



# The genus *Visiana* and the species complex *V. sordidata* from the Indo-Pacific region (Lepidoptera: Geometridae: Larentiinae)



Olga Schmidt

Zoologische Staatssammlung München

## Introduction

The genus *Visiana* Swinhoe (1900) [4] is widely distributed within the Indo-Pacific region, from north-eastern Himalaya to Papua New Guinea and eastern Australia, including the Greater- and the western part of the Lesser Sunda Islands, including the Moluccas.

According to Scoble (1999) [3], the genus currently comprises five species: *V. brujata* (Guenée), *V. excentrata* (Guenée), *V. hyperstenista* (Prout), *V. sordidata* (Moore) and *V. vinosa* (Warren). *V. sordidata* comprises three subspecies:

- *V. sordidata inimica* (Prout) [Indonesia: Bali, Java]
- *V. sordidata robinsoni* (Prout) [Indonesia: Sumatra]
- *V. sordidata tamborica* (Prout) [Lesser Sunda Islands]

On the one hand the species of the genus *Visiana* resemble those of other, often not closely related genera (see the figure below).



On the other hand the *Visiana* species are difficult to distinguish from each other without examination of the genitalia. However, the information about the genitalic characters is still mostly lacking.

Study of phylogenetic relationships of *Visiana* and related larentiine genera suggested *Visiana* was not monophyletic (Schmidt, 2005 [1] in press [2]). Consequently, the status of several subspecies needed to be reconsidered, and species had to be described as new.

## Diagnosis of the genus *Visiana*

### Adult. External characters

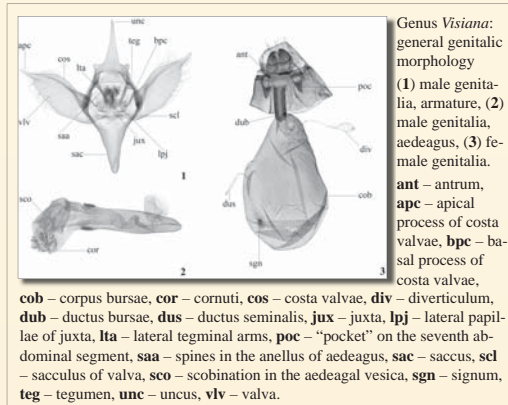
- Labial palpus very short, curved, with terminal segment small
- Antenna in male bipectinated
- Forewing with two areoles
- Forewing underneath rather uniformly coloured
- Coremata in males shaped like a broad pocket
- A broad ring between the 7th and the 8th segments is present
- The ventral surface of the 7th segment in females is rough

### Male genitalia

- Tegumen shorter than vinculum, with sclerotised lateral arms
- Valvae with costa projecting in an apical process and with basal projection
- Vinculum with distinct saccus
- Juxta with lateral papillae, calcar absent

### Female genitalia

- Antrum without folds of sclerotisation
- Corpus bursae membranous, with a small diverticulum
- Signum usually present



Genus *Visiana*: general genitalic morphology (1) male genitalia, armature, (2) male genitalia, aedeagus, (3) female genitalia.

ant – antrum, apc – apical process of costa valvae, bpc – basal process of costa valvae, cob – corpus bursae, cor – cornuti, cos – costa valvae, div – diverticulum, dub – ductus bursae, dus – ductus seminalis, jux – juxta, lpj – lateral papillae of juxta, lta – lateral tegminal arms, poc – “pocket” on the seventh abdominal segment, saa – spines in the anellus of aedeagus, sac – saccus, scl – sacculus of valva, sco – scobination in the aedeagal vesica, sgn – signum, teg – tegumen, unc – uncus, vlv – valva.

## Results

The present study reveals that all supraspecific taxa of *V. sordidata* should be regarded as distinct species, *V. inimica*, *V. robinsoni* and *V. tamborica*, and the specimens from Borneo should be assigned to a new species.

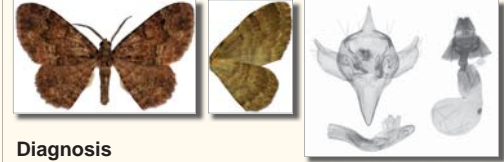
### *Visiana sordidata* (Moore)



#### Diagnosis

- Wing expanse 36-44 mm
- Uncus small, triangular shaped
- Tegumen with long, almost straight lateral arms protruded to the base of juxta
- Valvae short, costa with thick, distally rounded projecting apical process and with rather long, basal projection
- Saccus massive, protruded
- Juxta with small, apically flattened lateral papillae
- Corpus bursae very large, retort-shaped
- Signum a small patch of stout, inwardly directed spicules

### *Visiana hollowayi*, sp.nov.



#### Diagnosis

- Wing expanse 41-44 mm
- Uncus medium-sized, elongate triangular
- Tegumen with long, bent lateral arms, thickened at base
- Valvae short, costa with thick, distally rounded projecting apical process and with medium-sized, basal projection
- Saccus massive, but narrower than in *V. sordidata*
- Juxta with small, oval lateral papillae
- Corpus bursae large, divided into two bulbs, the proximal one is larger, rounded, the distal one is oval
- Signum a patch of stout, inwardly directed spicules

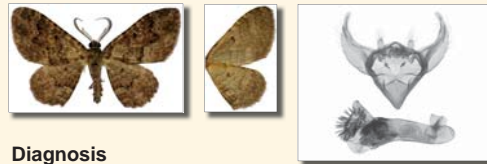
### *Visiana robinsoni* (Prout), stat nov.



#### Diagnosis

- Wing expanse 40-42 mm
- Uncus long, tapering towards the apex
- Tegumen with long, almost straight lateral arms protruded to the base of juxta
- Valvae medium sized, costa with thin, distally sharp projecting apical process and with rather long, basal projection
- Saccus massive, elongated
- Juxta with small, apically rounded lateral papillae
- Corpus bursae asymmetric, somewhat drop-shaped
- Signum large, polygonal patch of inwardly directed spicules

### *Visiana inimica* (Prout), stat nov.



#### Diagnosis

- Wing expanse 37-38 mm
- Uncus almost completely reduced
- Tegumen very short, with curved lateral arms
- Valvae relatively long, costa with a large projecting apical process rounded apically, and with a short, curved, basal projection
- Saccus medium-sized, triangular-shaped
- Juxta with large, apically rounded lateral papillae

### *Visiana tamborica* (Prout), stat nov.



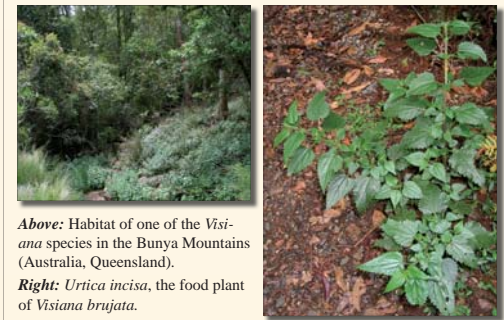
#### Diagnosis

- Wing expanse 36-42 mm
- Uncus almost completely reduced
- Tegumen short, with very thin, curved lateral arms
- Valvae of medium length, costa with a very short projecting apical process, and with a small, curved, basal projection
- Saccus small, thin
- Juxta with relatively large, apically rounded lateral papillae
- Corpus bursae sack-shaped, with distal extension
- Signum absent

## Habitat and food plant

The species of the genus *Visiana* occur in the forest zone, from low elevations to about 2000 m above sea level. All known specimens were light collected at night. Males are dominating in collections, comprising about 90% of the specimens.

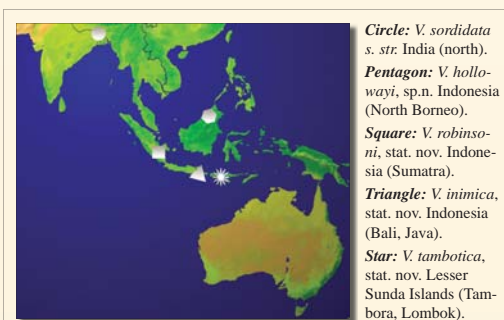
Recent studies revealed that *Visiana* species feed on species of the plant genus *Urtica* (Urticaceae) that is widely distributed in the Holarctic region and occurs also in the Indo-Australian region and in South Africa.



Above: Habitat of one of the *Visiana* species in the Bunya Mountains (Australia, Queensland).

Right: *Urtica incisa*, the food plant of *Visiana brujata*.

## Distribution of the *V. sordidata* complex



Circle: *V. sordidata* s. str. India (north).  
Pentagon: *V. hollowayi*, sp.n. Indonesia (North Borneo).  
Square: *V. robinsoni*, stat. nov. Indonesia (Sumatra).  
Triangle: *V. inimica*, stat. nov. Indonesia (Bali, Java).  
Star: *V. tamborica*, stat. nov. Lesser Sunda Islands (Tambora, Lombok).

## Conclusions

The genus *Visiana* is still in need of revision. The fact that the species of the genus feed on a widely distributed plant and that most of the species show considerable endemism make the genus interesting and important from phylogenetic and biogeographical perspectives.

## References

- [1] Schmidt, O. 2005. Revision of *Scotocyma* Turner (Lepidoptera: Geometridae: Larentiinae). Australian Journal of Entomology 44(3), 257-278.
- [2] Schmidt, O. (in press). *Visiana sordidata* (Moore), a complex of species from the Indo-Pacific region (Lepidoptera: Geometridae: Larentiinae). Spixiana
- [3] Scoble, M.J. 1999. Geometrid Moths of the World: A Catalogue (Lepidoptera, Geometridae). CSIRO Publishing, Collingwood, Victoria.
- [4] Swinhoe, C. 1900. Catalogue of Eastern (and Australian) Lepidoptera Heterocera in the Collection of the Oxford University Museum. Part 2. Clarendon Press, Oxford.