

STUDIES IN NEW WORLD BOMBYLIIDAE (DIPTERA)

I. Notes on some Nearctic *Bombylius*,
with descriptions of new speciesNeal L. Evenhuis¹

Abstract. The species status of *Bombylius helvus* is clarified based on examination of type material. Two new species, *Bombylius forbesi* and *B. anthophilus*, are described. New distribution records are given for *Bombylius breviabdominalis*, *B. curtirhynchus*, *B. diegoensis*, *B. flavifacies*, *B. plichtai*, *B. ballmeri* and *B. duncani*.

This series is designed to serve as an ongoing project for short papers and notes concerning Nearctic and Neotropical Bombyliidae. It will augment, append, and supplement Hall & Evenhuis' work on the Nearctic Bombyliidae presently in progress (cf. Hall & Evenhuis 1980, 1981, 1982) in Griffiths' *Flies of the Nearctic Region*, and the recently completed catalog of Bombyliidae of the Americas south of the United States (Painter et al. 1978). The series is intended to include brief systematic works and notes on various biological aspects of Bombyliidae. Large works such as generic revisions and monographs will be published elsewhere.

Results of recent collecting by me in Mexico and the SW United States, access to other collected material from these areas, and examination of type material since publication of Hall & Evenhuis (1980) are presented.

All primary types of new species described herein are deposited in Bishop Museum, Honolulu (BPBM); acronyms for other repository institutions are used as follows: NMSU, New Mexico State University, Las Cruces; SDNHM, San Diego Natural History Museum.

***Bombylius helvus* Wiedemann, 1821**

Bombylius helvus Wiedemann, 1821: 164.—Aldrich, 1905: 235.—Painter & Painter, 1962: 9; 1965: 409.—Hull, 1973: 79.—Painter et al., 1978: 38.3.—Hall & Evenhuis, 1980: 52.

Bombylius maculifer Walker, 1852: 200, **new synonymy**.

Bombylius azalae Shannon, 1916: 71, **new synonymy**.

Previous authors (Painter & Painter 1962; Hall & Evenhuis 1980) have treated *Bombylius helvus* as a nomen dubium. Examinations of the type male and 1 other non-type specimen in the Naturhistorisches Museum, Vienna, under the name "*helvus*," show this species to be conspecific with *maculifer* Walker and *azalae* Shannon. The type male from Mexico is without a locality label. It carries a blank square pink label, along with the labels "*helvus* det. Wiedem." and "*helvus* Wied.", the last one in

1. Department of Entomology, Bishop Museum, P.O. Box 19000-A, Honolulu, Hawaii USA, 96819.

Wiedemann's handwriting [Painter & Painter (1962) incorrectly state that both handwritten labels are in Wiedemann's handwriting]. The type is in fair condition with slight matting of pile on the anterior portion of the mesonotum as well as the lateral and ventral portions of the abdomen.

The other specimen, also a male, carries the labels "helvus coll. Winthem" and "Savannah." Its condition is much better than that of the type. This specimen is not considered part of the type material upon which Wiedemann based his species *helvus*, though it is conspecific with the type from Mexico.

Painter & Painter (1962) suggested leaving this species among the questionable, giving as one of their reasons, "no species are so far known from Mexico which have a proboscis as long as in this specimen." Species of *Bombylius* such as *lancifer* Osten Sacken, *facialis* Cresson, and others are able to lengthen their proboscides to as much as 2× their normal retracted length, enabling them to probe for nectar and pollen in long corolla-tubed flowers (Huether 1966). The extreme length of the proboscis in the type of *helvus* (ca. 1.5× body length) is, in fact, the lengthened state of the proboscis as described above. Four additional specimens of *helvus* from Mexico have since been examined and all fit the description of the species rather well. Two have the proboscis extended; the other 2 have the proboscis in the retracted state.

The description of *B. maculifer* Walker in Hall & Evenhuis (1980) will serve to identify this species and, therefore, is not repeated here.

To the known records of *helvus* [published under *maculifer* in Hall & Evenhuis (1980)], the following new records from Mexico can be added.

MEXICO: Nuevo Leon: 46, 9–16 mi [14.5–25.7 km] W [of] Linares, 23–25.IV.1966, R.H. & E.M. Painter (U.S. National Museum).

***Bombylius forbesi* Evenhuis, new species**

Fig. 1–2

This species keys to *B. eboreus* Painter in Hall & Evenhuis (1980). It differs from *eboreus* by the white palpal hairs, intermixed black and white hairs on the ocellar tubercle, the dark brown halter, black femora, and the shape of the male genitalia.

♂. *Length*: 4.5–9.0 mm. *Head*: gray-brown, occiput cinereous, mentum gray, front erect black pilose, tuft of silvery yellow tomentum lateral to antenna; face and gena mixed black and pale yellow pilose; mentum long white pilose; ocellar tubercle mixed long black and white pilose; occiput dense short pale yellow pilose and tomentose; antenna black, segment I with long black hair 2× its length, segment II with short brown hairs subequal to its length, segment III and stylar segments bare; antennal ratio 2:1:6; palpus black with long white hairs laterally; proboscis black, subequal in length to head and thorax combined. *Thorax*: mesonotum and scutellum dull black, dense pale yellow pilose, a few black hairs on post alar calli, scutellum and posterior portion of mesonotum; sparse yellowish tomentum on posterior portion of mesonotum and middle of scutellum; pleura gray-black, dense yellowish white pilose; halter stem brown, knob dark brown. *Legs*: coxae, femora and apical tarsal segments black, remainder of legs orange; coxae and bases of femora long white pilose; femora with dense white scales; hind femur with 4–6 black spines ventrally, a few smaller black setulae dorsally at apex; tibiae

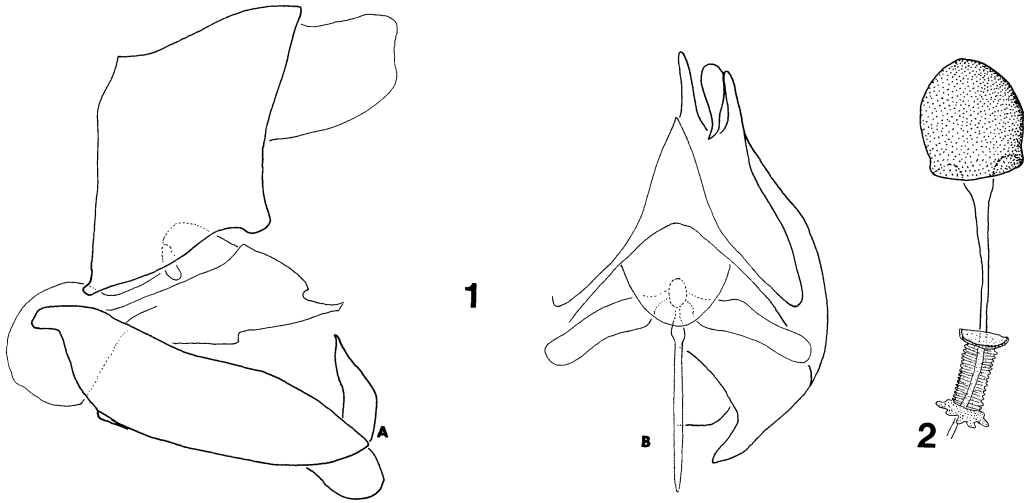


FIG. 1-2. *Bombylius forbesi*. 1, ♂ genitalia: a, lateral view; b, dorsal view. 2, ♀ spermatheca.

and tarsi with black spines; pulvilli vestigial; claws black. *Wing*: infuscated brown basally, tinting extending to arculus and alula, costal and submarginal cells yellowish brown, otherwise smoky hyaline; r-m crossvein at basal $\frac{1}{3}$ of discal cell; squama dark brown with brown fringe. *Abdomen*: dull black, dense pale yellow pilose on tergites I-III, white pilose on tergites IV-VII; tufts of black pile laterally on segments II and III; sparse long black hairs on posterior margins of tergites II-VII; dense yellowish white tomentum on dorsum of segments IV-VII; sternites brownish with dense white tomentum, sparse yellowish pile; black hairs on segments V-VII. *Genitalia* (Fig. 1): in lateral view with basistylus linear-ovate, darkly sclerotized, with basal claw; dististylus humped, broad basally, tapering sharply to hooked apex; epiphallus broad basally, tapering to short thin neck, with small dorsal projection; tip of aedeagus truncate; basal apodeme large, rounded, slightly sclerotized; epandrium rectangular, with prominent anterior and posterior processes; cerci slightly exerted.

♀. Much like the ♂ except: body pile with a much more shaggy appearance; eyes separated above by $2.5\times$ width of ocellar tubercle; front with golden tomentum in addition to black pile; pile of thorax and abdomen white; wing smoky hyaline, without basoanterior infuscation; lateral black abdominal tufts less pronounced than in ♂; pale yellow tomentose midline present from just anterior to scutellum to apex of abdominal tergum; genitalia (Fig. 2): acanthophorites with 12-14 pairs of spines hooked apically; vaginal apodeme L-shaped, sclerotized; spermathecal reservoir subhemispherical, sclerotized; apical spermathecal duct recessed into basal portion of spermathecal reservoir as in *B. frommerorum* Hall & Evenhuis; ejaculatory apparatus short, without canaliculi; apical valve small, cup-shaped, basal valve flat, disc-shaped; basal duct thin.

Holotype ♂ (BPBM 12,777), allotype ♀ (BPBM) and 22♂, 1♀ paratypes, MEXICO: Durango: 8.5 km W [of] La Zarca, 24.IX.1981 (G.S. Forbes, N.L. Evenhuis). Other paratypes: MEXICO: Durango: 1♂, Hwy 45, 12 mi [19.3 km] N [of] La Zarca, 24.X.1980 (G.S. Forbes); 1♂, 90 km N [of] La Zarca, 24.IX.1981 (Evenhuis); Zacatecas: 2♂, 32 mi [51.5 km] NW [of] Fresnillo, 23.X.1980 (G.S. Forbes). Paratypes in BPBM, NMSU.

Etymology. This species is named in honor of Mr Gregory S. Forbes, without whom this species might have gone undiscovered for a good many years.

Remarks. All specimens were collected in and around culverts in association with composite flowers. At the 8.5 km W of La Zarca site, males were collected while hovering and protecting their respective territories close to the composite flowers. Females were collected while feeding on flowers of the unidentified composite in association with 2 species of the *Bombylius comanche* group.

The 3 smallest male specimens (4.5 mm) in the type series examined differ slightly from their larger counterparts by having disproportionately longer hairs on the thorax and abdomen, giving them a shaggier appearance. Otherwise they agree well with the description above.

***Bombylius anthophilus* Evenhuis, new species**

Specimens of this species have previously been determined as *B. major* Linnaeus. As pointed out in Hall & Evenhuis (1980), there are 2 color forms of *B. major* in the Nearctic Region, the typical brown form and a silver (or whitish) form. The silver form was left undescribed in Hall & Evenhuis (loc. cit.) pending further study. Examination of material of this form occurring sympatrically with the brown form leads me to conclude that the silver form is, in fact, a separate taxon. Examination of numerous individuals of both forms over many years of collecting failed to turn up any intergrades between the 2. Both forms occur commonly at the same location.

B. anthophilus can be separated from *B. major* by the characteristic white pile and 2 contrasting reddish-brown to black crossbands on the venter (one across the venter of the metasternal region and the other across the abdominal sternum). In addition, there is commonly a reddish-brown pleural stripe from the occiput to the root of the wing, contrasting with the surrounding white pile.

♂. *Length:* 8.0–12.0 mm. *Head:* brown; front, face, antenna, upper oral margin dense black and reddish-brown pilose; ocellar tubercle black pilose; lower oral margin and mentum white pilose; occiput gray, short yellow pilose and tomentose along upper orbits, long black hairs intermixed, 2× length of shorter yellow pile, reddish brown pilose and tomentose laterally as continuation of thoracic pleural stripe; antenna black; antennal ratio 3:1:9; palpus black with long black hairs laterally; proboscis ca. 3× length of head. *Thorax:* mesonotum and scutellum dull black, dense short white pilose, a few short black hairs mixed in on posterior mesonotum above base of wing; scutellum without dark hairs or bristles; pleura gray, white pilose; pleural stripe of reddish-brown pile from humeral callus to root of wing; metapleuron reddish-brown pilose; halter dark brown. *Legs:* coxae and basal halves of femora black, remainder of legs orange; fore coxa and femur dense long white pilose mixed with a few black hairs; mid and hind coxae and femora reddish-brown pilose; hind femur with 6–8 black spines ventroapically; tibiae and tarsi with black spines; claws black; pulvilli subequal in length to claws. *Wing:* tinted as in *B. major*, though generally darker brown; r-m crossvein just before middle of discal cell; squama tan with fringe of white pile. *Abdomen:* black, dense white pilose; tergite II with lateral tuft of reddish-brown pile extending across venter so as to form a crossband; tergites IV and V with reddish-brown tufts of pile laterally. *Genitalia:* as in *B. major*.

♀. As in ♂ except: eyes separated by 3× width of ocellar tubercle; yellowish pile evident on face and front, intermixed with black pile; white tomentose midstripe on abdominal tergum from tergite II–VI and on scutellum; genitalia similar to *B. major* except ejaculatory apparatus longer.

Holotype ♂ (BPBM 12,778), CALIFORNIA: Sonoma Co: Dovoul Cr, 7.IV.1978 (N.L. Evenhuis). Allotype ♀ (BPBM), and 1♂, 1♀ paratypes, CALIFORNIA: Marin Co: Mt Tamalpais State Park, 12.IV.1978 (Evenhuis). Other paratypes: ARIZONA: Cochise Co: 1♀, Huachuca Mts: Ash Cyn: ½ mi [0.80 km] W [of] Hwy 92, 5100 ft [1554.5 m], 20.II.1981 (N. McFarland) (BPBM). CALIFORNIA: San Diego Co: 1♂, Escondido, 29.I.1955 (B. Bailey); 3♀, Banner Grade, 21.II.1979 (Faulkner); 1♀, Otay Mt, 18.II.1978 (Faulkner); 1♂, no locality, 5.II.1955 (Bailey). MEXICO: Baja California Norte: 1♂, 4 mi [6.44 km] N [of] Alamo, 12.II.1936 (C.F. Harbison), all deposited in SDNHM.

Examination of a small collection of *Bombylius* from Baja California Norte in SDNHM contained the following species and extends each of their distributions given in Hall & Evenhuis (1980) into that state.

***Bombylius breviabdominalis* Evenhuis**

Bombylius breviabdominalis Evenhuis, 1977: 125.

Material examined. MEXICO: Baja California Norte: 1♂, Ensenada, 29.VI.1925 (W.S. Wright); 1♀, 9 mi [14.5 km] E of Ojos Negros, 9.VI.1980 (Brown, Faulkner); 1♀, Sierra San Pedro Martir: vicinity of La Encantada, 21.VI.1979 (Brown, Faulkner); 1♂, 8 mi [12.8 km] E of Tecate, Hwy 2, 30.VI.1980 (Faulkner, Brown).

***Bombylius curtirhynchus* Evenhuis**

Bombylius curtirhynchus Evenhuis 1978: 34.

Material examined. MEXICO: Baja California Norte: 3♂, 17♀, 5.2 mi [8.4 km] N of Sordomudo, 6,9.III.1979 (Brown, Faulkner); 1♂, Valle de la Trinidad, 20.III.1936 (C.F. Harbison).

***Bombylius diegoensis* Painter**

Bombylius albicapillus diegoensis Painter, 1933: 16.

Bombylius diegoensis Painter: Hall & Evenhuis, 1980: 37.

Material examined. MEXICO: Baja California Norte: 1♂, 2.7 mi [4.3 km] N of El Testero, 6.III.1979 (Brown, Faulkner); 8♂, 2♀, 5.2 mi [8.4 km] N of Sordomudo, 6,9.III.1979 (Brown, Faulkner).

***Bombylius flavifacies* Hall & Evenhuis**

Bombylius flavifacies Hall & Evenhuis, 1980: 44.

Material examined. MEXICO: Baja California Norte: 2♂, Valle de la Trinidad, 18,20.III.1936 (C.F. Harbison).

These 2 large examples (ca. 12 mm in length) superficially resemble *cinerivus* Painter, but are easily separated by the yellow frontal tufts (silver in *cinerivus*).

***Bombylius plichtai* Hall & Evenhuis**

Bombylius plichtai Hall & Evenhuis, 1980: 78.

Material examined. MEXICO: Baja California Norte: 2♀, Valle de la Trinidad, 20.III.1936 (C.F. Harbison).

Both examples are badly rubbed. No spots are evident on the wing except for those on the anterior and posterior crossveins.

The following new distributional records for New Mexico are given based on material in the entomological collection of NMSU

Bombylius ballmeri Hall & Evenhuis

Bombylius ballmeri Hall & Evenhuis 1980: 23.

Material examined. NEW MEXICO: Doña Ana Co: 4♂, 3♀, N base Tortugas Mt, 4200 ft [1280 m], 19.25.III.1981 (G.S. Forbes); 1♂, W gate La Cueva, Organ Mts, 5100 ft [1554 m], 1.IV.1980 (Forbes).

Since the original description, an additional character has been found which will help separate this species from its closest relative, *B. balion* Hall & Evenhuis. In *ballmeri*, the apex of the palpus is broadly inflated and spade-shaped; in *balion*, the palpus apex is not inflated, but is instead linear.

Bombylius duncani Painter

Bombylius duncani Painter, 1940: 275.

Material examined. NEW MEXICO: Doña Ana Co: 1♂, 3♀, N base Tortugas Mt, 4200 ft [1280 m], 19.III.1981 (G.S. Forbes).

Acknowledgments. I would like to thank Mssrs David K. Faulkner, San Diego Natural History Museum, and Gregory S. Forbes, New Mexico State University, Las Cruces, for the opportunity to examine the *Bombylius* in their respective museum collections.

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