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OLD WORLD SPECIES OF *MYTHICOMYIA* COQUILLET  
(DIPTERA: MYTHICOMYIIDAE): EXAMPLES OF A  
RELICT GENUS?

*NEAL L. EVENHUIS*



BISHOP MUSEUM PRESS  
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Cover photo: *Mythicomyia irwini* Evenhuis, n. sp., holotype female from South Africa.

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### BERNICE PAUAAHI BISHOP MUSEUM

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## Old World species of *Mythicomomyia* (Diptera: Mythicomomyiidae): examples of a relict genus?<sup>1</sup>

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**Abstract:** Four new species of *Mythicomomyia* Coquillett, 1893 are described from the Old World: *Mythicomomyia africana* Evenhuis, **n. sp.** (South Africa); *M. irwini* Evenhuis, **n. sp.** (India); *M. tokotaai* Evenhuis, **n. sp.** (Fiji); and *M. vinaka* Evenhuis, **n. sp.** (Fiji). Also, *Mythenteles asiatica* (Evenhuis) from China and *M. rigirostris* (Evenhuis) from Bangladesh are re-examined and transferred back to *Mythicomomyia*. The biogeographical and evolutionary implications of these findings are discussed. A key to the Old World representatives of *Mythicomomyia* is given.

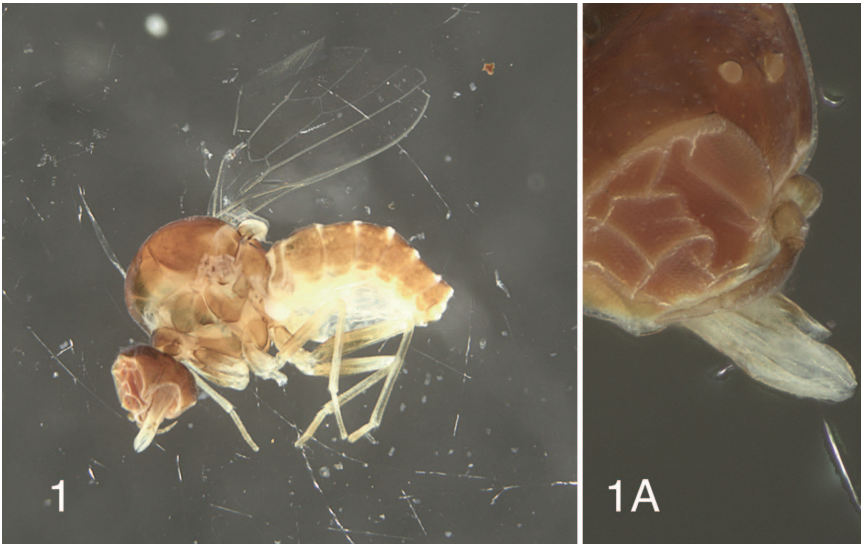
**Key words:** biogeography, taxonomy, microbombyliid, Miocene, disjunct, China, Bangladesh, South Africa, Fiji, India

### INTRODUCTION

The genus *Mythicomomyia* was originally proposed by Coquillett (1893) for the single species *Mythicomomyia rileyi* from California. Since then, more than 180 species have been described in the genus from both North and South America (and hundreds more undescribed species await publication), making it the most speciose genus of microbombyliids (cf. Evenhuis 2002a). It was thought for many years that all species were found in just North and South America until Evenhuis (1981) described two new species from China and Bangladesh. When Hall & Evenhuis (1986, 1987) revised the Nearctic species of *Mythicomomyia*, they placed some species that lacked the typical keel-shaped anal lobe of the wing in the new *Mythicomomyia* subgenus *Mythenteles* Hall & Evenhuis. Evenhuis (1991) noted the difference in antennal and female genitalic characters too and raised *Mythenteles* to a full genus. When compiling the world catalog of Mythicomomyiidae, Evenhuis (2002a) re-read his notes and descriptions of his 1981 Asian species and, along with *Empidideicus indicus* Brunetti from India, placed them all in *Mythenteles*, which resulted once again in *Mythicomomyia* being restricted to the New World.

However, recently examined specimens of *Mythicomomyia* collected from three widely disjunct Old World localities (Fiji, India, and South Africa) forced a re-thinking of the actual range of the genus and a re-examination of the 1981 type material. Results of this study show that the 1981 species placed in *Mythenteles* by Evenhuis (2003): *M. asiatica* and *rigirostris*, had been correctly described in *Mythicomomyia* and are here transferred back to that genus. The resulting disjunct distribution of *Mythicomomyia* (very speciose in North and South America) and disparate collections of singletons or a few specimens in the Old World— South Africa, China, India, Bangladesh, and Fiji—lends support to the possibil-

<sup>1</sup> Contribution 2022-001 to the Pacific Biological Survey.



**Figure 1.** *Mythicomyia africana* Evenhuis, n. sp. **1**, Habitus in transmitted light to show wing veins. Note: scutellum is brown, but appears paler here due to transmitted lighting. **1A**, Detail of antenna.

ity that the genus was once more widespread but has become extinct in many areas of the Old World, while successfully speciating in the western part of the New World.

#### MATERIAL AND METHODS

Specimens in this study derive from or are deposited in the following institutions and collections: BPBM = Bernice Pauahi Bishop Museum, Honolulu, Hawai'i; CAS = California Academy of Sciences, San Francisco, California; ZSI = Zoological Survey of India, Kolakat, India. Morphological terminology follows Evenhuis (2003).

#### TAXONOMY

##### Genus *Mythicomyia* Coquillett

*Mythicomyia* Coquillett, 1893: 209. Type species: *Mythicomyia rileyi* Coquillett, 1893, by monotypy.

##### Subgenus *Heterhybos* Brèthes

*Heterhybos* Brèthes, 1919: 40 (as genus). Type species: *Heterhybos hyalipennis* Brèthes, 1919, by original designation.

*Mythastrabes* Hall & Evenhuis, 1986: 340. Type species: *Mythicomyia antecessor* Melander, 1961, by original designation



**Figure 2**, *Mythicomyia irwini* Evenhuis, n. sp., habitus.

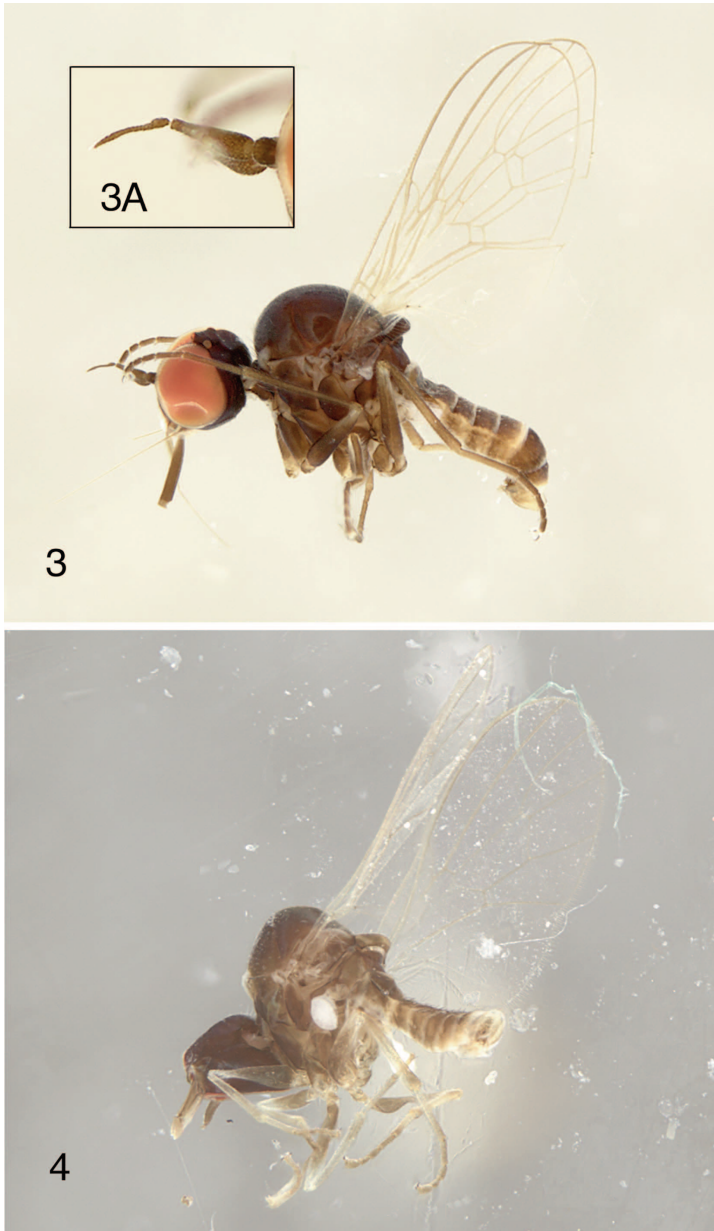
***Mythicomyia (Heterhybos) tokotaai* Evenhuis, n. sp.**

(Fig. 3)

lsid:zoobank.org:act:868AF39E-49C2-444F-9E93-C89029392560

**Type material.** Holotype male (BPBMENT0000081232) (FBA 14496) and paratype male (BPBMENT0000081233) (FBA 14497) from: **FIJI**: Taveuni I: Cakaudrove District, 3.2 km NW Lavenga Village, Mt Koronibuabua, 16.855°S, 179.89°W, 217 m, 26 Mar–9 Apr 2004, Malaise 3, E.I. Schlinger, M. Tokota'a (FBA 14496) Holotype and paratype (both preserved in fluid) [paratype damaged with head separated from body] in BPBM.

**Diagnosis.** Using the key to Nearctic species of *Mythicomyia* in Hall & Evenhuis (1987), this species runs to *M. agilis* Melander from California, but can be separated from it by the long proboscis (slightly longer than head height in *M. agilis*), the lack of a contrasting notopleural line from the humeral callus to the pleural suture (this area yellow in *M. agilis*), and the broadly open anal cell at the margin (narrowly open in *M. agilis*). Using



Figures 3–4. *Mythicomyia* (*Heterhybos*) habituses. 3, *M. (H.) tokotaai* Evenhuis, n. sp. 3A, Detail of antenna. 4, *M. (H.) vinaka* Evenhuis, n. sp.

the key in Hall (1976), this new species runs to *M. macra* Hall and is most similar to it based on the extremely long proboscis in both species, but differs from it by the all dark brown postalar callus (partially yellow in *M. macra*) and the brilliant white halter knob (yellow in *M. macra*).

**Description.** Male (Fig. 3). Length: 1.70 mm. *Head.* Vertex, occiput, and mentum black; eyes holoptic; front and face white, tip of oral margin black; antennae (Fig. 3A) black; scape minute; pedicel cylindrical, slightly wider than long; first flagellomere linear-lanceolate, length about 3.5 times greatest width; second flagellomere about equal in length to first flagellomere, with subbasal sensillum; proboscis dark brown, long, extending about 2.5 times head height [apical 2/3 of proboscis broke off during examination and is kept with the type in the same vial]; palpus not evident.

*Thorax.* Mesonotum and scutellum dark brown, with sparse short white hairs, densest anteriorly; humeral callus white; pleura dark brown, katapisternum with thin yellowish border dorsally.

*Legs.* Coxae and femora dark brown except apices yellow; all of tibiae and tarsi lighter brown than coxae and femora; halter stem yellow, knob brilliant white.

*Wing.* Hyaline; veins yellowish brown; costa ends slightly less than halfway between end of R<sub>4+5</sub> and M<sub>1</sub>; vein Sc incomplete; Rs evanescent at connection with R<sub>1</sub>; R<sub>2+3</sub> arising at midpoint of Rs, slightly sinuous to junction with R<sub>1</sub>; R<sub>4+5</sub> straight to wing margin, not curved; vein M<sub>1</sub> slightly curved toward wing margin; M<sub>2</sub> fairly straight to wing margin; A<sub>1</sub> evanescent, fairly straight to wing margin, not curved or sinuous; fringe of hair on posterior margin of wing rather sparse.

*Abdomen.* Dorsum brown, with scattered white hairs; tergites II–VII with thin white fascia posteriorly, yellowish laterally; venter yellow. Genitalia not dissected.

**Etymology.** Names for one of the collectors, Moala Tokota'a who provided useful assistance and great camaraderie in the field during our Fiji Terrestrial Arthropods survey.

*Mythicomyia (Heterhybos) vinaka* Evenhuis, n. sp.

(Fig. 4)

lsid:zoobank.org:act:6DA2D163-28CC-428E-9045-E14B023AABD8

**Type material.** Holotype male (BPBM0000081234) (FBA 156163) from: **Fiji:** Taveuni: 5.3 km SE Tavuki Village, Mt. Devo, 1064 m, 16.8741°S 179.968°W, 2–10 Oct 2002, Malaise 3, E.I. Schlinger, M. Tokota'a. Holotype (preserved in fluid) in BPBM.

**Diagnosis.** Using the key to Nearctic species of *Mythicomyia* in Hall & Evenhuis (1987), this species runs to *M. discreta* Hall & Evenhuis from California, but can be separated from it by the yellow postalar callus (postalar callus black in *M. discreta*) and the yellowish tibiae and tarsi (legs all black in *M. discreta*). Using the key in Hall (1976), this species runs to *M. orthis* Hall, but can be distinguished from it by the yellowish tibiae and tarsi (legs all black in *M. orthis*).

**Description.** Male (Fig. 4). Length: 1.20 mm. *Head.* Vertex, occiput, and mentum black; eyes holoptic; front and face black, tip of oral margin black; antennae brown; scape minute; pedicel cylindrical, slightly wider than long; first flagellomere linear-lanceolate, length about 3.5 times greatest width; second flagellomere broken off and missing; proboscis brown, short, length about 3/4 head height; palpus not evident.

*Thorax.* Mesonotum and scutellum dark brown, with evenly spaced short white hairs; humeral callus, post humeral area, supra-alar area, and post alar callus yellow; pleura dark brown, yellow only in membranous areas.

*Legs.* Baal 1/3 of coxae and basal 2/3 of femora dark brown; apical 2/3 of coxae, apical 1/3 of femora, all of tibiae, and tarsi yellowish to yellowish white; halter yellow, knob brilliant white.

*Wing.* Hyaline; veins yellowish white; costa ends slightly less than halfway between end of  $R_{4+5}$  and  $M_1$ ; vein Sc incomplete; Rs evanescent at connection with  $R_1$ ;  $R_{2+3}$  arising at apical 1/3 of Rs, slightly sinuous to junction with  $R_1$ ;  $R_{4+5}$  straight to wing margin, not curved; vein  $M_1$  slightly curved toward wing margin;  $M_2$  fairly straight to wing margin;  $A_1$  evanescent, fairly straight to wing margin, not curved or sinuous; fringe of hair on posterior margin of wing rather sparse.

*Abdomen.* Dorsum brown, with scattered white hairs; yellowish white posteriorly on tergites II–VII; venter yellow. Genitalia not dissected.

**Etymology.** The specific epithet derives from the Fijian “*vinaka*” = “thank you”; in thanks to all who worked with or assisted us in our Fiji Terrestrial Arthropods study. The name is treated as a noun in apposition.

**Remarks.** During photography of the holotype, the head became detached from the body. It is stored with the holotype in the same vial.

### Unplaced to Subgenus of *Mythicomyia* Coquillett

#### *Mythicomyia africana* Evenhuis, n. sp.

(Fig. 1)

lsid:zoobank.org:act:2428E0DD-C662-4866-A23B-F4D3E032AA74

**Type material.** Holotype female from: **SOUTH AFRICA:** Western Cape: 43 km N. Matjiesfontein, 3–24 Oct 2004, 970 m, 32°51'35"S, 20°33'37"E, ME Irwin, F Parker, M Hauser. Holotype (preserved in fluid) in CAS.

**Diagnosis.** Using the key to females of Nearctic *Mythicomyia* in Hall & Evenhuis (1987), this species runs to couplet 14 where it is stymied between *arizonica* Hall & Evenhuis and *armata* Cresson. It does not key to either because it lacks yellow fasciae on the abdominal tergites (*arizonica* and *armata* both possess yellow fasciae). Using the key to species in Hall (1976) it runs to *diasema* Hall but differs in having a short proboscis (the proboscis in *diasema* is as long as the head) and the hind femur coloration (brown on basal half, yellow in apical half in *africana*, all yellow with apex brown in *diasema*).

**Description.** Female (Fig. 1). Length: 1.30 mm. *Head.* Vertex, occiput, and mentum black; eyes dichoptic, separated at vertex by 1.5 times distance between lateral ocelli; front and face dark brown, paler just above antennae, tip of oral margin brown; antennae (Fig. 1A) brown; scape minute; pedicel cylindrical, slightly wider than long; first flagellomere linear-lanceolate, length about 3.5 times greatest width; second flagellomere about 3/4 length of first flagellomere, with subapical sensillum; proboscis yellowish white, short, extending slightly beyond oral margin; palpus not evident.

*Thorax.* Mesonotum brown, scutellum brown; humeral callus, post humeral area, supra-alar area, and post alar callus yellowish white; notopleural band from humeral cal-



lus to postalar callus yellow, interrupted in supraalar area; anepisternum, katepisternum and anepimeron yellow above, dark brown below; other plura brown; halter stem and knob yellow.

*Legs.* Foreleg yellowish white; mid leg with coxa and basal third of femur brown, apical two-thirds yellow; hind leg with coxa and basal half of femur brown, apical half yellow; mid tibia all yellow, hind tibia yellow, brown on apical one-third; mid and hind basitarsi yellow, tarsal segments 2–5 and claws [broken off during examination] brown.

*Wing.* Hyaline; veins white; costa ends slightly less than halfway between end of  $R_{4+5}$  and  $M_1$ ; vein Sc complete; Rs evanescent at connection with  $R_1$ ;  $R_{2+3}$  arising at apical 1/3 of Rs, slightly sinuous to junction with  $R_1$ ;  $R_{4+5}$  and  $M_1$  slightly curved toward wing margin;  $M_2$  fairly straight to wing margin;  $A_1$  fairly straight to wing margin, not curved or sinuous; fringe of hair on posterior margin of wing rather sparse.

*Abdomen.* Dorsum all brown, with scattered white hairs; sternites yellow. Genitalia not dissected.

**Remarks.** Other mythicomyiids collected with the holotype include the genera *Dolipteryx*, *Empidideicus*, *Glabellula*, *Cephalodromia*, and *Pieza* (the last a new record of the genus for the Old World).

***Mythicomyia irwini* Evenhuis, n. sp.**

(Fig. 2)

lsid:zoobank.org:act:8FC7E8D2-2899-421D-BBDB-07044822C610

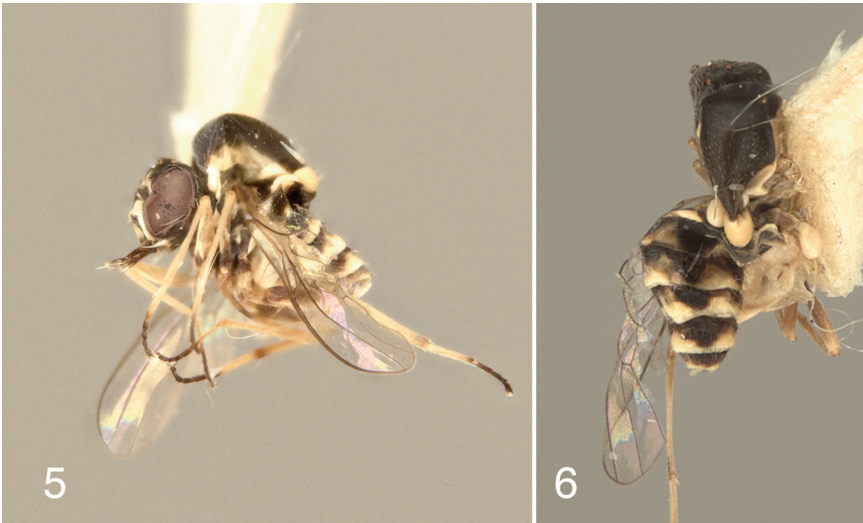
**Type material.** Holotype female from: **INDIA:** Rajasthan: Jaisalmer District: 15 km SW Jaisalmer, 280 m, 26°48'41"N, 70°50'27"E, 2 Mar 2008, M.E. Irwin, D.R. Priyadarsanan, hand netted in riverbed dunes. Holotype (preserved in fluid) in ZSI.

**Diagnosis.** Using the key to Nearctic species of *Mythicomyia* in Hall & Evenhuis (1987), this species runs to *M. desertorum* Hall & Evenhuis from California based on the abdominal pattern. *Mythicomyia irwini* n. sp. can be separated from it by the front being black above, white below (yellow with a black triangle in *M. desertorum*) and tergite I being brown (tergite I yellow in *M. desertorum*). Using the key in Hall (1967), it runs to *M. trepta* Hall, but differs by having the front black above and broadly white below (all black except yellow restricted to a small triangle in *M. trepta*) and the black and yellow abdomen (all black in *trepta*).

**Description.** Female (Fig. 2). Length: 1.70 mm. *Head.* Vertex, occiput, ocellar tubercle, and mentum black; eyes dichoptic, separated at vertex by 1.5 times distance between lateral ocelli; front black above, white below, face white, tip of oral margin black; antennae brown; scape minute; pedicel cylindrical, slightly wider than long; first flagellomere linear-lanceolate, length about 4 times greatest width; second flagellomere about 2/3 length of first flagellomere, with subbasal sensillum; proboscis brown, short, extending slightly beyond oral margin; palpus not evident.

*Thorax.* Mesonotum black, scutellum yellow, with evenly spaced short white hairs; uninterrupted broad band of white laterally from humeral callus to supra alar area, post alar callus white; pleural sclerites white above, dark brown below; halter stem and knob white

*Legs.* Coxae with small basal brown spot, otherwise legs yellowish white, except tarsi 2–5 brown; claws pale brown.



**Figures 5–6.** *Mythicomyia asiatica* Evenhuis. **5.** Habitus, lateral. **6.** Habitus, dorsal.

*Wing.* Hyaline; veins yellowish white; costa ends slightly beyond end of  $R_{4+5}$ ; vein Sc incomplete; Rs evanescent at connection with  $R_1$ ;  $R_{2+3}$  arising at apical 1/3 of Rs, slightly sinuous to junction with  $R_1$ ;  $R_{4+5}$  straight to wing margin, not curved; vein  $M_1$  slightly bowed toward wing margin;  $M_2$  fairly straight to wing margin;  $A_1$  evanescent, fairly straight to wing margin, not curved or sinuous; fringe of hair on posterior margin of wing rather sparse.

*Abdomen.* Tergites with anterior half brown, posterior half yellowish white, with scattered white hairs; posterior margins of brown on tergites wavy, not straight; venter yellow. Genitalia not dissected.

**Etymology.** Names after one of the collectors, Michael E. Irwin, who kindly provided much mythicomyiid material over the years for study.

***Mythicomyia asiatica* Evenhuis**

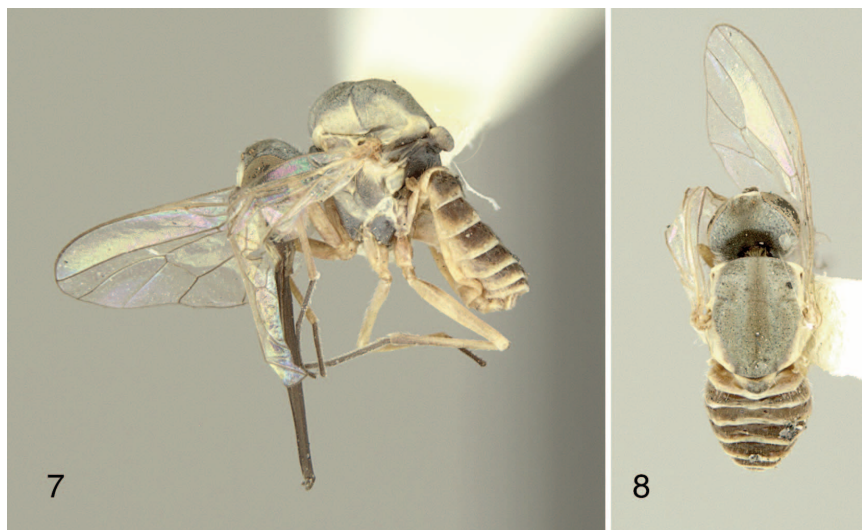
(Figs. 5–6)

*Mythicomyia asiatica* Evenhuis, 1981: 5.

*Mythenteles asiatica* (Evenhuis): Evenhuis 2002a: 36; Yao *et al.* 2018: 147.

**Material Examined.** Holotype female from: CHINA: “Szechuan” [now Chongqing]: “Mo-Tau-Kai, Wan Hsien” [former Wanxian] [= Wanzhou] [30°48'27.36"N, 108°24'30.96"E], 4200–4400 ft. [1280–1341 m], 26 Sep 1848, J.L. Gressitt & Djou. Holotype in CAS.

**Diagnosis.** This species is closest to *M. irwini* by both having a short proboscis and a yellow scutellum, but it is easily separated from it by having brown basally on the femora (femora all yellow in *M. irwini*) and the open anal cell in the wing margin (anal cell closed at the wing margin in *M. irwini*).



Figures 7–8. *Mythicomyia rigirostris* Evenhuis. 7, Habitus, lateral. 8, Habitus, dorsal.

**Remarks.** The holotype female (Figs. 5–6) of *Mythicomyia asiatica* was re-examined during this study and found to be a true *Mythicomyia*, so it is transferred back to that genus here. The antennae are broken off beyond the scape, so it is impossible to use this character. In revising the genus *Mythenteles* Evenhuis (2003) re-examined and concluded it belonged in *Mythenteles*. During this study, the holotype was once again examined, and it was found that the vein  $R_1$  is sinuous (a character state possessed by *Mythicomyia* and a few *Mythenteles*) but the base of M was evanescent. This vein is well sclerotized in *Mythenteles*, but evanescent in *Mythicomyia*. Thus, *M. asiatica* it is here transferred back to *Mythicomyia*.

The type locality of Wanxian [now Wanzhou] was located in Sichuan Province when the type was collected, and was listed as such in Yao *et al.* (2018), but the eastern part of Sichuan became the separate provincial-level municipality of Chongqing in 1997.

### *Mythicomyia rigirostris* Evenhuis

(Figs. 7–8)

*Mythicomyia rigirostris* Evenhuis, 1981: 6.

*Mythenteles rigirostris* (Evenhuis): Evenhuis 2002a: 36.

**Material Examined.** Holotype female from: “E. Pakistan” [= Bangladesh], Harbang Forest, 6 mi [9.7 km] N. Chiringa [21°52′05.9″N 92°02′35.0″E], 50 ft [15.25 m], 18 Sep 1961, E.S. Ross & D.Q. Cavagnaro. Holotype in CAS.

**Diagnosis.** This species is easily separated from its congeners in the Old World by the long proboscis (other females of *Mythicomyia* in the Old World have a proboscis shorter than the head height) and the yellow and black scutellum (other species have uniformly colored scutellum—either all yellow or all brown).

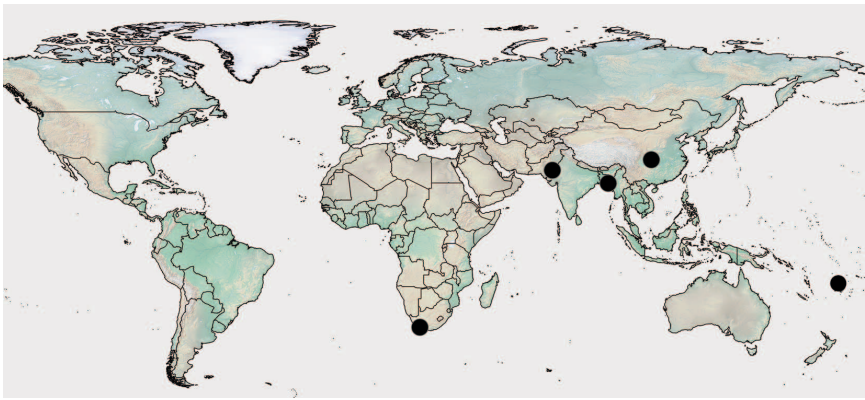


Figure 9. Map of *Mythicomyia* distribution in the Old World.

**Remarks.** The holotype female (Figs. 7–8) of *Mythicomyia rigirostris* was re-examined during this study and found to be a true *Mythicomyia*, so it is transferred back to that genus here. The antennae are broken off beyond the scape, so it is impossible to use this character; however, the wing shape (possessing a well developed [= keel-shaped] anal lobe) is unique to *Mythicomyia*. In revising the genus *Mythenteles* Evenhuis (2003) re-examined the holotype and re-humidified it in order to better ascertain the shape of the wing. It was concluded at that time that the anal lobe was reduced in shape and not keel-like and thus its treatment at that time in *Mythenteles*. During this study, the holotype was once again examined with special reference to the anal region. It is clear now, that what appeared to be a reduced anal lobe was mistaken because of the lobe was torn and not all of it could be seen. Better magnification used here concludes that is indeed keel-shaped. Additionally, the long tubular proboscis is not found in any species of *Mythenteles*. All *Mythenteles* have a proboscis shorter than the head and with the labellae one-third to one-half the length of the proboscis. The labellae of *M. rigirostris* are small and 1/10 the length of the proboscis.

KEY TO SPECIES OF OLD WORLD *MYTHICOMYIA*

- 1. Male ..... 2
- Female ..... 3
- 2. Proboscis much longer than head height (Fig. 3); postalar callus brown (Fiji) ..... *M. tokotaai* Evenhuis, n. sp.
- Proboscis shorter than head height (4); postalar callus yellow (Fiji) ..... *M. vinaka* Evenhuis, n. sp.
- 3. Scutellum brown with yellow laterally (Fig. 8); proboscis much longer than head height (Fig. 7); (Bangladesh) ..... *M. rigirostris* Evenhuis
- Scutellum uniformly colored brown or yellow but not mixtures of two; proboscis shorter than head height (Figs. 1, 2, 5) ..... 4

- 
- 
4. Scutellum all yellow (Figs. 2, 5); notopleural band complete from humeral callus to postalar callus (Asia) ..... **5**
  - . Scutellum all brown (Fig. 1), concolorous with mesonotum; notopleural band not complete, interrupted above wing base (South Africa) ..... *M. africana* Evenhuis, **n. sp.**
  5. Femora all yellow (Fig. 2); anepisternum black below broad whitish notopleural band; anal cell closed at wing margin by short stalk (India) ... *M. irwini* Evenhuis, **n. sp.**
  - . Femora brown basally, yellow apically (Fig. 5); anepisternum white below broad whitish notopleural band; anal cell open at wing margin (China) .....  
..... *M. asiatica* Evenhuis

### DISCUSSION

The collection of disparate and rare Old World representatives of an otherwise speciose New World genus is an interesting biogeographic puzzle (see Fig. 9). *Mythicomyia* are a common element in Malaise and yellow pan trap collecting in arid western North and South America (with 160+ described species and an additional 100+ new species awaiting description) but are extremely rare in the Old World. Species shown here from in these widely separated Old World localities could be a result of ancient relictual populations. This assumption is confounded, however, by the age of *Mythicomyia*.

The oldest known fossil representative of *Mythicomyia* is from c. 20 Ma Miocene Dominican amber (Evenhuis, 2002b), which is ca. 110 million years after the separation of the African and South American continents. Mythicomyiidae are an old lineage with the oldest known fossil deriving from the Middle Jurassic (ca. 180 Ma). However, those fossils that are contemporary or older than the breakup of South America+Africa (varying estimates from 140 to 180 Ma; Schettino & Scotese 2005, Seton *et al.* 2012) all belong to the subfamilies Platypyginae or Psiloderoidinae, not Mythicomyiinae. All Old World fossil representatives of the subfamily Mythicomyiinae are genera other than *Mythicomyia* (Evenhuis 2002a, 2003, 2013), with the oldest being *Mythenteles* Evenhuis, 2002 from Eocene Baltic amber and *Riga* Evenhuis, 2013 from Eocene Rovno amber. The findings here seem to point to the possibility that *Mythicomyia* may represent a much older lineage than current analyses show. The species of *Mythicomyia* used in the molecular analyses of Trautwein *et al.* (2010, 2011) derived from western North America and may be a young offshoot of a much older Old World ancestor.

Another factor to consider is that there are two subgenera of *Mythicomyia* currently recognized: *Mythicomyia* Coquillett and *Heterhybos* Brèthes. The nominate subgenus is separated from *Heterhybos* by the presence of a modified hind basitarsus in the male; unfortunately, no external characters have yet been found to separate females (dissection of female genitalia is required). *Mythicomyia* (*Mythicomyia*) is restricted to the Nearctic whereas the subgenus *Heterhybos* is found in the New World and Fiji (the species from India, Bangladesh, and Africa are females, and it is not possible without dissection to determine subgeneric status, but it is believed they will turn out to also belong to *Heterhybos*). The *Mythicomyia* species used in the Trautwein *et al.* (2010, 2011) DNA analyses and its sequence deposited in GenBank is of an undetermined species. In fact, all DNA analyses except one have used undetermined species of *Mythicomyia* (e.g., Moulton & Wiegmann 2007, Wang *et al.* 2021, Wiegmann *et al.* 2011, etc.); Whiting *et al.* (1997) used

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*Mythicomyia atra* Cresson, which is a member of the subgenus *Heterhybos*. However, only 18S and 28S ribosomal DNA was used by Whiting *et al.* (1997) in comparison with much higher level taxa of different orders, so this analysis does not give any useful information regarding the relationships within the genus, family, or other related Asiloidea. It could be very well that these undetermined species in the Trautwein (2010, 2011) study and other analyses are all members of the nominate subgenus, which is hypothesized here to be a modern descendant of a much older *Heterhybos* lineage. Analyses of representatives of the subgenus *Heterhybos* from different parts of the world should be conducted in future analyses to better ascertain the relationships of members of this genus.

Molecular analysis of representatives from both subgenera could help with determining not only relationships among taxa but also the ages of these Old World species. Unfortunately, material of species studied in this paper are too rare (only one has a paratype and it is damaged) to subject them to destructive sampling for DNA analysis (even removal of a leg would be detrimental to accurate identification and, due to their small size, one leg would not be enough to recover enough DNA for analysis) and are in too poor a condition to subject them to tissue dissolving to DNA. Until more material of these species becomes available for molecular analysis, the biogeographic history of *Mythicomyia* unfortunately cannot be determined with absolute confidence.

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