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A SECOND SPECIES OF THE RARE MICROBOMBYLIID GENUS
ACRIDOPHAGUS EVENHUIS FROM AUSTRALIA
(DIPTERA: MYTHICOMYIIDAE: PSILODEROIDINAE)

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Cover: Holotype of *Acridophagus niger* Evenhuis, sp. nov.

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A second species of the rare microbombyliid genus *Acridophagus* Evenhuis from Australia (Diptera: Mythicomyiidae: Psiloderoidinae)

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Abstract. A new species of *Acridophagus* from Queensland, Australia: *A. niger* Evenhuis, **n. sp.**, is described and illustrated. This marks the first records of the genus from mainland Australia.

INTRODUCTION

Acridophagus Evenhuis was previously known from only its type species (*Cyrtomorpha paganica* White, 1916) from Tasmania. The genus is very rare, being known from only eight collected specimens (of which only four survive) and one photographed but not collected. After the review of Australian Psiloderoidinae (Evenhuis 2025), a second species of *Acridophagus* has been found, and marks the first record of the genus from mainland Australia [the other previous records in the literature having been based on misidentifications of other psiloderoidine genera – see Evenhuis (2025)]. *Acridophagus niger* Evenhuis, **n. sp.** from Queensland, Australia is here described and illustrated and a key to the species of *Acridophagus* is presented.

MATERIAL AND METHODS

Material for study derives from or is deposited in the following: the Australian Museum, Sydney (AMS); the Natural History Museum, London (BMNH); National Museum of Victoria, Melbourne (NMVM); Queensland Museum, South Brisbane (QM); and the Tasmanian Museum and Art Gallery, Hobart (TMAG).

Morphological terminology follows Cumming & Wood (2017). Images of various morphological structures were accomplished by using a Leica M165C stereo dissecting scope with a DMC5400 camera and a Leica DM2500 compound scope with a MC 170 HC camera via the Leica Microsystems LASX Multifocus software (v. 5.0.1) and using Zerene Stacker[®] software (v. 1.04) (Zerene Systems, LLC, Richmond, Washington, USA) to align and stack-focus each final image. Adobe Photoshop 2026 (version 26.11.0) was used to increase saturation and contrast of colors in the Wing Interference Pattern images to make them more visible



Figures 1–2. *Acridophagus* male habitus, lateral view. 1, *Acridophagus niger* Evenhuis, sp. nov. 2, *A. paganicus* (White).

TAXONOMY

Acridophagus Evenhuis

Cyrtomorpha White, 1916: 185. [Preoccupied by Graff, 1882.] Type species: *Cyrtomorpha paganica* White, 1916, by monotypy.

Robertsella Evenhuis, 1978: 247 (new replacement name for *Cyrtomorpha* White, 1916).

[Preoccupied by Guinot, 1969.] Type species: *Cyrtomorpha paganica* White, 1916, automatic.

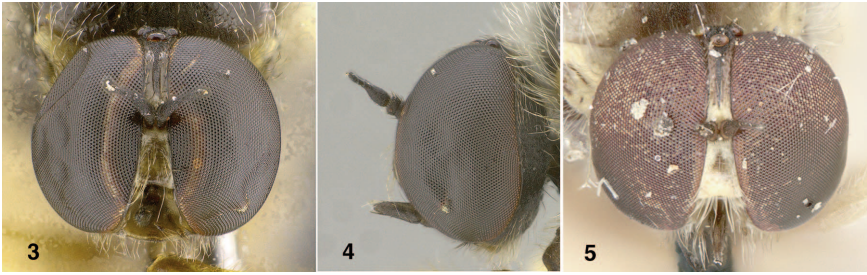
Acridophagus Evenhuis, 1983: 318 (new replacement name for *Robertsella* Evenhuis, 1978). Type species: *Cyrtomorpha paganica* White, 1916, automatic.

Diagnosis. The genus is distinguished from other members of the subfamily in Australia by the combination of a long hirsute mesonotum (especially in males) and short proboscis extending only slightly beyond the oral margin (Fig. 4). In both sexes the head is higher than wide in lateral view (Figs. 1–2) and placed low on the thorax, giving the thorax a rather humpbacked appearance. The postgena, anterior thorax, and hind femora are all densely clothed with hairs in males. The antenna has the second flagellomere almost the same length as the first. The wing is relatively broad, length ca. two times greatest width and has vein R_{2+3} originating at roughly the halfway point of R_s and running parallel to R_1 , ending in the wing margin at approximately 1/3 the distance from R_1 to R_{4+5} ; the r-m crossvein is placed beyond the middle of M_{1+2} ; and the anal cell is open in the wing margin.

Included species: *Acridophagus niger* Evenhuis, sp. nov. (Queensland), *A. paganicus* (White) (Tasmania).

KEY TO SPECIES OF *ACRIDOPHAGUS* EVENHUIS IN AUSTRALIA

1. Face dark brown to black (Fig. 3); thorax black, yellow markings on mesonotum restricted to small marks on humeral and post alar calli; R_{2+3} as long as M_1 (Fig. 6); gonocoxae brown ... (Queensland) *niger* Evenhuis, sp. nov.



Figures 3–5. *Acridophagus* male heads. **3.** *Acridophagus niger* Evenhuis, sp. nov., frontal view **4.** *A. niger* Evenhuis, sp. nov., lateral view **5.** *A. paganicus* (White), frontal view.

- . Face yellow (Fig. 5); thorax dark brown, yellow markings extensive on interhumeral area, humeral calli, notopleural area, and post alar calli; R_{2+3} shorter than M_1 (Fig. 8); gonocoxae yellow ... (Tasmania) *paganicus* (White)

***Acridophagus niger* Evenhuis, sp. nov.**

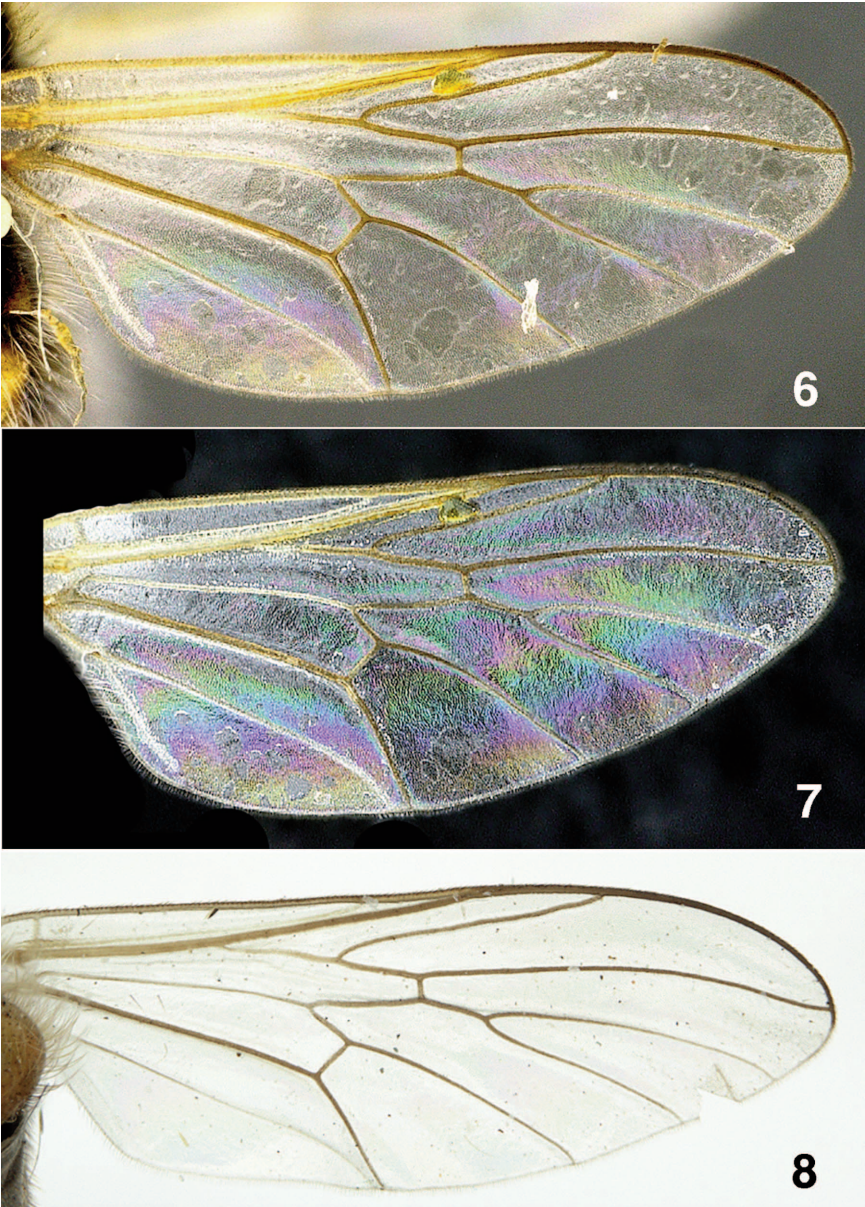
(Figs. 1, 3, 4, 6, 7)

Material Examined. *Holotype* ♂ from AUSTRALIA: Queensland: 5 km N. Leyburn, 27°58'S, 151°38'E, 23 Jan 1988, G. & A. Daniels. Holotype deposited in AMS. The species is known only from the unique holotype.

Diagnosis. Separated from its only congener, *A. paganicus*, generally by the more extensive black coloration, yellow markings restricted to small spots. The face and front are predominantly black to brown (predominantly yellow in *A. paganicus*), and without yellow laterally on the mesonotum (posthumeral and notopleural areas broadly yellow in *A. paganicus*); in the wing, R_{2+3} is as long as M_1 (R_{2+3} shorter than M_1 in *A. paganicus*); the gonocoxae are brown (yellowish white in *A. paganicus*).

Description: Male (Fig. 1). Lengths: body: 4.2 mm; wing: 3.7 mm. *Head.* Black; eyes dichoptic, separated at vertex by more than distance between lateral ocelli, narrowing on frons to just below median ocellus; vertex and occiput black, occiput with white decumbent hairs, longest on ventral half; front black, with narrow groove medially, row of proclinate erect brownish hairs along inner eye margin to just above antennal bases; face receding, dark brown to black (Fig. 3), with yellowish white hairs laterally; length of face shorter than frons; antenna black; scape and pedicel subcylindrical, slightly wider than long; first flagellomere subconical, slightly flared apically, length about 2 times greatest width; second flagellomere long, cylindrical, about 4/5 length of first flagellomere, with small apical style; postgena black, extending slightly below eyes; proboscis dark brown, pointed apically, length slightly longer than oral margin (Fig. 4); labellum slightly less than 1/2 length of proboscis; palpus not evident.

Thorax. Mesonotum (predominantly) and scutellum (completely) matte black, with long, dense whitish hairs, hairs curved backwards on anterior mesonotum; interhumeral and supraalar areas shining black; humeral callus, spot below anterior spiracle, and post alar callus yellowish white; pleura dark brown to black; halter stem yellow, knob white.



Figures 6–8. *Acridophagus* wings, lateral view. **6.** *Acridophagus niger* Evenhuis, sp. nov. **7.** *A. niger* Evenhuis, sp. nov. Wing Interference Pattern. **8.** *A. paganicus* (White).

Legs. Coxae and femora yellowish, orangish basally on coxae; tibiae and tarsal segments I–III yellow, tarsal segments IV–V brown. Coxae with short yellowish hairs distally; femora with dense, long white hairs; tibiae with shorter yellowish white hairs. Pulvilli ovoid, subequal in length to claws.

Wing (Figs. 6, 7). Hyaline; veins yellow; costa ends slightly beyond end of R_{4+5} ; vein Sc ending in costa at level of origin of vein R_{2+3} ; R_{2+3} originating at midway point of Rs, ending in costa at level midway along R_{4+5} ; R_{2+3} as long as M_1 . Rs evanescent at connection with R_1 ; R_{4+5} slightly sinuous at wing margin; r-m crossvein placed slightly before apical two-thirds of vein M_{1+2} ; vein M_1 and M_2 each curved toward wing margin; crossvein dm-cu closing cell dm absent; anal cell open at wing margin by width narrower than crossvein r-m; CuP slightly curved apically; A_1 ending in middle of anal lobe; anal lobe normal; alula absent; fringe of short hairs on posterior margin of wing. Wing Interference Pattern (Fig. 6) with posterior margin with bands of golden, orange, magenta, blue, and blue green (successively distal to proximal) from cells m2 to anal lobe; cell r4+5 blue at apex, with green and magenta basally.

Abdomen. Dorsum predominantly shining black, with scattered long white hairs, densest laterally; yellow color laterally on tergites I–VII, extending medially as posterior fasciae on segments II–VII, becoming broader on each successive tergite going posteriorly; venter brown, with yellowish color on posterior portion of segments.

Genitalia. Not dissected. Gonocoxites dark brown; epandrium yellow.

Female. Unknown.

Remarks. The WIP is reminiscent of that found in *Qaysug* Evenhuis, which may be evidence of a close morphological relationship. Studies of male and female genitalia (when more specimens are found) would better help in ascertaining phylogenetic affinities of the genus with others in the family.

Etymology. The specific epithet derives from the Latin “*niger*” referring to the characteristic black face of the species.

Acridophagus paganicus (White)

(Figs. 2, 5, 8)

Cyrtomorpha paganica White, 1916: 185.

Robertsella paganica (White). Evenhuis, 1978: 247.

Acridophagus paganicus (White). Evenhuis, 1983: 318; 2024: 19; 2025: 19.

Types. *Holotype* ♂ (examined from photos) from AUSTRALIA: **Tasmania:** Mangalore [near Hobart], 31 January 1913, Arthur White (collected in flight) (in BMNH). **Other material examined:** AUSTRALIA: **Tasmania:** 1 ♂, Hobart, 29 Jan 1918, C.E. Cole (NMVM); 1 ♂, Musselroe, xanthorhea Ridge, N. end, 40.7988°S, 148.0917°E, 16 Jan 2019, hand collected, F97692, S.J. Grove; 1 ♀, Musselroe: Heathlands WNW Turbine D08, 40.7909°S, 148.0893°E, 16 Jan 2019, hand collected, F97644, S.J. Grove (TMAG).

Description

Male (Fig. 2). Lengths: body: 4.0 mm; wing: 3.5 mm. *Head.* Black; eyes dichoptic, separated at vertex by more than distance between lateral ocelli, narrowing to 1.5× width of lateral ocelli at level of antennae; vertex and occiput black, occiput with white decumbent hairs, longest on ventral half; frons with narrow groove medially, black medially to just above antennal bases, brown on inner eye margins, yellowish white just above bases of

antennal bases, line of brownish hairs along inner eye margin to just above antennal bases; face (Fig. 5) receding, yellowish, length shorter than frons, with long, yellowish white hairs; antenna black; scape and pedicel subcylindrical, slightly wider than long; first flagellomere subconical, slightly flared apically, length about 2 times greatest width; second flagellomere long, cylindrical, about 4/5 length of first flagellomere, with small apical style; postgena black, becoming yellowish brown at posterior margin of oral cavity; proboscis brown, pointed apically, length slightly longer than oral margin; labellum about 1/3 length of proboscis; palpus not evident.

Thorax. Mesonotum and scutellum matte black, with dense, long white hairs; humeral callus, large interhumeral triangle, broad notopleural line to wing base, post alar callus, proepimeron, and metakatepisternum yellow; halter stem yellow, knob white.

Legs predominantly yellow, with femora brownish yellow basally; tibiae and tarsal segments I–III yellow, tarsal segments IV–V brown. Coxae with short yellowish hairs distally; femora with dense, long white hairs; tibiae with shorter yellowish white hairs. Pulvilli ovoid, subequal in length to claws.

Wing (Fig. 8). Hyaline; veins yellow; costa ends slightly beyond end of R_{4+5} ; vein Sc ending in wing margin at level of origin of vein R_{2+3} ; R_{2+3} shorter than M_1 , originating at midway point of Rs, ending in wing margin at level midway along R_{4+5} ; Rs evanescent at connection with R_1 ; R_{4+5} slightly sinuous at wing margin; r-m crossvein placed at 2/3 of vein M_{1+2} ; vein M_1 curved toward wing margin; M_2 fairly straight to wing margin; crossvein dm-cu closing cell dm absent; anal cell almost closed at wing margin; CuP slightly curved apically; A_1 incomplete, ending in middle of anal lobe; anal lobe normal; alula reduced; fringe of short hairs on posterior margin of wing.

Abdomen. Dorsum predominantly shining brownish black, with scattered long white hairs, densest laterally; yellow color laterally on tergites I–VII, extending medially as posterior fasciae on all segments, becoming broader on each successive tergite going posteriorly; venter brown medially, with yellowish color on lateral and posterior portions of all segments.

Genitalia. Not dissected. Gonocoxites and epandrium yellowish white; pseudo-surstyli of epandrium dark brown, pointed.

Female. Exhibiting dimorphism and different from the male as follows: in general body appearance, the abdomen is much broader than the thorax, ovate in shape; and the body has more distinct yellow patterning; eyes distinctly dichoptic, separated at vertex by $2\times$ width of ocellar tubercle; scutellum all yellow; mesonotum yellow with pattern of three coalesced black vittae dorsally. Genitalia not dissected.

Distribution. Australia (Tasmania).

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REFERENCES

- Cumming, J.M. & Wood, D.M.** 2017. Adult morphology and terminology, pp. 89–133. *In*: Kirk-Spriggs, A.H. & Sinclair, B.J. (Eds.), *Manual of Afrotropical Diptera*. Vol. 1. Introductory chapters and keys to Diptera. Suricata 4. South African National Biodiversity Institute, Pretoria.
- Evenhuis, N.L.** 1978. Homonymy notes in the Bombyliidae. III. *Entomological News* **89**: 247–248.
- Evenhuis, N.L.** 1983. Nomenclatorial notes on the genera *Robertsella* and *Meganthrax* (Diptera: Bombyliidae). *International Journal of Entomology* **25**: 324.
- Evenhuis, N.L.** 2024. World catalog of Mythicomyiidae (Insecta: Diptera). *Bishop Museum Bulletins in Entomology* **17**, 95 pp.
- Evenhuis, N.L.** 2025. Resolving the genera of Psiloderoidinae in Australia (Diptera: Mythicomyiidae): lost types found, misidentifications rectified, and new genera described. *Bishop Museum Occasional Papers* **162**, 44 pp.
- White, A.** 1916. The Diptera-Brachycera of Tasmania. Part III. Families Asilidae, Bombyliidae, Empidae, Dolichopodidae, & Phoridae. *Papers and Proceedings of the Royal Society of Tasmania* **1916**: 148–294.