shaped cornuti and zones of scobination. Sternum VIII not modified.

Female genitalia. Not studied so far.

Preimaginal stages and bionomics are unknown. Species of the genus are rather rare and are known in a very few specimens except typical *Philotherma* sometimes coming to the light in mass.

R a n g e : Equatorial Africa: Cameroon, Zaire, Gabon, Equatorial Guinea, and Angola.

2 species are included in the subgenus *Mariaeia* so far, one of them (*P. spargata* HOLLAND, 1893) provisorically, at least 1 more species is at yet undescribed and the status of *P. brunnea* AURIVILLIUS, 1908, as a member of the group is still questionable.

***Philotherma (Mariaeia) spargatana* STRAND, 1912, comb. nov. pl. figs 2-4**

*Philotherma spargatana* STRAND, 1912 - Arch. Naturg. **78**: 114. Locus typicus: Kamerun, Bibundi, Bomana. Holotype (by monotypy): male (MHUB) [examined].

= *Mariaeia kivensis* DUFRANE, 1945, syn. nov. - Bull. Annl. Soc. r. ent. Belg. **81**: 142, by original designation. Locus typicus: [Zaire] Congo belge: Kivu, river Bilati, 1600-1800 m. Holotype (by original designation): male (ISNB) [examined].

More uniform colored species with wingspan in males of 61-67 mm and forewing length 30-32 mm. Wings light reddish brown with indistinct lighter shadows and serrate medial lines. Discal spot rounded, mostly bordered with black scales.

Male genitalia generally simplified (figs 3, 4). No uncus and gnathos present, tegumen and vinculum slender, reduced, merged in a common ring. Socii rudimentary. Valvae stronger developed, long but slender, heavily sclerotized, slightly S-curved, with broadened bases, the latter ventrally with a single seta. Juxta simple, plate-shaped. Distal processes of vinculum reduced to a small rounded to ovoid plate with smooth outer margin.

Aedeagus tubular with rounded and robust apical spur; with dorsal opening of vesica. Vesica large, bilobed, fore lobe nipple-shaped; no cornuti present. Sternum 8 not modified but with a medial zone of wide desclerotization.

D i s t r i b u t i o n : Cameroon, Zaire, Gabon.

Taxonomic remarks. The species was described after 2 male specimens originally designated as the holotype and the paratype. Both are found in ISNB, but contrary the original description, they bear the name "*Mariaeia* ♂ | *kamitugensis* | Dufrane" on the original labels of DUFRANE. In other details, the specimens are completely comparable with the description given and therefore should be considered as syntypes of the species. Later, the author corrected his identification and added himself a label "*Philotherma* | *dentata* Aur. | Coll. et det. A. Dufrane", but see under the following species.

The species was initially described (in the Lasiocampidae) as *Ph. spargatana* STRAND, 1912 which led to the new synonymy. The female of the species seems to be slightly dimorphic (wingspan 111 mm and forewing length 57 mm) which allows us to establish one more synonymy but this decision must still be proven by rearing experiments or DNA-analysis:

*Philotherma ponera* HERING, 1928, **syn. nov.**, Mitt. zool. Mus. Berlin **14**: 490, pl. 1, fig. 5. Locus typicus: Uamgebiet. Holotype (by monotypy): female (MHUB).

**M a t e r i a l e x a m i n e d :** ♂, holotype of *Philotherma spargatana* STRAND, 1912, Kamerun, Bibundi, Bomana (MHUB, GU-HUB-2008-08); ♂, holotype of *Mariaeia kivensis* DUFRANE, 1945, [Zaire] Congo belge: Kivu, river Bilati, 1600-1800 m, 17.I.1939 leg A. DUFRANE (ISNB, GU-Bruss-2008-08); ♀, holotype of *Philotherma ponera* HERING, 1928, Uamgebiet (MHUB); 1♂, paratype of *Mariaeia kivensis* DUFRANE, 1945, [Zaire] Congo belge: Kivu, 13.XII.1939, leg. A. DUFRANE (ISNB); 1♂, Kivu, Kamituga, 24.II.1960 (MRAC); 1♂, Gabon, Makokou-Colline, Mission biologique, 28.X.1967, leg. G. BERNARDI (MNHN); 1♂, Uele: Paulis, 5.IV.1960, Dr M. FONTAINE (MRAC).

The second species is attributed to the group provisoricaly. In spite of very strong external similarity, the moths have modified genitalia and are probably members of another specific group. We consider the single species *P. spargata* HOLLAND, 1893, as related with *P. spargatana* STRAND, 1912 until a complete revision of *Philotherma* will be undertaken.

***Philotherma (Mariaeia) spargata* (HOLLAND, 1893), comb. nov. pl. figs 5-7**

*M.[etanastris]* (?) *spargata* HOLLAND, 1893, Psyche **6**: 513 [pl. 18, fig. 7]. Locus typicus: [Gabon] [West Africa] [valley of Ogove River]. Holotype (by monotypy): male (CMNH) [examined].

= *Philotherma nigritarsis* STRAND, 1912, syn. nov., Arch. Naturg. **78**: 115. Locus typicus: [Guinea Equatorial] [Spanisch-Guinea] Nkolentangan. Holotype (by monotypy): male (MHUB) [examined].

= ?*Philotherma dentata* AURIVILLIUS, 1906, syn. nov., Arkiv f. Zool. **3**: 8, pl. 1, fig. 1. Locus typicus: [Zaire, Katanga] Congo, Mukimbungu. Holotype (by monotypy): female (RMS) [examined].

A very characteristic species, *P. spargata* HOLLAND, 1893, was so far also considered as a member of *Philotherma* MÖSCHLER, 1887, in spite of quite different appearance and male genitalia structure. The species was misinterpreted by E. STRAND who described it under the name *P. nigritarsis* STRAND, 1912; he mentioned his doubts himself in a description of the previous species, *P. spargatana*, as "sollte die Art nicht diejenige [*spargata*] Hollands sein, möge sie den Namen *spargatana* m. bekommen" (STRAND, 1912: 114). The dimorphic female of the species (wingspan 86-94 mm and forewing

length 43-46 mm) was presumably described as *?Philotherma dentata* AURIVILLIUS, 1906, and is included here in the synonymic list.

Wingspan in males 62-65 mm and forewing length 29-31 mm. One of the brightest and colourfulest species in the Lasiocampidae, with spotted yellowish fields on reddish-brown ground colour; is very characteristic.

Male genitalia (fig. 2). Uncus and gnathos reduced. Tegumen and vinculum slender, merged in a sclerotized ring, more slender than in *P. spargatana*. Valvae stronger sclerotized, slender, flattened, slightly S-curved, with broadened bases, the latter ventrally with a single seta. Juxta simple, plate-shaped. Distal processes of vinculum completely absent. Aedeagus tubular with conical pointed apical spur; with dorsal opening of vesica. Vesica bilobed, anterior lobe covered with about 20 long and slender needle-shaped cornuti as well the posterior lobe with numerous much shorter needle-shaped to hair-like cornuti.

Female genitalia. Not studied so far.

**D i s t r i b u t i o n :** Gabon, Guinea Equatorial, Zaire, Cameroon, Angola.

**Material examined:** ♂, holotype of *Metanaestia spargata* HOLLAND, 1893, [Gabon] [West Africa] [valley of Ogove River] (CMNH);

♂, holotype of *Philotherma nigratarsis* STRAND, 1912, [Guinea Equatorial] [Spanisch-Guinea] Nkolentangan (MHUB); ♀, holotype of *Philotherma dentata* AURIVILLIUS, 1906, [Zaire, Katanga] Congo, Mukimbungu (RMS); 1♂, Gabon, Mt Bengué, 8.X.1967, leg. G. BERNARDI (MNHN); 1♂, Bas-Congo, Mayldi, 1942, R. P. VAN EYEN (MRAC); 1♂, Kasai: Luluabourg, 11.V.1953, Dr M. FONTAINE (MRAC); 1♂, B. Congo, Lemfu, 1935, R. F. ANASTAX (MRAC); 1♂, Kasai: Luluabourg, 6.VI.1953, Dr M. FONTAINE (MRAC); 1♂, Sankuru: Komi, VIII.1930, J. GHESQUIÈRE (MRAC); 1♂, Nordwest Angola, Prov. Nordcuanza, Canzele, 30 km nördl. Quiculungo, 10.X.1957, leg. Gerd HEINRICH (ZSM); 1♀, [Cameroon] Efulen, VIII.1894, leg. GOOD (CMNH).

The current taxonomic position of the *Mariaeia* group within the genus is unclear as well as the position of *Philotherma* within the Lasiocampidae. It is surely a member of the Pinarinae but its position within related genera of the Lasiocampidae will be defined more precisely only after a complete revision of the family will be undertaken. Some affinity can be found with the Trabalini which can probably be explained by the common origin of both groups.

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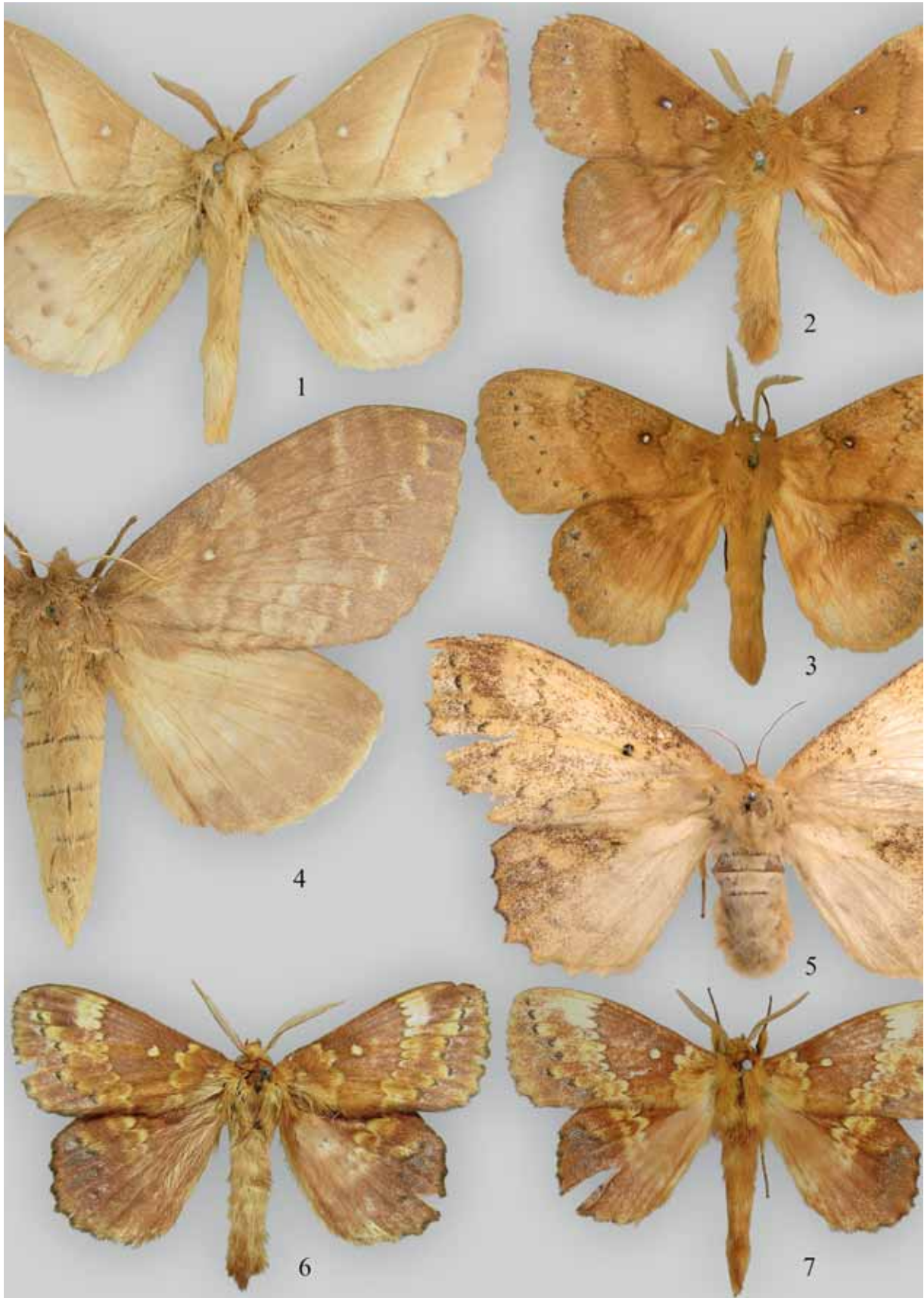
### Legends to the colour photos of moths

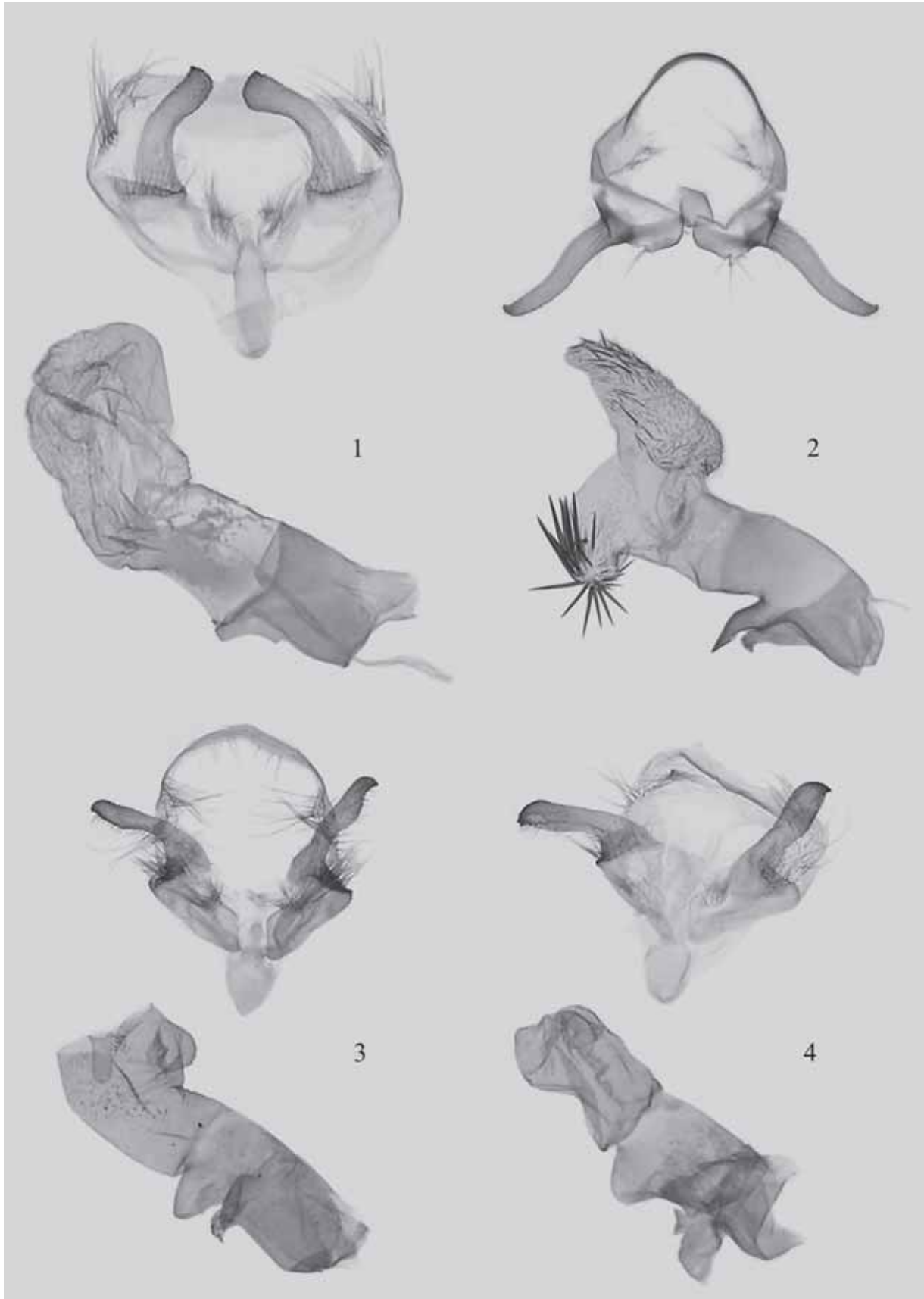
Plate 1: (1) *Philotherma jacchus* MÖSCHLER, 1887, ♂, [Zaire] Uele: Paulis, 18.XI 1955, leg. Dr. M. Fontaine (MRAC); (2) *Philotherma spargatana* STRAND, 1912, ♂, holotype, Kamerun, Bibundi, Bomana (MHUB); (3) *Philotherma spargatana* STRAND, 1912, ♂, holotype of *Mariaeia kivensis* DUFRANE, 1945, [Zaire] Congo belge: Kivu, river Bilati, 1600-1800 m (ISNB); (4) *Philotherma spargatana* STRAND, 1912, ♀, holotype of *Philotherma ponera* HERING, 1928, Uamgebiet (MHUB); (5) *Philotherma spargata* (HOLLAND, 1893), ♀, holotype of ?*Philotherma dentata* AURIVILLIUS, 1906, [Zaire, Katanga] Congo, Mukimbungu (RMS); (6) *Philotherma spargata* (HOLLAND, 1893), ♂, holotype, [Gabon] [West Africa] [valley of Ogove River] (CMNH); (7) *Philotherma spargata* (HOLLAND, 1893), ♂, holotype of *Philotherma nigratarsis* STRAND, 1912, [Guinea Equatorial] [Spanisch-Guinea] Nkolentangan (MHUB);

### Legends to the figures of genitalic preparations

(1) *Philotherma jacchus* MÖSCHLER, 1887, [Zaire] Uele: Paulis, 18.XI 1955, leg. Dr. M. Fontaine (MRAC, GU 2008-30); (2) *Philotherma spargata* (HOLLAND, 1893), ♂, holotype, [Gabon] [West Africa] [valley of Ogove River] (CMNH, GU-08-42); (3) *Philotherma spargatana* STRAND, 1912, ♂, holotype, Kamerun, Bibundi, Bomana (MHUB, GU-2008-08); (4) *Philotherma spargatana* STRAND, 1912, ♂, holotype of *Mariaeia kivensis* DUFRANE, 1945, [Zaire] Congo belge: Kivu, river Bilati, 1600-1800 m (ISNB, GU-2008-08).







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## Literaturbesprechung

**TARRIER, Michel R. & J. DELACRE (2008): Les Papillons de Jour du Maroc. Guide d'identification et de bio-indication.** — Biotope. Mètze (Collection Parthénope); Muséum national d'Histoire naturelle, Paris, 480 S. Preis ca. 70 Euro.

In dem vorliegenden Führer werden die 120 Tagfalter-Arten Marokkos komplett dargestellt. Für jede einzelne Art gibt es eine exakte Verbreitungskarte mit den einzelnen Fundpunkten und exzellente Farbfotos, oftmals beide Geschlechter, verschiedene Unterarten und auch die ersten Stände zeigend. Die Originalbeschreibungen und Typenlokalitäten der Arten sowie der in Marokko vorkommenden geographischen Subspezies werden angeführt. Außerdem gibt es Angaben zur Verbreitung, den diagnostischen Merkmalen für die Bestimmung, Futter- und Nektarpflanzen, Habitat-Typen, Schutz und mögliche Funktion als Bio-Indikatoren. Ferner werden Phänologie, Flug und präimaginale Stadien beschrieben. Nicht zuletzt wird auch der Schutz-Status diskutiert. Ausführliche Beschreibung der Naturräume mit Karten und reicher Bebilderung sowohl der Arten als auch ihrer Habitate machen den Führer besonders reizvoll. Ebenfalls positiv herauszuheben sind die Angaben zur ökologischen Einnischung, die Rolle als Bioindikatoren und hinsichtlich der Zurückdrängung der Habitate. Dieses Werk ist ein aktuelles Dokument für die Geschwindigkeit, mit der Populationen und ihre Habitate vernichtet werden. Der leidenschaftliche Appell für die Erhaltung der Schönheit und des natürlichen Reichtums Marokkos richtet sich an uns alle. Ein schön geschriebener Führer, allerdings bisher ausschließlich in französischer Sprache lieferbar, der nicht nur für den entomologischen Fachmann lesenswert ist!

Wolfgang SPEIDEL

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