

Wasp Parasitoid *Utetes anastrephae* (Viereck) (Insecta: Hymenoptera: Braconidae) ¹

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Introduction

Utetes anastrephae (Viereck) is the only species of *Utetes* recorded repeatedly from several species of *Anastrepha*, a genus of tephritid fruit flies that contains several major pest species (Ovruski et al. 2000). It is also the only *Anastrepha*-attacking *Utetes* species (see Host Table below) native to the continental United States (Wharton 1997).

Synonymy

Utetes anastrephae was originally described as *Opius anastrephae* by Viereck in 1913. In 1977, Fischer transferred it to the genus *Bracanastrepha*, and it was finally placed in the genus *Utetes* by Wharton (1988). *Bracanastrepha argentina* Brèthes, 1924 and *Opius mombinpraeoptantis* (Fischer 1966) are synonyms (Wharton and Marsh 1978).

Distribution

Utetes anastrephae has a wide distribution that extends from Florida to Argentina (Wharton and Marsh 1978, Sivinski et al. 1997). In addition to parasitizing several *Anastrepha* spp., both pests and non-pests (Wharton and Gilstrap 1983), it has also been collected from the [Mediterranean fruit fly](#), *Ceratitis capitata*, in Argentina (Nasca 1973).



Figure 1. Adult male *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp.

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Description

Adult: “*Utetes anastrephae*” may actually be a complex of closely related species, with subtle differences in ovipositor length, body sculpture, and host preferences (Wharton 1997). A number of color morphs have been obtained from the same host-collections. This species has a relatively short ovipositor ~ 1.6 mm in length (Sivinski et al. 2001). The absence of an occipital carina (an upside-down U-shaped ridge on the back or posterior surface of the head) is characteristic of the *Utetes anastrephae* species group, as is a sharp ridge located basal-medially on the hind tibia.

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Figure 2. Adult female *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp.
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Figure 3. The hind tibia of an adult *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp. This image shows the sharp ridge located basal-medially.
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The Cu2 submarginal cell of the forewing is five-sided and relatively long compared to Cu1 and Cu3 (Wharton and Marsh 1978).

Life Cycle and Behavior

Utetes anastrephae is a larval-prepupal synovigenic (produce eggs over the life of the adult), endoparasitic koinobiont (parasitoid allows the host to continue development

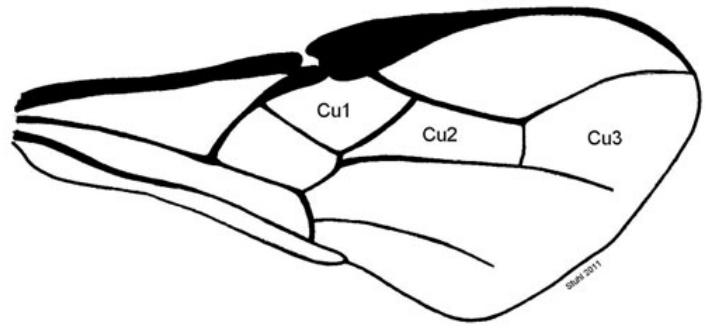


Figure 4. Forewing.



Figure 5. The fore- and hindwings of an adult *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp.
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and does not kill the host until the parasitoid larva pupates) that develops well in late instar larvae. It forages for larvae in ripe fruit hanging on tree branches (Ovruski et al. 2000) and the female inserts a single egg inside the body of the fly larvae. Upon hatching, the parasitoid larva remains in the first instar stage until the host begins to pupate. Development time from egg to adult parasitoid is temperature dependent, but usually takes about two weeks. Females are attracted to fruit volatiles in their search for food and fly hosts. Host location within the fruit is mediated by antennation (sensing information by touching antennae) and perhaps probing with the ovipositor to detect compounds unique to larval hosts (Stuhl et al. 2011). It is assumed that fruit juices and other plant-produced substances such as extrafloral nectars are the food source of this parasitoid.

Economic Importance

Utetes anastrephae contributes to the mortality of the [Caribbean fruit fly](#), *Anastrepha suspensa* (Loew), in Florida and in Mesoamerica, inflicting very high levels of parasitism on the [West Indian fruit fly](#), *Anastrepha obliqua* (Macquart).

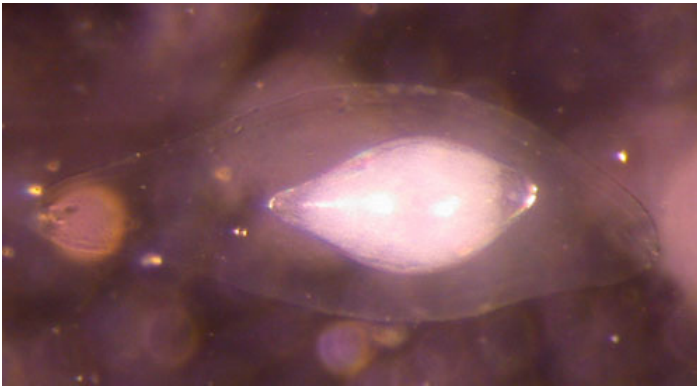


Figure 6. An egg of *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp.

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It occupies niches, e.g., the exploitation of hosts in native fruit trees in Mexico, that commonly imported fruit fly parasitoids, such as braconid *Diachasmimorpha longicaudata* (Ashmead), may be less suited to exploit (Lopez et al., 1999).

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Figure 7. Ovipositing adult female *Utetes anastrephae* (Viereck), a wasp parasitoid of *Anastrepha* spp

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Table 1. Some fruit fly host plant species and fruit fly hosts of *Utetes anastrephae* (Aluja et al. 2000, Aluja et al. 2003).

Fruit Fly Host	Fruit Fly Host Plant
<i>Anastrepha alveata</i>	<i>Ximenia americana</i> L.
<i>Anastrepha bahiensis</i>	<i>Malmea gaumeri</i> (Greenm.) Lundell
<i>Anastrepha cebra</i>	<i>Quararibea funebris</i> (La Llave) Vischer
<i>Anastrepha fraterculus</i>	<i>Psidium guajava</i> L.
	<i>Psidium guineense</i> Sw.
	<i>Psidium sartorianum</i> (O. Berg) Nied.
	<i>Syzygium jambos</i> L.
<i>Anastrepha ludens</i>	<i>Mangifera indica</i> L.
<i>Anastrepha obliqua</i>	<i>Ampelocera hottle</i> Standl.
	<i>Mangifera indica</i> >L.
	<i>Spondias mombin</i> L.
	<i>Spondias</i> sp. L.
	<i>Tapirira mexicana</i> Marchand
<i>Anastrepha serpentina</i>	<i>Bumelia sebolana</i> Lundell
	<i>Cratogeomys gracilior</i> J. B. Phipps
	<i>Manilkara zapota</i> L.
<i>Anastrepha striata</i>	<i>Psidium guajava</i> L.
	<i>Psidium guineense</i> Sw.
	<i>Psidium sartorianum</i> (O. Berg) Nied.
<i>Anastrepha suspensa</i>	<i>Eugenia uniflora</i> L.
	<i>Prunus persica</i> L.
	<i>Psidium guajava</i> L.
	<i>Syzygium jambos</i> L.
	<i>Terminalia catappa</i> L.
<i>Rhagoletis</i> spp.	<i>Crataegus mexicana</i> DC.
	<i>Crataegus rosei parrayana</i> (Eggl.) J. B. Phipps
	<i>Cratogeomys gracilior</i> J. B. Phipps