Revision of the family Metarbelidae (Lepidoptera) of the Oriental Region. IV. Genus Tagoria Yakovlev & Zolotuhin, gen. nov.

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Received 5 June 2021 | Accepted by V. Pešić: 16 June 2021 | Published online 18 June 2021.

Abstract
In the fourth part of the revision on the Asian Metarbelidae we describe the new genus Tagoria Yakovlev & Zolotuhin, gen. nov. (type species, by original designation: Arbela watsoni Hampson, 1900). The male and female of Tagoria watsoni (Hampson, 1900) comb. nov. are redescribed, the new species Tagoria dierli Yakovlev & Zolotuhin, sp. nov. (type locality: Nepal, Rapti Tal, Monahari Khola, Belwa) is described.

Key words: biodiversity, Cossoidea, entomology, Asia, Paleotropics, Metarbelidae, taxonomy, new species.

Introduction

Metarbelidae (Lepidoptera, Cossoidea) of the Oriental region were studied very insufficiently. Lehmann (2019) described two new genera from Nepal and Sumatra. In the same time, Yakovlev and Zolotuhin† (2020, 2021) prepared a detailed revision of the Asian representatives of the family basing on the study of all the available materials.

Arbela watsoni Hampson, 1900 was described on a series of syntypes from “Madras”. Having examined the morphological details of this little studied species, we came to the conclusion that A. watsoni represents a genus new to science, the description of which is given below. Additionally, we found one more male of a non-described species from Nepal, also belonging to this species.

Material and methods

The materials for the study were the adult Metarbelidae specimens deposited in various collections:
   NHMUK – National Museum of Natural History (formerly: The Natural History Museum, London, U.K.);
   ZSM – Zoologische Staatssammlung der Bayerischen Staaten (Munich, Germany).
The male and female genitalia were mounted in euparal on slides following Lafontain and Mikkola (1987) and examined with an Olympus SZX16 microscope. The images were taken with the digital camera CMOS 20.7 megapixels and processed using Corel Photo-Paint 2017 software.

**Taxonomical part**

*Tagoria* Yakovlev & Zolotuhin, gen. nov.

https://zoobank.org/urn:lsid:zoobank.org:act:6CB913BA-9834-4732-9C03-0E3D0442930C

**Type species**: *Arbela watsoni* Hampson, 1900 (designated here).

**Description**. Male. Moths of small size, color dark. Antenna bipectinate, setae in medium third of antenna three times longer than antenna rod diameter. Fore wing short. Small transverse white spot discally (in cubital area), wide dark band postdiscally. Hind wing grey, without pattern.

Male genitalia. Uncus thin, slightly extending apically, with wide semicircular bifurcation, uncus halves thick, diverging to sides; subscaphium strongly extended dorsally, with narrow abdominal half; gnathos arms short, lamellar; gnathos lamellar, with long thin lateral processes; costal edge of valve almost smooth, outer edge semicircular, saccular edge curved, strongly sclerotized, saccus tiny, juxta lamellar, semicircular; phallus very small, equal to approximately 1/3 of valve in length, with strongly extended coecum, vesica without cornuti.

Female. Slightly bigger than male. Antenna bipectinate, setae in medium third of antenna twice longer than antenna rod diameter. Wing pattern resembles that of male, but significantly lighter.

Female genitalia. Papillae anales elongated, cylindrical; apophyses anteriores equal in length to apophyses posteriores, thin; ostium wide, oval; antrum strongly sclerotized, funnel-shaped, slightly narrowing from ostium to ductus; ductus short, thick, with two sclerites in lateral sides; bursa bag-like with vast scabination zones basally and apically.

**Diagnosis**. The new genus clearly differs from all the Asian representatives of the family in the following characters:
- the short, wide fore wing with a small light portion in discal area (cubitally),
- the tiny phallus,
- the very wide ostium and strongly sclerotized funnel-shaped antrum;
- the extended scabination zones on the bursa.

**Composition**. The genus includes two species: *T. watsoni* (Hampson, 1900) and *T. dierli* Yakovlev & Zolotuhin, sp. nov.

**Distribution**. Nepal and India.

**Etymology**. The new genus is named after the Nobel laureate, Rabindranath Tagore (1861–1941), who was a Bengali polymath – poet, writer, playwright, composer, philosopher, social reformer and painter.

*Tagoria watsoni* (Hampson, 1900) comb. nov.

Figs 1–3, 5–6, 8

*Arbela watsoni* Hampson, 1900, J. Bombay Nat. Hist. Soc. 13: 228.
Type material (syntypes) in NHMUK.
Type locality: “Madras” [Chennai].
Material examined. Male (syntype), Madras, Apr. [18]97, Watson Coll. (NHMUK); 2 males, 1 female, Madras, Apr. [18]97, collection H.J. Elwes (NHMUK, individual number NHMUK: 012832508, 012832509, 012832511; slides NHMUK: 010315539, 010315542, 010315540 – female).

Redescription. Male. Length of fore wing 12–13 mm. Fore wing light-brown, with small brown strokes along costal edge; brown portion basally (at base of cubital veins); light creamy strokes more distally, wide brown band in discal area with two bright brown spots at top of discal cell and in cubital zone; poorly expressed brown pattern of strokes postdiscally, submarginally and marginally; thin brown band submarginally. Fringe on fore wing mottled, creamy between veins, brown at veins. Hind wing light-brown with poorly developed pattern of brown strokes; marginal area creamy without pattern. Fringe on hind wing creamy, unicolorous.

Figures 1–4. Adult specimens of Tagoria: 1. T. watsoni, male, syntype (NHMUK); 2. T. watsoni, male, Madras (NHMUK); 3. T. watsoni, female, Madras (NHMUK); 4. T. dierli, male, holotype (ZSM).

Male genitalia. Uncus thin, long, apically slightly extended, with wide semicircular bifurcation, uncus halves thick, diverging to sides; subscaphium dorsally strongly extended, abdominal half narrow, funnel-shaped; gnathos arms short, lamellar; gnathos lamellar, with long thin lateral processes; costal edge of valve
practically smooth, outer edge semicircular, saccular edge curved, strongly sclerotized, with small harpe, saccus tiny, juxta lamellar, semicircular; phallus very small, slightly curved on border between basal and medium thirds, equal to 1/3 of valve in length, coecum very extended, vesica aperture in dorso-apical position, about 1/2 of phallus in length, vesica without cornuti.

Female. Length of fore wing 14.5 mm. Wing slightly more extended than that of male. Wing pattern resembles that of male but significantly lighter, all dark elements reduced.

Female genitalia. See the genus description.

**Diagnosis.** *T. watsoni* differs from *T. dierli* in the lighter pattern, more distinctive postdiscal band, wider valve and shorter subscaphium.

**Figures 5–7.** Genitalia of *Tagoria*: 5. *T. watsoni*, male, Madras (slide NHMUK: 010315539); 6. *T. dierli*, male, holotype (slide ZSM-Coss 2016/3); 7. *T. watsoni*, female, Madras (slide NHMUK: 010315540).
Etymology. The species is named after Captain Edward Yerbury Watson (1864–1897), a prominent British entomologist, specialist in Hesperiidae killed in action at Maidan 8th November 1897.

Distribution. SE India (Tamil-Nadu).

Figure 8. Distributional map of Tagoria.

Tagoria dierli Yakovlev & Zolotuhin, sp. nov.

https://zoobank.org/urn:lsid:zoobank.org:act:012EF827-8DBA-408F-83FE-F32B5DEAE8BF

Figs 4, 7, 8

Material. Holotype, male, Nepal, Rapti Tal, Monahari Khola, Belwa, 350 m, 12.v.1967, leg. Dierl, Forster & Schacht (ZSM, slide ZSM-Coss 2016/3).

Description. Male. Length of fore wing 12 mm. Fore wing brown, with dim dark-brown portions at root and postdiscal, small light portion discally (in cubital area), border creamy, fringe brown. Hind wing brown, without pattern, border creamy, fringe brown.

Male genitalia. Uncus thin, long, slightly extended apically, with wide semicircular bifurcation, uncus halves thick, widely diverging to sides; subscaphium strongly extended dorsally, with very long narrow abdominal end, funnel-shaped; gnathos arms short, lamellar; gnathos lamellar with long thin lateral processes; valve slightly elongated, costal edge almost smooth, outer edge semicircular, saccular edge strongly curved, sclerotized, with small harpe, saccus tiny, juxta lamellar, semicircular; phallus very small, slightly curved on border between distal and medium thirds, equal to 1/3 of valve in length, with strongly extended coecum, vesica aperture in dorso-apical position, about 1/2 of phallus in length, vesica without cornuti.

Female unknown.

Diagnosis. T. dierli differs from T. watsoni in the darker pattern, poorly expressed postdiscal band, narrow valve and long subscaphium.
Etymology. The species is named after the well-known German entomologist Wolfgang Dierl (1935–1996), specialist in Psychidae, explorer of the entomofauna of Nepal, one of the collectors of the new species.

Distribution. Nepal (Mid-Western Region)

Acknowledgements

The authors are grateful to Anna Ustjuzhanina (Tomsk) for the help in translation of the paper. The authors also express their gratitude to Axel Hausmann & Ulf Buchsbaum (Munich) and Geoff Martin & Alessandro Giusti (London). We are indebted to Ingo Lehmann (Bonn) for the constant collaboration and sharing information and literature, as well as to Xenia Proskuryakova (Moscow) and Oleksiy Bidzilya (Kiev) for the technical assistance. The images of type specimens from the NHMUK are figured here with the kind permission of The Trustees of the Museum.

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