



## NOTE

**A new species of *Prototheora* from Zimbabwe, with additional collecting records of the genus in South Africa (Lepidoptera: Hepialidae)**

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## INTRODUCTION

*Prototheora* Meyrick, 1917 is an unusual genus in the Hepialoidea. The retention of several plesiomorphic characters suggests the genus to be one of the earliest lineages of the hepialoid clades (Nielsen & Kristensen, 1989). The taxon was until recently accepted as representing the family Prototheoridae Meyrick, 1917, but molecular evidence suggested its inclusion in Hepialidae *sensu lato* (Regier *et al.*, 2015), which is followed here. With the downgrading of Prototheoridae, the Afrotropical Region has no endemic family anymore. The group was studied intensively by Davis (1996, 2001, 2004). The core distribution area of *Prototheora* follows the Cape Fold Mountain Belt from the Cape Peninsula to the KwaZulu-Natal Drakensberg. Isolated records are known from Angola and Malawi. The discovery of a new species in Zimbabwe further extends the range of the genus to the north of South Africa and brings the total number of described species to 13.

In the course of the last few years, the author has collected further specimens of *Prototheora* in South Africa. In addition, the rich collection of the Ditsong National Museum of Natural History in Pretoria and the collection of D.M. Kroon were examined, and the *Prototheora* species were sorted out and identified. The present article provides the faunistic data for these new records.

Acronyms of depositories:

MfN – Museum für Naturkunde, Berlin

TMSA – Ditsong National Museum of Natural History, Pretoria (the former Transvaal Museum of South Africa)

## DESCRIPTION

*Prototheora zimbabwiensis* **spec. nov.**

urn:lsid:zoobank.org:act:985EC1FE-4409-4021-A1C1-2178C3DE9628

Holotype ♂, Zimbabwe, Bvumba, 23–31.xii.2006,

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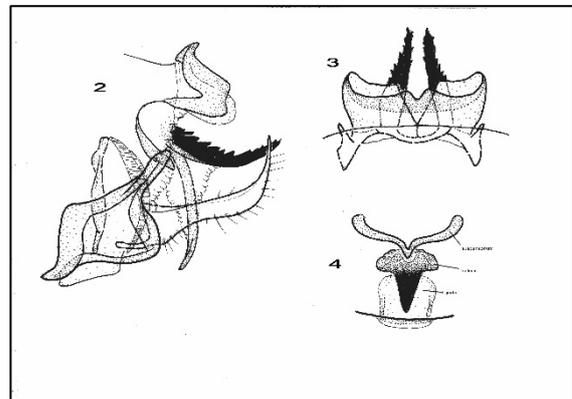
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S 19°06.302' E 32°45.185', 1630 m, UV, cleared abdomen in plastic vial, leg. Jürgen Lenz (TMSA).



Figure 1 – *Prototheora zimbabwiensis* ♂ upperside. Scale bar = mm.



Figures 2–4 – *Prototheora zimbabwiensis* ♂ genitalia

**Male** (Fig. 1): wing length 6.8 mm; expanse 14 mm. Head vestiture with brown, grey-tipped scales and longer, piliform scales over occipital area; antenna about one third the length of forewing, with 24 flagellomeres; flagellum brown, naked except for dense pubescence of pale sensilla, basal segments broader and somewhat compressed; labial palpi long and porrect, covered by brown, semi-erect scales; scales on dorsum of thorax with long, piliform scales, similar in colour to head; venter light-brown, with scattering of long, pale, piliform scales; forewings brown, with scattered irroration of darker scales; a prominent longitudinal, white band from wing base to apex; fringe mostly grey, an indistinct

fringe-line present; hindwings uniformly brown; foreleg brown, irrorated with slender grey scales, epiphysis present, tarsal segments without spines, tarsal claws small, hidden in overhanging scales, arolium present; tibia of middle legs with terminal spur pair (hindlegs missing).

**Genitalia** (Figs 2–4): Tergal plate large, bowl-like, extending caudad, without processes; pseudoteguminal plate short, articulating laterally with dorsal parts of vinculum; pseudoteguminal arms broad, sickle-shaped, with triangular teeth on dorsal and lateral sides; suspensorium well developed, curved ventrad, lateral arms fused apically forming a blunt beak, dorsal and ventral sides membranous, without covering of small setae; vinculum large, anterior and posterior margins strongly sclerotized; juxta in vertical position, plate-like, articulating on dorsal side with long trulleum, as long as suspensorium; valvae elongate, broader at base, with a slender basal apophysis on ventral side; apex acute, smoothly curved upwards (dorsad).

**Female:** Unknown

**Diagnosis:** The new species and *P. malawiensis* Davis, 2001 are the only species in the genus to lack tergal processes on the tenth tergum. The prominent, bowl-like tergal plate is unique in the genus, where the plate is usually of a flat shape without caudal prolongation of the margins. The trulleum is not grooved apically as in the majority of species, and the pseudoteguminal arms are much more strongly serrate than in *P. biserrata* Davis, 1996 or in other species.

The forewing pattern of the male most closely resembles that of *P. malawiensis* and *P. quadricornis* Meyrick, 1920. According to the male genitalia, the new species cannot be placed close to any of the known species. The absence of tergal processes both in *P. malawiensis* and *P. zimbabwiensis* is only a weak argument to group the species together, because it is a regressive character that could have developed independently in different lines. Indeed, all other parts of the genitalia are completely different. The species, therefore, takes an isolated position within the genus. The same observation applies to *P. angolae* Davis, 1996 and *P. malawiensis* Davis, 2001. Interestingly, the three species occur outside of South Africa and may be regarded as northern outliers from the main distribution area of the genus ranging from the Cape Peninsula in the south-west to KwaZulu-Natal in the north (Fig. 5).

## REVIEW OF OTHER SPECIES IN GENUS

### *Prototheora petrosema* Meyrick, 1917

Material examined (Fig. 6): 7 ♂ 1 ♀, Western Cape, Franschhoek, Theewaters Nature Reserve, 26.iii.2009, at light, W. Mey (MfN); 1 ♂, Western Cape, Stellenbosch, Assegaibosch Nature Reserve, 26.iii.2009, at light, W. Mey (MfN).



**Figure 5** – Distribution of *Prototheora* species



**Figure 6** – *Prototheora petrosema* ♂ upperside

### *Prototheora corvifera* (Meyrick, 1920) [*Metatheora*]

Material examined (Fig. 6): 2 ♂, Eastern Cape, Knysna, Diepwalle Forest, 467m, 33°56'55''S 23°09'23E, 23.ii.-6.iii.1998, D.M. Kroon (TMSA MfN); 1 ♂, Western Cape, Kogelberg, W. Louwsbos Road, 31.iii.1981, D.M. Kroon (TMSA 1 ♂, Western Cape, Spinnekopneskloof, SE 34 19 Bd, 11.ii.1983, D.M. Kroon & Molekane (TMSA).



**Figure 7** – *Prototheora corvifera* ♂ upperside

### *Prototheora biserrata* Davis, 1996

Material examined (Fig. 8): 3 ♂, Eastern Cape,

Camdeboo, Graaf-Reinet District, Farm Onbedacht, 6.ii.2003, 32°10'59''S 24°02'45''E, summit fynbos, 1618m, D.M. Kroon (TMSA); 3 ♂, same area, semi-alpine ravine, 10.ii.2004, 32°10'59''S 24°03'15''E, 1605m, D.M. Kroon (TMSA, MfN); 2 ♀, Eastern Cape, Tsitsikamma, GoesabosForestry, 1-13.iii.1980, D.M. Kroon & M. Scoble (TMSA [Ditsong Museum?]).

***Prototheora cooperi*** Janse, 1942

Material examined (Fig. 9): 1 ♂, Western Cape, Cape Town, 4.iii.1962, C.G.C. Dickson (TMSA); 3 ♂ 1 ♀, Western Cape, Franschhoek, Theewaters Nature Reserve, 26.iii.2009, at light, W. Mey (MfN); 2 ♂, Eastern Cape, Graaff-Reinet District, Asante Sana Game Farm, Glen Haven, 3.iii.2014, at light, W. Mey (MfN).



**Figure 8** – *Prototheora biserrata* ♂ upperside



**Figure 9** – *Prototheora cooperi* ♂ upperside

***Prototheora quadricornis*** Meyrick, 1920

Material examined (Fig. 10): 2 ♂, Western Cape, Knysna, Diepvalle Forest, 467m, 33°56'55''S 23°09'23E, 23.ii.-6.iii.1998, D.M. Kroon (TMSA, MfN).



**Figure 10** – *Prototheora quadricornis* ♂ upperside

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**LITERATURE CITED**

- DAVIS, D.R. 1996. A revision of the southern African family Prototheoridae (Lepidoptera: Hepialoidea). *Entomologica Scandinavica* **27**: 393–439.
- DAVIS, D.R. 2001. A new species of *Prototheora* from Malawi, with additional notes on the distribution and morphology of the genus (Lepidoptera: Prototheoridae). *Proceedings of the Entomological Society of Washington* **103**(2): 452–456.
- DAVIS, D.R. 2004. Prototheoridae. *In* Heppner, J.B. (ed.): *Lepidopterorum Catalogus* (New Series), fascicle 11: 8 pp.
- MEYRICK, E. 1917. Descriptions of South African Microlepidoptera. *Annals of the South African Museum* **17**: 1–21.
- NIELSEN, E.S. & Kristensen, N.P. 1989. Primitive Ghost Moths. *Monographs on Australian Lepidoptera*, CSIRO Australia, Vol. 1: 206 pp.
- REGIER, J.C., MITTER, C., KRISTENSEN, N.P., DAVIS, D.R., VAN NIEUKERKEN, E., ROTA, J., SIMONSEN, T., MITTER, K.T., KAWAHARA, A.Y., YEN, S.-H., CUMMINGS, M.P. & ZWICK, A. 2015. A molecular phylogeny for the oldest (nonditrysian) lineages of extant Lepidoptera, with implications for classification, comparative morphology and life-history evolution. *Systematic Entomology*, doi: 10.1111/syen.12129.