TAXONOMIC NOTES ON THE GENUS HETEROMYIA SAY, 
AND A NEW SPECIES FROM NICARAGUA 
(DIPTERA: CERATOPOGONIDAE)

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ABSTRACT
The 2 North American species of Heteromyia Say (fasciata, pratii) are 
differentiated and illustrated, and a key is provided. A new species, Heteromyia wokiei from Nicaragua, is described and illustrated. The pupa of Heteromyia is described and illustrated for the 1st time from H. wokiei and H. clavata Williston. Heteromyia rufa Kieffer and H. caloptera Kieffer are junior synonyms of H. clavata (new synonymy).

Heteromyia Say is a small genus of essentially tropical biting midges with 2 species presently known from North America. The Neotropical species were revised by Duret and Lane (1955). Some confusion as to the limits of the genus and the identities of the North American species resulted when Malloch (1915) placed some species of Palpomyia with swollen fore femora in Heteromyia. Later Johannsen (1943) correctly reallocated these to Palpomyia and provided a list of the North American species. Also, Johannsen (1955) published a key to the North American species, in which he considered festiva (Loew) and pratii (Coquillett) to be varieties of fasciata Say. Wirth (1965) synonymized festiva and pratii with fasciata.

A re-examination of the type series of pratii and a re-evaluation of the original descriptions of Loew (1861) for festiva and Coquillett (1902) for pratii prompted us to examine more closely the North American species. We found that Say (1825) had described fasciata as "abdomen with a silvery sericeus reflection," whereas Loew (1861) had described festiva as "abdomen niveo-micans" and "abdomen foeminae candido-micans." From these descriptions there can be little doubt that festiva is a junior synonym of fasciata. The description of pratii by Coquillett (1902) does not mention specimens with whitish pruinosity on their abdomens, but the type series includes specimens with and without whitish pruinosity. An examination of specimens with non-pruinose abdomens reveals that the segments are banded alternately with pale and dark bands. Both male and female specimens of pruinose and non-pruinose forms were mounted on slides to determine whether there were other differences. The examination of male genitalia indicated that there are differences in both the aedeagus and claspers in the 2 forms. We conclude therefore that fasciata and pratii are distinct species; the former has a pruinose abdomen, and the latter has a banded and non-pruinose abdomen.

In this paper we provide descriptions, illustrations, and a key to the North American species, and we describe for the 1st time the pupa of Hetero-

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myia. In addition, we take this opportunity to describe a new species from Nicaragua and the pupa of *H. clavata* Williston and to synonymize *H. rufa* Kieffer and *H. caloptera* Kieffer with *H. clavata*.

Unless otherwise indicated, specimens are part of the collections of the National Museum of Natural History (USNM) in Washington where the types of our new species will be deposited. Material of *H. fasciata*, *H. pratii*, and *H. clavata* has been deposited in the Florida State Collection of Arthropods in Gainesville. For general terminology of Ceratopogonidae see Wirth (1952); terms dealing with male genitalia are those of Snodgrass (1957).

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Genus *Heteromyia* Say


*Diagnosis*.—A genus of large hetaomyiine biting midges distinguished from all other ceratopogonid genera by the following combination of characters: fore femur greatly swollen with 20-30 spines; wing fasciately timid; hind claw of female greatly enlarged with inner claw smaller than the other.

*Description*.—Body slender, nearly bare. Eyes bare, broadly separated. Palpus slender, 5 segmented; 3rd segment without pit. Female antenna with proximal 8 flagellomeres oval, distal 5 elongate; male antenna with distal 3 flagellomeres elongate, plume sparse. Scutum robust with anterior spine. Fore femur greatly swollen, bearing 20-30 spines; fore tibia arculate; 4th tarsomeres of male and on fore and mid legs of female cordiform, greatly elongated on hind leg of female; claws of male and fore and mid legs of female small, equal, but outer claw greatly elongated on hind leg of female with a smaller inner claw; 5th tarsomeres unarm, those on fore leg of female slightly inflated. Wing slender, fasciately timid; macrotrichia absent; 1 or 2 radial cells present even within a single species; costa extending 0.75-0.80 of wing length. Female abdomen lacking gland rods; 2 well-developed spermathecae present. Male genitalia with 9th tergum tapering with small cerci; basimere and telomere elongate, slender, simple; aedeagus with short basal arch, distal portion with modified tip, basal arm well developed, short; claspcettes divided, basal arm well developed, distal portion slender.

*Pupa*.—The pupa of *Heteromyia* differs from that of *Clinohelea*, the only other heteromyiine genus whose pupa has been described, by its greatly elongated apicolateral processes on the abdomen, and by the small tubercles with very short setae on the operculum. The pupa of *Clinohelea bimaculata* (Loew) has normal apicolateral processes and large, greatly elevated tubercles with long setae on the operculum (Wirth 1951, Grogan and Wirth 1975).

*Relationships*.—*Heteromyia* apparently is most closely related to *Pellucidomyia* Macfie, the females of which have enlarged hind claws and lack bifid 4th tarsomeres. The wing of *Pellucidomyia* is unsotted, and it lacks swollen fore femur with spines, *Heteromyia* being the only genus in the
tribe Heteromyiini having a swollen fore femur with spines. The only other heteromyine genus with enlarged hind claws is *Tetramezzia* Kieffer, which, along with *Ceratobezzia* Kieffer, *Clinotohelea* Kieffer, and *Metahelea* Edwards, has fasciate wings and females with bifid 4th tarsomeres bearing spines.

**KEY TO THE NORTH AMERICAN SPECIES OF Heteromyia**

1. Dorsum of female abdomen with whitish pruinosity; male aedeagus with narrow tip .................................................. *fasciata* Say

1'. Dorsum of female abdomen without whitish pruinosity; male aedeagus with expanded tip ........................................... *prattii* Coquillett

*Heteromyia fasciata* Say

*(Fig. 1 a-e,?)*

*Heteromyia fasciata* Say, 1825: plate 35 (1859:80) (no type locality: "of rather frequent occurrence"; Malloch, 1915:360 (key); Kieffer, 1917:325 (key); Johannsen, 1943:783 (list); Johannsen, 1952:163 (figs.; key); Wirth, 1965:137 (distribution; syns.: *festiva*, *prattii*).

*Ceratopogon festivus* Loew, 1861:314 (male, female; Pennsylvania).

*Heteromyia festiva* (Loew); Malloch, 1915:360 (combination; key); Kieffer, 1917:325 (key); Johannsen, 1943:783 (list); Johannsen, 1952:163 (key; variety of *fasciata*); Wirth, 1965:137 (syn. of *fasciata*).

**Diagnosis.**—Females: Wing length 2.71 3.49 mm. A large subshining species with brown legs, yellow on mid femur and distal 1/3 of hind femur; dorsum of abdomen with whitish pruinosity; wing fasciate (Fig. 1d), fore and mid claws small and equal, outer hind claw greatly elongated with a smaller, inner claw (Fig. 1e). Males: Similar to female but smaller and slightly darker aedeagus (Fig. 1b) with narrow tip; clasperites (Fig. 1c) with slender, slightly swollen, distal portions and short, slightly-expanded, basal arms.

**Distribution.**—Massachusetts south to Florida; locality records plotted in Fig. 2.

**Types.**—Types of *H. fasciata* lost. Types of *Ceratopogon festivus* Loew collected by Osten Sacken in Pennsylvania are in the Museum of Comparative Zoology, Cambridge, Massachusetts.


*Heteromyia pratii* Coquillett

*(Fig. 1f-h,3)*

*Heteromyia pratii* Coquillett, 1902:88 (female; Virginia); Wirth, 1965:137 (syn. of *fasciata*).
Fig. 1. *Heteromyia fasciata*: a-e. *H. prattii*: f-h. a, f, leg pattern; b, g, male aedeagus; c, h, male clasperette; d, female wing; e, female 5th tarsomeres and claws.

*Heteromyia prattii* Coquillett; Malloch, 1915:360 (key; Wisconsin record); Johanssen, 1943.783 (list); Johanssen, 1952:163 (key; variety of *fasciata*).

Diagnosis.—Very closely related to *H. fasciata* but a slightly larger and darker species lacking whitish pruinosity on the dorsum of the ab-
Wirth and Grogan: New Heteromyia

domen. Females: Wing length 2.95-3.77 mm. Legs (Fig. 1f) yellowish brown; proximal 2/3 of hind femur dark brown; mid and hind tibiae dark brown to blackish. Abdomen with conspicuous segmental alternating pale and dark bands Males: Similar to female but smaller and slightly darker; aedeagus (Fig. 1g) with expanded tip; claspers (Fig. 1h) with expanded distal portions and very broad basal arms.

Distribution.—Illinois east to Massachusetts and south to Florida; locality records plotted in Fig. 3.

Types.—Syntypes, 4 females, St. Elmo, Alexandria, Virginia, 9-22-VI-1901, F. C. Pratt. Lectotype (Type no. 6163, USNM) here designated, a large female collected 9VI-1901, F. C. Pratt, scutum entirely black, mid and hind femora extensively brown, and abdomen non-pruinose.


Heteromyia wokie Wirth and Grogan, New Species
(Fig. 4a-f)

Diagnosis.—Females with reddish-brown legs, yellow on apex of mid femur, distal 1/5 of hind femur, subapical 1/2 of mid tibia, base and sub-
apical 1/3 of hind tibia, and tarsi except hind 4th tarsomere; male claspettes with slender, nearly straight basal arms.

**Holotype Female.**—Wing length 3.20 mm; breadth 0.92 mm.

Head: Dark yellowish brown. Proximal 8 flagellomeres pale yellow on basal 1/2, distal 5 flagellomeres pale yellow basally; flagellomeres with lengths in proportion of 13-9-8-8-8-9-18-17-18-19-22; antennal ratio 1.31. Palpus brown, slender; segments with lengths in proportion of 6-9-15-10-19. Mandible with 8 large teeth on inner margin; outer margin with about 5 small, widely-spaced teeth.

Thorax: Scutum, scutellum, postscutellum dark reddish brown; pleura and sterna lighter reddish brown. Legs (Fig. 4a) reddish brown; apex of mid femur, distal 1/5 of hind femur, subapical 1/2 of mid tibia, base and sub-apical 1/3 of hind tibia, and tarsi except hind 4th tarsomere yellow; fore femur with 26-27 spines. Wing as in *H. fasciata* (Fig. 1d), costal ratio 0.79. Halter pale.


**Allotype Male.**—Smaller, similar to female with the following differences: Antennal pedicel dark brown; proximal 12 flagellomeres light brown, distal 3 flagellomeres dark brown; plume brown. Femora and tibiae dark brown except light brown on broad subapical band of mid tibia. Genitalia as in Fig. 4b. Ninth sternum about twice as broad as long, base slightly curved with a shallow caudomedian excavation; 9th tergum tapering gradually distally, straight on distal 1/4; cercus short, extending well beyond basimere. Basimere nearly straight, about twice as long as broad, telomere slightly longer than basimere, tapering distally with a slightly hooked, pointed tip. Aedeagus lightly sclerotized, about 1.3 times longer than broad; membrane spiculate; basal arm more heavily sclerotized, slightly recurved; distal portion with tip as figured. Claspettes divided;
Fig. 4. Heteromyia wokiei: a-f; H. clavata: g-i. a, g. leg pattern; b, male genitalia; c, h. pupal respiratory horn; d, female operculum; e, i. female pupal terminal segments; f, male pupal terminal segment.
Heteromyia clavata Williston
(Fig. 4g-i)

Heteromyia clavata Williston, 1900:225 (female; Vera Cruz, Mexico); Malloch, 1915:361 (notes; key).
Heteromyia rufa Kieffer, 1917:325 (male; Baranquilla, Colombia); Edwards, 1933:87 (descriptive notes; Argentina); Duret and Lane, 1955:36 (key; Argentina). NEW SYNONYMY.
Heteromyia caloptera Kieffer, 1910:192 (unnecessary new name for H. rufa
Kieffer, not Loew 1861). NEW SYNONYMY.

Diagnosis.—A yellow-legged species with a pair of dark, narrow, sub-apical bands on mid and hind femora (fig. 4g).

Pupa.—Dark brown. Respiratory horn (Fig 4h) nearly 5 times longer than broad, surface smooth; apex with 20-25 spiracular papillae. Operculum lost. Female terminal segment (Fig. 4i) 3 times longer than broad; dorsum covered with small, rounded tubercles; venter covered with small, rounded tubercles except as figured; apicodistal processes greatly divergent, covered with small, pointed tubercles.

Distribution.—Mexico south to Argentina.


**LITERATURE CITED**


