

## A new genus and species of Epermeniidae (Lepidoptera, Epermenoidea) from China

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**Abstract** A new genus of Epermeniidae, *Gaedikermania* gen. nov., is described, based on *Gaedikermania semifusca* sp. nov. from Guangdong, China. *Gaedikermania* differs from all other epermeniid genera by a combination of three characters including the presence of a small, dentiform cluster of scales on the dorsum of the forewing, the bifid uncus, and the disc-shaped cucullus in the male genitalia. Illustrations and photos of the generic and specific characters are provided for *Gaedikermania semifusca*.

Epermeniidae is the only family included in an apoditrypsian superfamily, Epermenoidea. The family comprises 126 species of 10 genera (van Nieukerken et al., 2011), represented in all zoogeographical regions. These small, narrow-winged moths share an apomorphy that is the presence of stiff bristles on the whole surface of the hind tibia (Dugdale et al., 1998). Kuroko & Gaedike (2006) proposed the presence of one or more scale teeth on the dorsum of the forewing as another possible synapomorphy.

Taxonomic studies of the Chinese Epermeniidae are scanty. For the family, only three species of *Epermenia* and *Ochromolopis kaszabi* Gaedike have been recorded from the mainland China (Meyrick, 1930; Gaedike, 1996, 2007). The aim of this article is to describe a new genus and species of Epermeniidae from China.

### Taxonomy

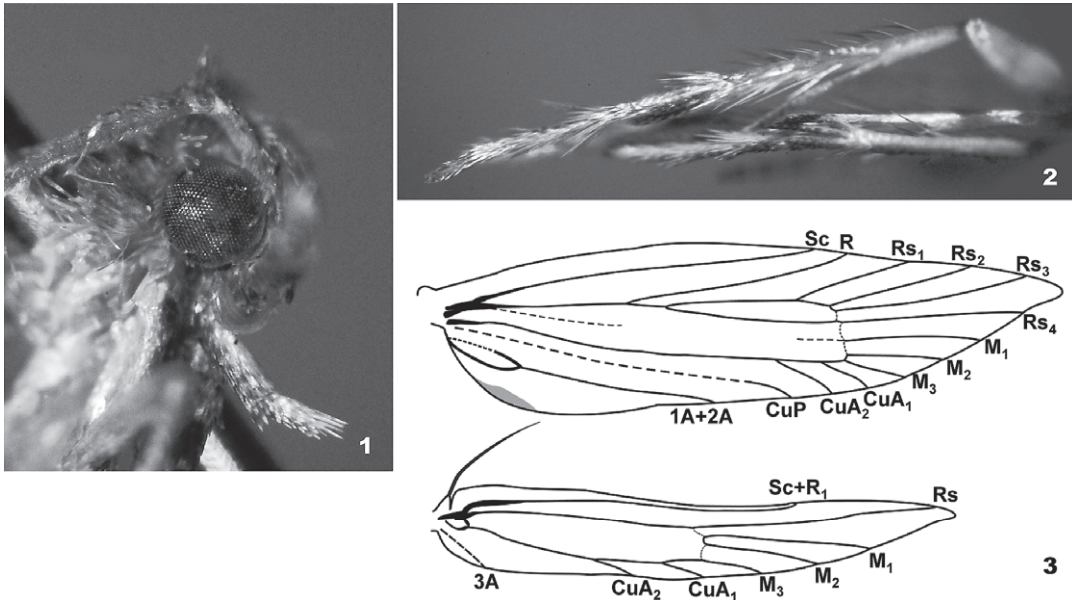
#### *Gaedikermania* n. gen.

Type species: *Gaedikermania semifusca* Sohn and Wu, n. sp.

**Diagnosis.** The forewing shape of this genus resembles those of *Phaulernis*, e.g. *P. fulviguttella* (Zeller). The hindwing venation shows reduction in anal area, resembling those of *Epermenia* (e.g. *E. sinjovi* Gaedike and *E. fuscomaculata* Kuroko and Gaedike, illustrated in Kuroko and Gaedike, 2006). Both genera, *Epermenia* and *Phaulernis* share the characters in the male genitalia including an elongate, curved uncus and a costal process on the valva (Kuroko and Gaedike, 2006). These characters cannot be observed from *Gaedikermania*. Furthermore, *Gaedikermania* differs from *Epermenia* by the lack of the pockets of androconial scales on the first two abdominal segments.

**Description.** Head (Fig. 1): Vertex with anteriorly directed, appressed, piliform scales; ocellus and chetosemata absent. Antenna filiform; scape with dense piliform scale covering anteriorly; flagellomere with slightly erected scales distally. Labial palpus upcurved, with spiniform scales. Maxillary palpus reduced. Proboscis elongate, naked.

**Thorax:** Foreleg with tibial epiphysis arising at the middle. Fore, mid and hind tarsomeres with a whorl of bristles distally. Hind tibia (Fig. 2) with stiff spiniform scales dorsally before spurs, throughout after spurs. Forewing (Fig. 4) with one dentiform cluster of scales protruding at middle of dorsum; distal half of dorsum slightly concave. Forewing venation (Fig. 3) with Sc extending beyond middle of costa; pterostigma absent; accessory cell weak; R arising from near middle of radius; Rs<sub>1-3</sub> extending to costa; Rs<sub>1</sub> arising from distal 1/4 of anterior margin of accessory cell; Rs<sub>1</sub> mostly parallel to Rs<sub>2</sub>; Rs<sub>2</sub> and Rs<sub>3</sub> close basally, divergent; Rs<sub>4</sub> extending to termen below apex, divergent from Rs<sub>3</sub> on distal half; M with 3 branches; M<sub>1</sub> parallel to M<sub>2</sub>; M<sub>3</sub> and M<sub>2</sub> close basally, then divergent; CuA<sub>1</sub> and CuA<sub>2</sub> almost parallel, slightly sinuous; CuP vestigial as fold in basal 5/6; basal



Figs 1–3. *Gaedikermania semifusca* sp. nov. 1. Head, lateral view. 2. Hindtibia with spiniform scales. 3. Wing venation.

fork of 1A+2A near 1/4 of length. Hindwing narrow with long piliform scales along costa. Hindwing venation (Fig. 3) with Sc+R<sub>1</sub> extending to distal 1/3 of costa; Rs extending to slightly above apex; M stem absent; M<sub>1</sub> divergent from Rs and M<sub>2</sub>; M<sub>2</sub> almost parallel to M<sub>3</sub> on basal 4/3, then divergent; distance between M<sub>2</sub> and M<sub>3</sub> 2 × longer than between M<sub>1</sub> and M<sub>2</sub> on basal half; CuA<sub>1</sub> parallel to CuA<sub>2</sub>; CuP and 1A+2A absent.

Remarks. This genus is associated with Epermeniidae by the presence of spiniform scales on almost entire area of hind tibia and the presence of one scale tooth on the dorsum of the forewing.

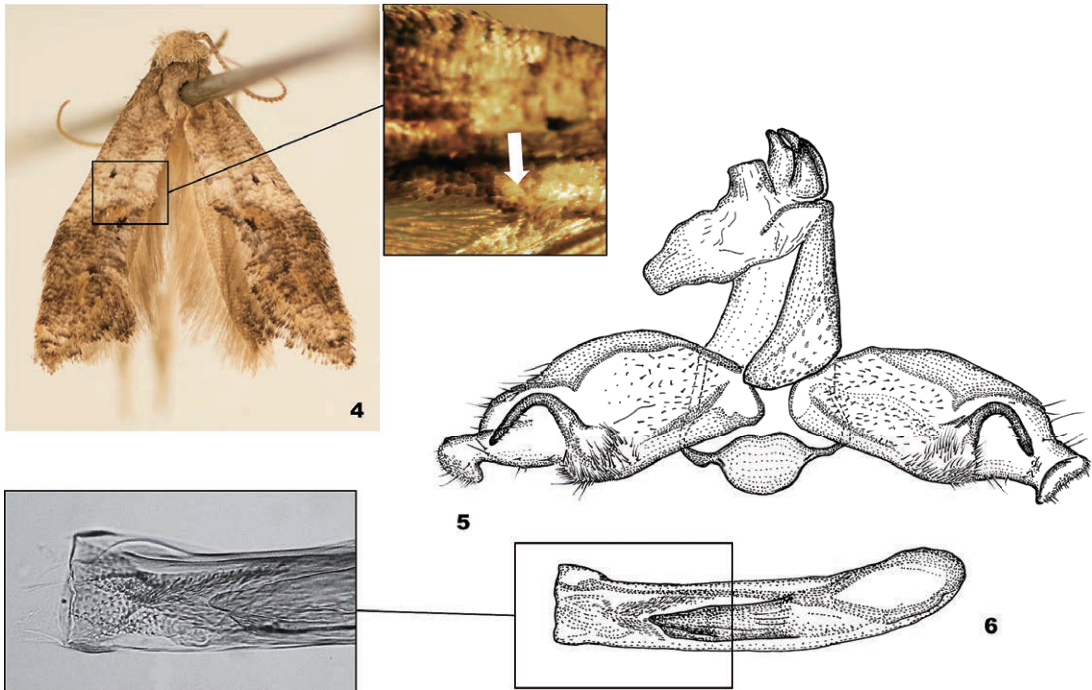
Etymology. This genus is named after Reinhard Gaedike who has rigorously worked on Epermeniidae, in combination with the Greek 'armenia' which is the suffix of *Epermenia*.

***Gaedikermania semifusca* Sohn and Wu, sp. nov.** (Figs 1–6)

Diagnosis. This new species is similar to *Epermenia dalianicola* Gaedike, 2009 from Liaoning, China, in external appearance but differs from the latter in having the basal 1/3 of the forewing pale brown (dark gray in *E. dalianicola*); the uncus bifid (elongate in *E. dalianicola*); and the costa of the valva without process.

Adult. Head (Fig. 1) – Vertex and frontoclypeus dark brownish gray. Antenna 1/2 as long as forewing; scape fuscous, with pectens; flagellomeres fuscous. Labial palpus 2 times larger than diameter of compound eye, slightly upcurved, covered with white tipped, dark brown scales laterally, pale gray scales mesally; scale tuft on 2nd segment present; 3rd segment 1/2 as long as 2nd.

Thorax (Fig. 4) – Tegula, patagia and mesonotum dark brownish gray. Foreleg fuscous laterally, silvery yellowish gray mesally; tibial epyphysis dark gray; tarsomere with yellowish gray ring and a whorl of strong spiniform scales distally. Midleg concolorous as foreleg; tibia with three whorls of spiniform scales; tarsomere with a whole of spiniform scales distally. Hindleg silvery yellowish gray; tibial spur fuscous; tibia sparsely with stiff spiniform scales on entire area; tarsomere with a whorl of spiniform scales distally. Forewing length 4.5 mm (n=1), of nearly even width on distal 1/3, pale brownish gray on basal 1/4; apex narrowly round; termen oblique; interspace between subbasal



Figs 4–6. *Gaedikermania semifusca* sp. nov. 4. Holotype, dorsal view, the right wings detached after the photo was taken (inset: enlarged view of dentiform scale cluster on forewing dorsum as indicated by white arrow). 5. Male genital capsule, ventral view. 6. Phallus (inset: enlarged view of cornutal zone).

and median lines brownish white, with sparse, dark brown strigulae; interspace between median and subterminal lines dark brown; pale yellowish brown spots near apex; terminal line pale yellowish brown; two small black spots comprising raised scales present at middle; median line in basal area oblique, reddish brown, worn off near distal end of discal cell, with raised scales of black spot next to scale tuft at middle of dorsum; fringe yellowish gray, darkened distally, white-tipped, denser and dark brownish gray around tornus. Hindwing dark gray; fringe yellowish gray along termen, dark gray along anal area.

Abdomen – Tergites lustrous, dark gray; sternites brownish white, tinged with dark gray medially.

Male genitalia (Figs 5 & 6) – Uncus subtriangular, with short, robust process laterally. Tegumen long, trapezoidal. Gnathos broadly fused with tegumen, linguiform, with quadrate medial plate. Valva elliptical, 1.5x longer than tegumen, sparsely setose on basal 1/2, with clubbed hairs of tuft around dorsal base; cucullus small, papillate, setose apically; costa slender, broadened medially to form a triangular sclerite, with long setae distally; sacculus broad, extending to 2/3 of valva, angulated distally; saccular process robust, directing to costa, curved outward at middle; interior margin of sacculus densely setose on basal 1/2. Vinculum narrow, rectangular; saccus broad, semielliptical apically; juxta rectangular, concave anteriorly. Phallus as long as valva, almost straight; internal rod as long as phallus, with Y-shaped branch in coecum; spinulate cornutal zone present distally; a robust, cuneiform cornutus present medially.

Female unknown.

Holotype. Male, China: Guangdong Prov.: Guangzhou: Guangdong Botanical Garden, 22 May 1978, genitalia slide no. IOZ-09045, wing slide no. IOZ-09046, deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

Distribution. China (Guangdong).

Etymology. The species name is derived from two Latin words, 'semi' and 'fuscus', meaning "a half" and "dark" respectively, and refers to the dark brown suffusion on the distal half of the forewing in this new species.

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