

Research Note

FRANKLINIELLA OCCIDENTALIS, F. SCHULTZEI AND F. FUSCA (THYSANOPTERA:THRIPIDAE) IN PUERTO RICO^{1,2}

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Frankliniella Karny (Thysanoptera: Thripidae) is a large genus of about 180 species. Species of *Frankliniella* tend to be polyphagous pests of ornamental crops, fruits and vegetables. Feeding by these thrips can result in distortion, discoloration, stunting, and silvering of foliage, flowers and fruits (Chaput and Schooley, 1998; Childers, 1997; Agricultural Experiment Station, 1999; Medina, 1961). Direct feeding damage and pathogen transmission by thrips cost growers billions of dollars worldwide in control measures besides in production losses (Ullman et al., 1997). An even greater concern with some *Frankliniella* species is their ability to transmit viruses in the genus *Tospovirus* (Bunyaviridae) to a wide variety of plants (Sether and Deangelis, 1992; Ullman et al., 1997).

From January 2005 to May 2006, samplings were conducted to collect thrips associated with fruits and vegetables at the University of Puerto Rico-Agricultural Experiment Station, Juana Díaz, Puerto Rico. Thrips were collected by two sampling methods: 1) a direct method using a moist camel hair brush to collect specimens from leaves in vials with 70% ethyl alcohol (Medina, 1961), and 2) an indirect method, collecting whole plants in plastic bags for later processing with sieves. We observed taxonomic traits such as body color, ocellar setae, post ocular setae I, prothorax setae, metanotum setae, metanotum with a pair of campaniform sensilla, and the posteromarginal comb in tergite VIII.

Three *Frankliniella* species were found in fruits and vegetables cultivated in the southern region of Puerto Rico: the tobacco thrips, *Frankliniella fusca* Hinds (Figure 1A); western flower thrips, *Frankliniella occidentalis* Pergande (Figure 1B); and eastern flower thrips, *Frankliniella schultzei* Trybom (Figure 1C). *Frankliniella occidentalis* is a new record in Puerto Rico. We found a new host for *F. schultzei* and *F. fusca* (Table 1). Both species were reported by Medina in Puerto Rico (unpublished). Female and male adults were identified in the Entomological Laboratory at Juana Díaz, Southern Plant Diagnostic Network (SPDNC) and confirmed by Dr. Joe Funderburk (Entomologist, University of Florida). Voucher specimens of *Frankliniella* species were deposited at the Río Piedras Agricultural Experiment Station Museum of Entomology and Tropical Biodiversity (Table 1).

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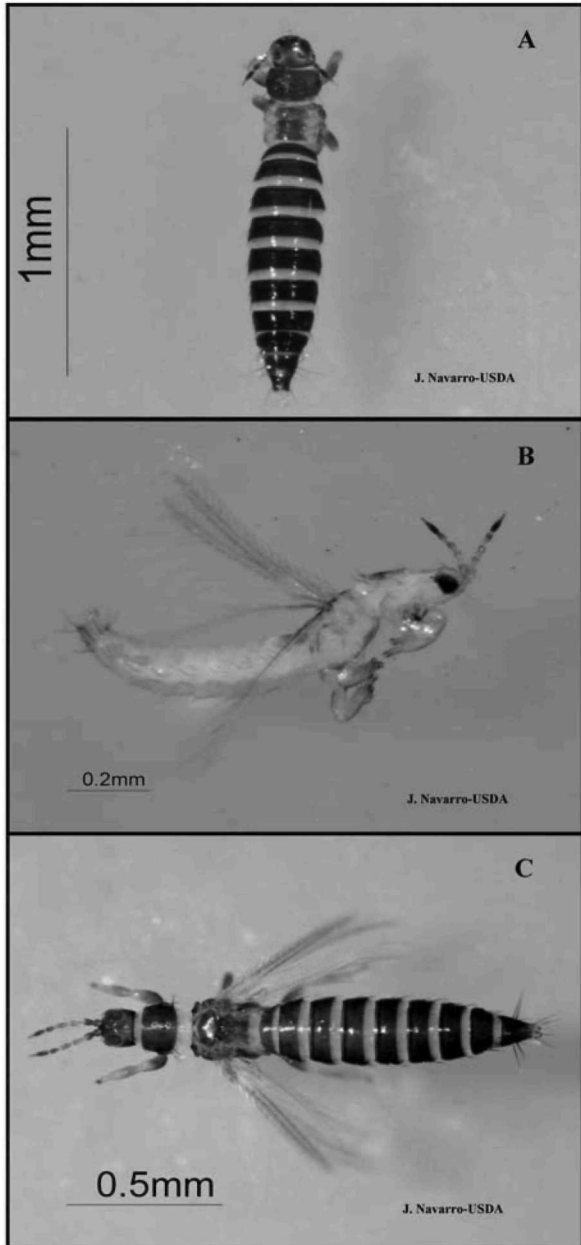


FIGURE 1. A) Adult female of *F. fusca*, B) adult male of *F. occidentalis*, and C) adult female of *F. shultzei*.

TABLE 1.—Frankliniella species identified, synonyms, hosts, voucher number and sex.

Frankliniella species	Synonyms	Hosts	# Voucher	Sex
<i>Frankliniella fusca</i> Hinds				
	<i>Euthrips fuscus</i> Hinds	<i>Allium cepa</i> (L.) onions (leaves)	PR Acc No. 26-06	♀
	<i>Euthrips nicotianae</i> Hinds			
	<i>Frankliniella nicotianae</i> (Karny)			
<i>Frankliniella occidentalis</i> Pergande				
	<i>Frankliniella californica</i> Moulton	<i>Allium cepa</i> (L.) onions (leaves)	PR Acc No. 27-06	♀
	<i>Frankliniella dianthi</i> Moulton	<i>Capsicum annuum</i> (L.) peppers (flowers)	PR Acc No. 119-05	♂
	<i>Frankliniella helianthi</i> Moulton	<i>Mangifera indica</i> (L.) mango (flowers)	PR Acc No. 32-06	♂
	<i>Frankliniella moultoni</i> Hood	<i>Celosias</i> spp.—cocks comb (flowers)	PR Acc No. 31-06	♀
	<i>Frankliniella syringae</i> Moulton	<i>Persea americana</i> (M.) avocado (flowers)	PR Acc No. 29-06	♂
	<i>Frankliniella threhernei</i> (Morgan)	<i>Glycine max</i> (L.) soybean (leaves)	PR Acc No. 33-06	♀
<i>Frankliniella schultzei</i> Trybom				
	<i>Frankliniella ipomoeae</i> Moulton	<i>Allium cepa</i> (L.) onions (leaves)	PR Acc No. 28-06	♀
	<i>Physopus schultzei</i> Trybom	<i>Capsicum annuum</i> (L.) peppers (flowers)	PR Acc No. 118-05	♂
		<i>Cucurbita moschata</i> (D.) pumpkin (flowers)	PR Acc No. 30-06	♀
		<i>Phaseolus vulgaris</i> (L.) drybeans (flowers)	PR Acc No. 36-06	♂
		<i>Citrullus lanatus</i> (M & N) watermelon (flowers)	PR Acc No. 35-06	♀
		<i>Arachis pintoi</i> (K & G) peanuts (flowers)	PR Acc No. 34-06	♀

Taxonomical Traits

***Frankliniella fusca* Hinds:** Adults were brown, but some yellowish brown specimens were observed, although never yellow. Ocellar pair III arising outside anterior margin of triangle. Postocular setae pair I absent. Prothorax with anteroangular setae longer than anteromarginal setae. Metanotum presents a pair of campaniform sensilla. Lacks a posteromarginal comb in tergite VIII. Specimens were collected in onions (Table 1).

***Frankliniella occidentalis* Pergande:** Adults were pale with body parts yellow (Figure 1-B). Ocellar pair III arising on anterior margins of ocellar triangle. Postocular setae pair I present. Prothorax with anteroangular and anteromarginal setae equal in length. Two pairs of setae in the metanotum at anterior margin and a pair of campaniform sensilla. The female has a complete posteromarginal comb of micotrichia in tergite VIII. The male lacks a posteromarginal comb of micotrichia in tergite VIII, Sternites III-VII with transverse glandular area. Specimens were collected in onions, peppers, mango, cockscomb, avocado and soybean (Table 1).

***Frankliniella schultzei* Trybom:** Adults were brown. Ocellar pair III arising close together between anterior margins of hind ocelli. Postocular setae pair I present. Prothorax with anteromarginal setae slightly shorter than anteroangulars. Metanotum lacking a pair of campaniform sensilla and the pair of setae at anterior margin. Tergite VIII with a few teeth laterally on posterior margin. Specimens were collected in onions, peppers, pumpkin, dry beans, watermelon and ornamental peanuts (Table 1).

Frankliniella spp. report in Puerto Rico is very important because of its rapid dissemination in the field under favorable conditions and its potential to affect other fruits, ornamental plants and vegetables that are usually cultivated in close proximity. Besides, these species are considered important vectors of Tospoviruses such as the tomato spotted wilt virus, already reported from Puerto Rico.

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