

## An annotated checklist of the Tephritidae (Diptera) of Florida

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**ABSTRACT:** A total of 73 species of tephritid flies has been recorded from Florida since the early 1800s. Of these, 7 species are considered to represent occasional waifs or accidental introductions from surrounding regions that are not known to have established populations in Florida; 6 are exotic pests which failed to colonize or were extirpated; and 7 species are represented only by early literature records and are considered dubious for the state. Thus, the tephritid fauna of Florida currently comprises a total of 53 species of which 1 species is precinctive to the state and considered to be endangered.

### Introduction

Our recorded knowledge of the tephritid flies in Florida can be said to have begun in 1830 with the publication of the descriptions of *Zonosemata electa* (as *Trypeta*) by Say and *Eurosta lateralis* by Wiedemann, although the latter was not to be recognized as a Florida species for many years. In 1862 the first comprehensive treatment of the American tephritid flies (as Trypetidae), in *Monographs of the Diptera of North America* Part I, was published by Loew and included *Z. electa* as well as two additional species from Florida described by Walker in 1849; *Trupanea mevarna* (as *Trypeta*) and *Herina narytia* (as *T. narytia*), the latter later placed in the Otitidae. Loew omitted *E. lateralis*, specimens of which were languishing in Europe unrecognized as an American species. In 1873, the publication of Part III of the Loew Monographs increased the number of tephritid species known from Florida to a grand total of 3 (not including *Herina narytia* and the still unrecognized *E. lateralis*) with the addition of *Dioxyna picciola* (as *T. humilis* Loew), in a note by Baron Osten Sacken. With the *Catalogue of the Described Diptera of North America* published in 1878, Osten Sacken further increased the then recognized Florida tephritid fauna to 5 with the inclusion of *Xanthaciura insecta* (Loew) (as *Trypeta*) and *Anastrepha obliqua* (Macquart) (misidentified as *Trypeta acidusa* Walker), but the omission of *E. lateralis* continued.

The first specific attempt to catalog the Diptera of Florida, that of Johnson (1895), was "...based chiefly on material collected while living in St. Augustine, 1880-88, a collecting trip in March, 1891, and again in 1894, a collection made by Mrs. Annie

Trumbull Slosson, the collection of Mr. Charles Robertson, and the collections of the U. S. National Museum" (Johnson 1913). Of the approximately 450 Diptera species listed, 12 species comprised the total number of Tephritidae known from Florida at that time. A second, more extensive list was published by the same author in 1913 further increasing the number of Tephritidae recorded from Florida to 19. The catalog of Aldrich (1905) added nothing new.

Then, during the late 1920s, an exotic pest, the Mediterranean fruit fly (*Ceratitis capitata* (Wiedemann)), was introduced to Florida and, as part of the resulting eradication program, the first systematic survey of the native fruit flies of the state was undertaken by the United States Department of Agriculture (USDA) in cooperation with the State Plant Board of Florida (the predecessor of the present Division of Plant Industry). The resulting monograph by Benjamin (1934) on the Tephritidae (as Trypetidae) of Florida increased the number of species (excluding *Anastrepha*) to 34, included the description of 7 species new to science, and provided the first comprehensive treatment of their biology, distribution, and hosts. The native and introduced *Anastrepha* of Florida were also surveyed both by extensive trapping as well as rearing of adults from fruit. The result was the discovery of 3 species new to science (Brown 1937) and their description (Stone 1942) for a total of 40 species of Tephritidae recognized as occurring in the state of Florida.

It was not until 1965 that another major monograph on the Diptera of North America was to appear, *A Catalog of the Diptera of America North of Mexico* (Stone *et al.* 1965). The *Catalog* listed a total of 41 tephritid species as occurring in Florida and an

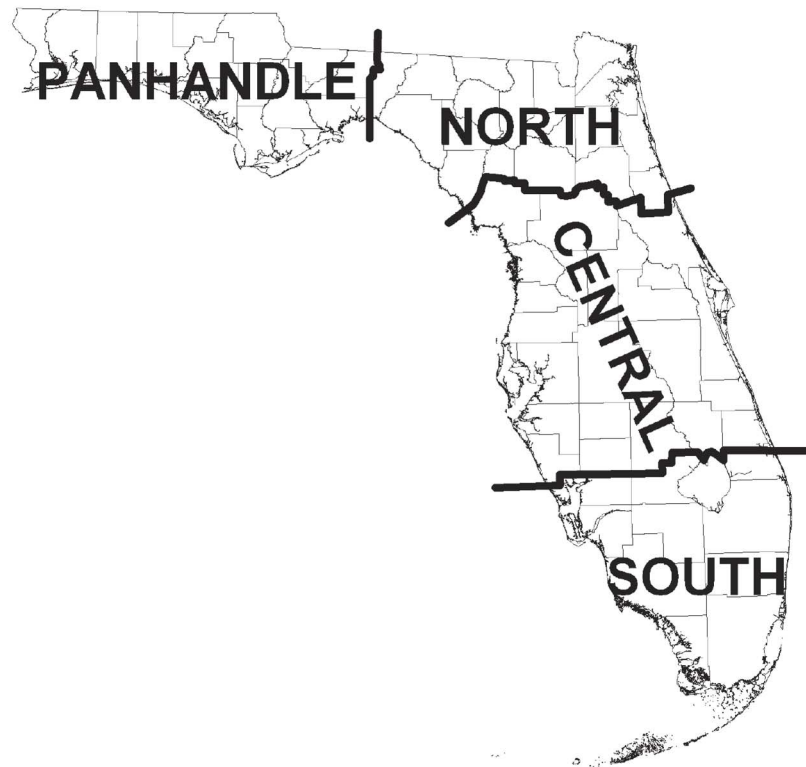


Figure 1. Florida regions used in this paper.

additional 5 having distributions "...throughout U.S."; however, of the latter, 2 do not occur in Florida. In addition, 2 of the species specifically listed as occurring in Florida have not been collected there.

The most recent monograph specifically on the Tephritidae of Florida was a Ph.D. dissertation at the University of Florida (Ibrahim 1980). This was based primarily on Benjamin (1934), Stone *et al.* (1965) and other literature records through the 1970s, and the collections of the Florida State Collection of Arthropods (FSCA) and the United States National Museum of Natural History (USNM), and provided a few additional new records for the state; however, significant errors and omissions make this work problematic at best. Errors included the omission of *Eurosta cribrata* (given as *E. reticulata* Snow by Benjamin (1934)), the mis-identification of specimens of *Paramyiolia rhino* (as *Myoleja rhino*) as *Strauzia longipennis*, and the confusion of *Eurosta comma* and *E. floridensis*, as well as numerous errors in the reported label data. In addition, the mistaken tephritid records for Florida by Stone *et*

*al.* (1965) were included without serious examination.

More recently, the *Handbook of the Fruit Flies (Diptera: Tephritidae) of America North of Mexico* (Foote *et al.* (1993)) listed 57 species from Florida, including exotics extirpated from the state and at least one questionable record; however, a number of records of the FSCA were omitted.

At present, a total of 73 species of Tephritidae has been recorded from Florida including literature records. Of these, 7 species (designated by \* in the checklist) are represented by only 1, or a few specimens, and are considered to represent occasional waifs or accidental introductions from surrounding regions and have not established current or recent populations in Florida. The majority of these species (5) are of Caribbean/Bahamas origin; southern Florida, in particular, has definite faunal and floral affinities with the circum-Caribbean region. Six species are exotic pests (designated by \*\*) introduced by humans, sometimes repeatedly, which failed to colonize or were extirpated (*Bactrocera correcta*, *B. dorsalis*, *B. oleae*, *Ceratitis capitata*, *Anastrepha obliqua*, and *A. ludens*). In addition, 7

species (designated by \*\*\*) are represented only by early literature records. These specimens, including 3 recorded by Johnson (1895, 1913), have not been located, nor have additional specimens come to light. Given that these species do not appear to be part of the known Florida fauna, and could easily represent misidentifications, particularly given the status of tephritid taxonomy during the early 1900s, they are interpreted as dubious for Florida. Thus, the native Florida tephritid fauna is known to consist of 53 species (Appendix I), of which one (*Eurosta lateralis*) is precinctive to the state, and must be considered endangered.

The Florida tephritid fauna is part of a broad eastern to southeastern North American fauna with a neotropical/circum-Caribbean influence that dramatically increases in the southern part of the state. Overall, approximately 77% of the native Florida tephritid species also occur in states to the north and west; of these, some 13% of the total can be considered as part of a southeastern coastal plain assemblage that is centered on Florida, and the remaining majority (~64% of the total) are widespread throughout the eastern US and beyond. Approximately 15% of the Florida tephritids represent more northern species that reach their southeastern limit of distribution in the northern part of the state. Only one species is precinctive to Florida (~2%). The remaining species (~21%) are generally neotropical/circum-Caribbean having their northern limit of distribution in the southern part of Florida. A few of these species may also reach into southern Texas. These peripheral populations can be expected to undergo periodic extinctions and recolonizations as climatic patterns shift, thus this checklist represents a "snapshot" of a dynamic regional fauna rather than an invariant inventory.

The classification presented here follows Korneyev (1999). Tephritid genera and/or species known to be present in Florida are in bold. Florida records include first citations and other important references to that species in the state, as well as those under other names, but do not necessarily include all literature references. The collections listed are known to contain vouchers for the state records. Distributions of most Florida taxa were mapped in Foote *et al.* (1993) based, in part, on the database of tephritid records for the U. S. by Blanc (1995). The distributions stated here are based on reliable literature records and/or records and specimens of the FSCA and the USNM. Panhandle refers to counties west of Jefferson Co. (Fig. 1); North Florida refers to non-Panhandle counties north of Marion Co.; Cen-

tral Florida includes counties from Marion south to Lake Okeechobee; South Florida is Lake Okeechobee and south; Peninsular comprises North, Central and South Florida. "Reared" following a plant name and/or part indicates that we reared the species in question from that host.

**Order Diptera**  
**Family Tephritidae Newman**  
**Subfamily Dacinae Loew**  
**Tribe Dacini**

Genus *Bactrocera* Macquart

*B. correcta* (Bezzi), 1916 \*\*

**FL Records:** FSCA.

**FL Distribution:** (Historical) Central and South; generally urban areas. **Does not presently occur in Florida.**

**FL Host(s):** Not recorded for Florida.

**Notes:** An exotic pest, commonly known as the "guava fruit fly," repeatedly introduced since 1999; there has been no evidence of the establishment of a breeding population in Florida. A wide range of hosts has been recorded for this species (Weems 1987).

*B. dorsalis* (Hendel), 1912 (complex) \*\*

**FL Records:** Clark *et al.* (1996), FSCA.

**FL Distribution:** (Historical) Central and South, generally urban areas. **Does not presently occur in Florida.**

**FL Host(s):** Not recorded from Florida.

**Notes:** One or more indistinguishable species of exotic pest, commonly known as the "oriental fruit fly complex," repeatedly introduced since 1964; successfully extirpated from Florida. A wide range of hosts has been recorded for this species (Weems 1964).

*B. oleae* Rossi, 1790 \*\*

**FL Records:** FSCA.

**FL Distribution:** (Historical) Central. **Does not presently occur in Florida.**

**FL Host(s):** *Olea europaea* L. (Oleaceae); fruit.

**Notes:** An introduced exotic pest, commonly known as the "olive fruit fly." Larvae and pupae of *B. oleae* were found in the fruit of potted olive trees brought into Florida, but apparently this species failed to establish.

**Subfamily Dacinae Loew**  
**Tribe Ceratitidini Bezzi**

Genus *Ceratitis* Macleay

*C. capitata* (Wiedemann), 1824 \*\*

**FL Records:** Clark *et al.* (1996), FSCA, USNM.

**FL Distribution:** (Historical) Peninsular, generally urban introductions that have sometimes spread widely. **Does not presently occur in Florida.**

**FL Host(s):** Recorded hosts include *Citrus* L. and related species (Rutaceae), Surinam cherry (*Eugenia uniflora* L.) and other *Eugenia* L. spp. (Myrtaceae), guava spp. (*Psidium* L.) (Myrtaceae), peach (*Prunus persica* (L.) Batsch) (Rosaceae), rose apple (*Syzygium (Eugenia) jambos* (L.) Alston) (Myrtaceae), mango (*Mangifera indica* L.) Anacardiaceae), sapodilla (*Manilkara zapota* (L.) van Royen) (Sapotaceae), soursop (*Annona muricata* L.) (Annonaceae), and white sapote (*Casimiroa edulis* Llave & Lex.) (Rutaceae) (Division of Plant Industry, unpublished data).

**Notes:** An introduced exotic pest, commonly known as the "Mediterranean fruit fly," that has been repeatedly found in the state since 1929, and the subject of major control programs; successfully extirpated from Florida. This species has been recorded from a wide range of host plants outside of Florida (Weems 1981, Liquido *et al.* 1991).

**Subfamily Trypetinae Loew**  
**Tribe Toxotrypanini Munro**

Genus *Anastrepha* Schiner

*A. edentata* Stone, 1942

**FL Records:** Brown (1937) (as sp. "F"), Stone (1942), FSCA, USNM.

**FL Distribution:** Extreme South and the Florida Keys.

**FL Host(s):** Not recorded for Florida.

**Notes:** Rarely collected in Florida, this species is also known from elsewhere in the Caribbean region (Foote *et al.* 1993). The host or hosts for *A. edentata* are unknown.

*A. interrupta* Stone, 1942

**FL Records:** Brown (1937) (as sp. "E"), Stone (1942), Pereira *et al.* (2006), FSCA, USNM.

**FL Distribution:** South.

**FL Host(s):** *Schoepfia chrysophylloides* (A. Rich.) Planch. (Olacaceae) (Norrbon & Kim 1988); fruits (reared).

**Notes:** Rarely collected in Florida, this species may be locally abundant; also recorded from the Bahamas (Foote *et al.* 1993).

*A. ludens* (Loew), 1873 \*\*

**FL Records:** Clark *et al.* (1996), Steck (1998), FSCA.

**FL Distribution:** (Historical) Peninsular. **Does not presently occur in Florida.**

**FL Host(s):** Not recorded for Florida.

**Notes:** A species of particular concern to Florida, the "Mexican fruit fly" is considered a potentially devastating agricultural pest, particularly for *Citrus* spp., and has been recorded from a number of plant genera (Norrbon & Kim 1988). It has been detected, surprisingly infrequently, on only 3 occasions since 1934 and failed to establish in the state.

*A. nigrifascia* Stone, 1942

**FL Records:** Brown (1937) (as sp. "W"), Stone (1942), FSCA, USNM.

**FL Distribution:** Restricted to the Florida Keys.



**FL Host(s):** *Manilkara jaimiqui* (C. Wright ex Griseb.) Dubard subsp. *emarginata* (L.) Cronquist, and *M. zapota* (L.) van Royen (Sapotaceae) (Stone 1942, Norrbom & Kim 1988); fruits.

**Notes:** This species was erroneously said to have not been collected from the Florida Keys since 1936 by Foote *et al.* (1993), probably as a result of a statement to that effect by Ibrahim (1980); however, specimens have been trapped periodically in the Lower Keys since then, often in significant numbers. *Anastrepha nigrifascia* has also been reported from the Bahamas (Foote *et al.* 1993).

*A. obliqua* (Macquart), 1835 \*\*

**FL Records:** Osten Sacken (1878) (misidentification as *Trypeta acidusa* Walker), Johnson (1895, 1913) (as *Acrotoxa acidusa* Loew referring to Osten Sacken (1878)), Newell (1933) (misidentification as *A. fraterculus* (Wiedemann)), McAlister (1936) (as *A. acidusa*), Stone (1942) (as *A. mombinpraeoptans* Seín), Steck (2001), FSCA, USNM.

**FL Distribution:** (Historical) extreme South and Keys. **Does not presently occur in Florida.**

**FL Host(s):** Guava (*Psidium* L. spp.) (Myrtaceae), hog plum (*Spondias* L. spp.) (Anacardiaceae), and barbados cherry (*Malpighia emarginata* L.) (Malphigiaceae) (Clark *et al.* 1996); fruits.

**Notes:** An introduced(?) agricultural pest, commonly known as the “West Indian fruit fly,” occurring throughout the American tropics, this species was the subject of an intensive control effort during the 1930s and was successfully extirpated from Florida. The Osten Sacken (1878) reference to *Trypeta acidusa* from Florida was apparently a misidentification of a specimen of *Anastrepha obliqua* at the British Museum rather than a reference to the original Walker specimen of *T. acidusa*. Stone (1939) wrote “... the Florida record mentioned by Aldrich (i.e. the reference to *T. acidusa* by O. S. (1878)) is probably this latter species” (*A. obliqua* (as *A. mombinpraeoptans*)). This would indicate that *A. obliqua* was first collected in Florida at some point prior to 1878, well before the find of this species during the 1930s that led to the eradication program. A wide range of plant genera is known as hosts for this species (Norrbom & Kim 1988).

*A. ocesia* (Walker), 1849 \*

**FL Records:** Brown (1937), Stone (1942), FSCA, USNM.

**FL Distribution:** (Historical) Florida Keys; **not known presently to occur in Florida.**

**FL Host(s):** Not reported from Florida.

**Notes:** This species has been trapped only rarely in the Florida Keys, perhaps as an occasional waif and/or accidental introduction in imported fruits, but has failed to establish. Known also from the Greater Antilles (Foote *et al.* 1993), Florida represents the northernmost periphery of its distribution. Known hosts for *A. ocesia* are species of *Psidium* L. (Myrtaceae) and *Manilkara* Adans. (Sapotaceae) (Norrbom & Kim 1988).

*A. stonei* Steyskal, 1977 \*

**FL Records:** Foote *et al.* (1993), USNM.

**FL Distribution:** (Historical) South; **not known presently to occur in Florida.**

**FL Host(s):** Not reported from Florida.

**Notes:** Only one specimen (Palm Beach Co., August 1988), probably a waif; also known from the Bahamas (Steyskal 1977). The host or hosts for this species are unknown.

*A. suspensa* (Loew), 1862

**FL Records:** Newell (1935), Weems (1966), FSCA, USNM.

**FL Distribution:** Common Central and South, occasional in northeastern Atlantic coastal counties.

**FL Host(s):** Numerous hosts have been reported (Swanson & Baranowski 1972); fruits (reared).

**Notes:** An introduced pest, commonly known as the “Caribbean fruit fly”, endemic to the Greater Antilles. This species was first detected in low numbers in South Florida in the 1930s and apparently eradicated; it re-colonized Dade County in 1965 and has since spread widely in peninsular Florida (Clark *et*

*al.* 1996). Numerous plant species in many plant families have been recorded as hosts for *A. suspensa* (Norrbon & Kim 1988).

### Genus *Toxotrypana* Gerstaecker

#### *T. curvicauda* Gerstaecker, 1860

**FL Records:** Johnson (1913), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Common South, occasional Central.

**FL Host(s):** *Carica papaya* L. (Caricaceae) (Benjamin 1934), *Morrenia odorata* (Hook. & Arn.) Lindl. (Asclepiadaceae (~Apocynaceae)) (Landolt 1994); fruits.

**Notes:** This species, the “papaya fruit fly,” is widespread in the Neotropics. It was introduced into Florida about 1905 (Weems 1969).

#### Subfamily Trypetinae Loew Tribe Carpomyini Norrbom

### Genus *Rhagoletis* Loew

#### *R. chionanthi* Bush, 1966

**FL Records:** Benjamin (1934) (as *R. cingulata* (Loew)), Bush (1966), FSCA, USNM.

**FL Distribution:** North, Central.

**FL Host(s):** *Chionanthus virginica* L. (Oleaceae) (Benjamin 1934, Bush 1966); fruits (reared).

**Notes:** Rarely collected; localized.

#### *R. cingulata* (Loew), 1862

**FL Records:** Benjamin (1934), Bush (1966), FSCA, USNM.

**FL Distribution:** Widespread North and Central.

**FL Host(s):** *Prunus serotina* Ehrh. (Rosaceae) (Benjamin 1934, Bush 1966); fruits (reared).

**Notes:** Common. This is the “cherry maggot” pest of northern states. The Benjamin (1934) records for “*R. cingulata*” include what are currently recognized as *R. cingulata*, *R. chionanthi*, and *R. osmanthi*.

#### *R. juniperina* Markovitch, 1915

**FL Records:** FSCA.

**FL Distribution:** North and Central.

**FL Host(s):** *Juniperus* L. (Cupressaceae); fruits.

**Notes:** Probably more common than the small number of specimens known from the state might suggest. All adults have been collected by fruit fly traps. Larvae presumably of this species have been recently found in berries of the only known host, species of *Juniperus* (Bush 1966), but have not yet been reared.

#### *R. mendax* Curran, 1932

**FL Records:** Bush (1966), Payne & Berlocher (1995), FSCA, USNM.

**FL Distribution:** North, Central.

**FL Host(s):** *Vaccinium stamineum* L. (Ericaceae) (Payne & Berlocher (1995)); fruits (reared).

**Notes:** Probably more common than collection records indicate. The “blueberry maggot” is a serious pest in states to the north, but has never infested commercial blueberry in Florida.

#### *R. sp. nr. mendax*

**FL Records:** Benjamin (1934) (as *R. pomonella* (Walsh) in part), Bush (1966) (as *R. cornivora* Bush in part), FSCA, USNM.

**FL Distribution:** Widespread North and Central.

**FL Host(s):** *Cornus florida* L. (Cornaceae) (Benjamin 1934, Bush 1966); fruits (reared).

**Notes:** Common; an undescribed species of the *pomonella* complex (Smith & Bush 1999).

***R. osmanthi*** Bush, 1966

**FL Records:** Benjamin (1934) (as *R. cingulata* in part), Bush (1966), FSCA, USNM.

**FL Distribution:** Central.

**FL Host(s):** *Osmanthus americana* (L.) Benth. & Hook. f. ex A. Grey (Oleaceae) (Benjamin 1934, Bush 1966); fruits (reared).

**Notes:** Uncommon and localized.

***R. pomonella*** (Walsh), 1867

**FL Records:** Benjamin (1934), Bush (1966), FSCA, USNM.

**FL Distribution:** Widespread North and Central.

**FL Host(s):** *Crataegus aestivalis* (Walt.) T. & G. (Rosaceae), *Prunus umbellata* Ell. and related species (Rosaceae), *Vaccinium arboreum* Marsh (Ericaceae), and *Pyrus arbutifolia* (L.) L. f. (as *Aronia arbutifolia* (L.) Ell.) (Rosaceae) (Benjamin 1934); fruits (reared).

**Notes:** Known as the “apple maggot” in northern states. Populations of unresolved taxonomic status are known from *Prunus* L. spp. (Rosaceae), sparkleberry (*Vaccinium arboreum* Marsh) (Ericaceae), and Mayhaw (*Crataegus aestivalis* (Walt.) Torr. & Gray) (Rosaceae). The sparkleberry population was listed as *R. zephyria* Snow by Benjamin (1934).

***R. suavis*** (Loew), 1862

**FL Records:** FSCA.

**FL Distribution:** North.

**FL Host(s):** *Juglans nigra* L. (Juglandaceae); nut husks (reared).

**Notes:** Infrequent. The host is not native to peninsular Florida but has been introduced into the more northern parts of the state. This is a northern species, commonly known as the “walnut husk fly,” that reaches its southeastern limit of distribution in northern Florida.

**Genus *Rhagoletotrypeta*** Aczél***R. rohweri*** Foote, 1965\*

**FL Records:** FSCA.

**FL Distribution:** Central and Northern.

**FL Host(s):** Not recorded for Florida.

**Notes:** Ten adults, all female, were found in a single fruit fly trap (multilure) in Pasco County and a single specimen was trapped from Duval county in the extreme northeastern part of the state during 2005. These are the only known records for *R. rohweri* in Florida. This species was previously recorded from the northeastern United States. The host is presumed to be one or more species of hackberry (*Celtis* L.) (Celtidaceae); however, this remains to be confirmed (Foote *et al.* 1993). The most likely host for this species, *C. occidentalis* L., is considered natively rare and local in Florida but is also used as an ornamental. Whether *R. rohweri* is truly native to Florida or introduced by the interstate movement of cultivated host plants is unknown.

**Genus *Zonosemata*** Benjamin***Z. electa*** (Say), 1830

**FL Records:** Say (1830) (as *Trypeta electa*), Osten Sacken (1878) (as *Trypeta (Spilographa) electa* Loew), Johnson (1895, 1913) (as *S. electa*), Benjamin (1934), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** *Solanum carolinense* L. and *S. capsicoides* All. (as *S. aculeatissimum sensu* Schulz, non Jacq.); larvae were also recorded from cultivated tomato (*Lycopersicon esculentum* L. var. *cerasiforme* (Dunal) Spooner, J. Anderson & R. K. Jansen) (Solanaceae) (Benjamin 1934); fruits (reared).

**Notes:** Common and widespread.

**Subfamily Trypetinae Loew  
Tribe Trypetini**

**Genus *Euleia*** Walker***E. fratria*** (Loew), 1862

**FL Records:** Stone *et al.* (1965) (“...throughout U.S.”), Ibrahim (1980), FSCA, USNM.

**FL Distribution:** Widespread Peninsular.

**FL Host(s):** *Cicuta mexicana* Coult. & Rose (Apiaceae); leaf mines (reared).

**Notes:** Not uncommon, but rarely collected and may be localized. Recorded from a number of other species of Apiaceae (and Asteraceae?) outside of Florida (Foote *et al.* 1993).

Genus *Strauzia* Robineau-Desvoidy

*S. longipennis* (Wiedemann), 1830 (complex) \*

**FL Records:** Ibrahim (1980), FSCA.

**FL Distribution:** Panhandle (Tallahassee area). **Not known to be established in Florida.**

**FL Host(s):** Not recorded for Florida.

**Notes:** Only 2 specimens are known from Florida. This species is widespread in the more northern states of the U.S. and into Canada, and perhaps occasionally to be found in extreme northern Florida; however, there is no evidence of an established population in the state. It is possible that the Florida records reflect chance introductions in cultivated host plants. The Ibrahim (1980, p. 321) map records outside of Leon County were mis-identified female *Paramyiolia rhino*.

Genus *Paramyiolia* Shiraki

*P. nigricornis* (Doane), 1899 \*\*\*

**FL Records:** Stone *et al.* (1965) (“s. to Fla.”), Ibrahim (1980).

**FL Distribution:** unlikely to occur in Florida.

**FL Host(s):** Unknown.

**Notes:** Dubious literature records; this is a northern species reaching its southeastern limit of distribution in the southern Appalachian Mountains and is very unlikely to occur in Florida. It is possible that

the Stone *et al.* (1965) reference refers to specimens of *P. rhino* which was unrecognized at the time. Ibrahim (1980) refers to Stone *et al.* (1965).

*P. rhino* (Steyskal), 1972

**FL Records:** Steyskal (1972) (as *Myoleja* Rondani), FSCA, USNM.

**FL Distribution:** Panhandle, North, Central.

**FL Host(s):** Unknown.

**Notes:** Appears to be moderately common, if localized; occasionally collected in fruit fly traps.

Genus *Parastenopa* Hendel

*P. limata* (Coquillett), 1899

**FL Records:** Benjamin (1934) (as *Myoleja*), FSCA, USNM.

**FL Distribution:** Widespread Peninsula.

**FL Host(s):** Species of *Ilex* L. (Aquifoliaceae) (Benjamin 1934); fruits (reared).

**Notes:** Extremely common. Adults have been reared from just about all species of *Ilex* known from the state.

*P. undescribed species* \*

**FL Records:** FSCA.

**FL Distribution:** Known only from coastal Dade County. **Not known to be established in Florida.**

**FL Host(s):** Unknown.

**Notes:** A single specimen of an undescribed species of *Parastenopa* was trapped during July, 2004; likely to represent a waif from the circum-Caribbean region or accidentally introduced from the neotropics.

Subfamily Tephritinae  
Tribe Terelliini Hendel

Genus *Neaspilota* Osten Sacken



***N. achilleae*** Johnson, 1900

**FL Records:** Johnson (1913) (as *N. achilleae* Johnson, *N. vernoniae* Loew?, see below), Benjamin (1934), Freidberg & Mathis (1986), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Hosts(s):** Various Asteraceae (Benjamin 1934); flowers (reared).

**Notes:** Moderately common. Reared from a species of *Hieracium* L.

***N. dolosa*** Benjamin, 1934

**FL Records:** Benjamin (1934), Freidberg & Mathis (1986), FSCA, USNM.

**FL Distribution:** widespread throughout.

**FL Host(s):** Various Asteraceae (Benjamin 1934); flowers (reared).

**Notes:** Common. Often swept and/or reared from species of *Erigeron* L.

***N. floridana*** Ibrahim, 1982

**FL Records:** Benjamin (1934) (as *N. alba* (Loew)), Ibrahim (1982), Freidberg & Mathis (1986), FSCA, USNM.

**FL Distribution:** Peninsula.

**FL Host(s):** Species of *Vernonia* Schreber (Asteraceae) (Benjamin 1934); flowers.

**Notes:** Not collected in Florida since 1930, ironic given the specific epitaph, but not uncommon in more northern states.

***N. isochela*** Freidberg & Mathis, 1986 \*

**FL Records:** Freidberg & Mathis (1986).

**FL Distribution:** northern Gulf coast (historical).  
**Not known to be established in Florida.**

**FL Host(s):** Not recorded for Florida.

**Notes:** Only a single collection known, perhaps representing waifs from further north/west. No known host plants for this species are recorded from Florida.

***N. punctistigma*** Benjamin, 1934

**FL Records:** Johnson (1913) (as *Neaspilota signifer* (Coq.)?, see below), Benjamin (1934), Freidberg & Mathis (1986), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Species of *Pluchea* Cass. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Common.

***N. signifera*** (Coquillett), 1894 \*\*\*

**FL Records:** Johnson (1913) (as *Trypeta signifer*).

**FL Distribution:** unlikely to occur in Florida.

**FL Host(s):** Not recorded for Florida.

**Notes:** A dubious literature record, as this is a far western U.S. species; Benjamin (1934, p. 38) referring to *N. punctistigma* states "This apparently is the species listed as *Neaspilota signifera* Coquillett by Johnson (52, p. 84) in 1913." This specimen was presumably deposited in the collection of the American Museum of Natural History (AMNH) (Johnson 1913); however, it was not examined by Freidberg & Mathis (1986), although the Johnson (1913) reference to *Trypeta signifer* is cited under *N. signifera*.

***N. vernoniae*** (Loew) 1861 \*\*\*

**FL Records:** Johnson (1895, 1913), Stone *et al.* (1965) ("...s to ... and FL."), Ibrahim (1980).

**FL Distribution:** unlikely to occur in Florida.

**FL Host(s):** Not recorded for Florida.

**Notes:** Dubious literature records, as this species occurs in the northeastern U.S. west to Nebraska. Foote *et al.* (1993, p. 241) state that "Johnson's record from Florida may represent (*N.*) *achilleae*". Freidberg & Mathis (1986) stated "We have not seen specimens from Florida, thus Johnson's record

(1895:337) of this species from that state remains unconfirmed. It may actually refer to *N. achilleae*, a species superficially similar." Both Stone *et al.* (1965) and Ibrahim (1980) likely refer to Johnson (1895).

**Subfamily Tephritinae**  
**Tribe Cecidocharini Hering**

**Genus *Procecidochores* Hendel**

***P. atra*** (Loew), 1862

**FL Records:** Johnson (1913) (as *Oedaspis setigera* Coquillett), FSCA.

**FL Distribution:** Extreme North, including Panhandle.

**FL Host(s):** *Solidago canadensis* L. (Asteraceae); leafy stem galls (reared).

**Notes:** Known only from a few scattered sites, this is a northern species that reaches its southeastern limit of distribution in northern Florida. The Johnson (1913) record from the Slosson collection may refer to *P. australis* Aldrich, which was unrecognized at that time and is considerably more common in northern Florida. The Slosson collection was reported to have been deposited in the American Museum of Natural History (AMNH) (Calvert 1927). Foote *et al.* (1993) place the Johnson (1913) record under *P. atra*; however, Blanc (1995) does not list a specific specimen but only the Johnson reference.

***P. australis*** Aldrich, 1929

**FL Records:** Aldrich (1929) (as *P. atra* var. *australis*), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** *Heterotheca subaxillaris* (Lam.) Britt. & Rusby (Asteraceae) (Benjamin 1934); leafy stem galls (reared).

**Notes:** Moderately common but not often collected. *Conyza canadensis* (L.) Croquist var. *pusilla* (Nutt.) Cronquist (as *Erigeron pusillus* Nutt.) was also recorded as a host for this species by Benjamin (1934), but this has not been verified.

***P. gibba*** (Loew), 1873

**FL Records:** FSCA.

**FL Distribution:** Extreme North?

**FL Host(s):** *Ambrosia artemisiifolia* L. (Asteraceae); stem galls (reared).

**Notes:** Only a single collection known from extreme northern Florida. A record from Key West (Foote *et al.* 1993, map 9, as *Callachna* Aldrich) has not been verified and may be in error.

***P. polita*** (Loew), 1862

**FL Records:** Johnson (1913) (as *Oedaspis* Loew), Ibrahim (1980), FSCA, USNM.

**FL Distribution:** Peninsular.

**FL Host(s):** *Solidago stricta* Ait. (Asteraceae) (Ibrahim 1980); stem galls.

**Notes:** Very rarely collected in Florida.

**Subfamily Tephritinae**  
**Tribe Dithrycini Hendel**

**Subtribe Eurostina Foote, Blanc & Norrbom**

**Genus *Eurosta* Loew**

***E. cribrata*** (Wulp), 1867

**FL Records:** Benjamin (1934) (as *E. reticulata* Snow), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** *Solidago sempervirens* L. (Asteraceae) (Benjamin 1934); rhizome crown galls (reared).

**Notes:** Rare in Florida, only 2 sites are presently known.

***E. fenestrata*** Snow, 1894 \*\*\*

**FL Records:** Johnson (1909, 1913).

**FL Distribution:** North. **Unlikely to occur in Florida.**

**FL Host(s):** Not recorded for Florida.

**Notes:** A dubious literature record. This species is a generally northern and western species of the *Eurosta comma* (Wiedemann) complex. The single specimen reported by Johnson (1913) may be a misidentification of *E. floridensis*, another member of this species complex, which was unrecognized at the time. The Johnson collection was reported to have been deposited in the Museum of Comparative Zoology (MCZ) (Brues 1933); however, these specimens cannot be located (Philip D. Perkins personal communication). In addition, Ming (1989) did not list any specimens of *E. fenestrata* from Florida in that collection. Complicating the issue is a tray of *Eurosta* specimens in the USNM identified as *E. fenestrata* by Ming including one specimen from Alachua County originally determined as *E. solidaginis* by Foote and a second from Putnam County determined to be *E. floridensis* by Norrbom. Neither of these specimens are listed under *E. fenestrata* in Ming (1989). These determinations by Ming appear to be in error.

***E. floridensis*** Foote, 1977

**FL Records:** Benjamin (1934) (as *E. comma* (Wiedemann)), Steyskal and Foote (1977), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** *Solidago fistulosa* Ait. (Asteraceae) (Benjamin 1934); root galls (reared).

**Notes:** Common. This species barely extends into the southeastern coastal plain outside of Florida. Records of *E. comma* in Florida, including those of Ibrahim (1980), refer to *E. floridensis* as do most, if not all, records of *E. fenestrata*. The only member of the *comma-fenestrata-floridensis* complex known to occur in Florida is the latter species.

***E. lateralis*** (Wiedemann), 1830

**FL Records:** Wiedemann (1830)?, Walker (1849)? (as *Trypeta donysa* Walker), Benjamin (1934) (as *E. nicholsoni* Benjamin), FSCA, USNM.

**FL Distribution:** Central, restricted to the Atlantic coastal scrub region.

**FL Host(s):** *Solidago odora* Ait. (Asteraceae); aerial stem galls (reared).

**Notes:** Very localized, may be reduced to a single population in Brevard County; should be considered as endangered; the only tephritid known to be pre-cinctive to Florida. The collection locality for the Wiedemann specimen is given as "Indien" (Wiedemann 1830), this may refer to the "Indian River" in Florida. Foote (1964) in placing *E. nicholsoni* in synonymy with *E. donysa* concluded "The type locality of *donysa* was not stated by Walker, but it is almost certainly Florida, since *nicholsoni* is known only from specimens collected in several localities in Brevard Co. in that state."

***E. solidaginis*** (Fitch), 1855

**FL Records:** Johnson (1895, 1913)? Foote *et al.* (1993) (state record only), Brown *et al.* (1996), FSCA.

**FL Distribution:** Extreme North, south into Suwannee county.

**FL Host(s):** *Solidago canadensis* L. (Asteraceae) (Brown *et al.* 1996); stem galls (reared).

**Notes:** Currently known from only 3 sites (one mostly destroyed in recent years), this is a northern species that reaches its southeastern limit of distribution in northern Florida. Johnson listed "*E. solidaginis*" collected by Mrs. Anne T. Slosson from "Charlotte Harbor" (1895, 1913) and Biscayne Bay (1913). Both of these localities are well south of the presently known distribution of *E. solidaginis* and host, *Solidago canadensis*, in Florida and there is no reason to believe that the situation was significantly different in the late 1800s and early 1900s. Given the coastal placement of the Slosson localities it may be possible that these specimens were in fact *E. lateralis*, unrecognized at the time and morphologically similar to *E. solidaginis*. If this is the case, then the distribution of *E. lateralis* prior to the 20<sup>th</sup> century would have been far more extensive than it is today. Given the urbanization of the coastal regions of Florida, particularly in Dade and Charlotte counties, it is quite possible that this species was extirpated from most of Florida over the last century outside of a small region in Brevard county. It is also possible that the specimens were mis-identified *E. floridensis*, which was also unrecognized at the time and would have been identified as *E. comma*, or *E. cribrata*; however, the latter 2 species would seem unlikely to have been confused with *E. solidaginis* given the significant morphological differ-

ences. In addition, the March collection date given for the Charlotte Harbor specimen (Johnson 1895) is also inconsistent with *E. floridensis*, which has a fall emergence for adults, but is consistent with either *E. cribrata* or *E. lateralis*. Neither *E. cribrata* nor *E. floridensis* has been recorded from the Biscayne Bay or Charlotte Harbor localities although the hosts for these *Eurosta* species are found throughout those regions. The Slosson collection was deposited in the collection of the American Museum of Natural History (AMNH) (Calvert 1927); however, Ming (1989) examined specimens of *Eurosta* in that collection but failed to list any Slosson specimens from Florida. An inquiry to the AMNH about the current status of these specimens was not answered. It is presumed that they were destroyed thus making it impossible to resolve their identity. The Foote *et al.* (1993) state record for Florida appears to refer to Johnson (1895, 1913).

**Subfamily Tephritinae**  
**Tribe Dithrycini Hendel**  
**Subtribe Oedaspidina Hering**

**Genus *Peronyma* Loew**

***P. quadrifasciata* (Macquart), 1843**

**FL Records:** Curran (1932) (as *Tomoplagina maculata* Curran), Benjamin (1934) (as *Peronyma maculata* (Curran)), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** *Chrysopsis gossypina* (Michx.) Elliott subsp. *hyssoipifolia* (Nutt.) Semple (Asteraceae) (Benjamin 1934, as *Heterotheca trichophylla* (Nutt.) Shinnery); *Chrysopsis* (Nutt.) Ell. spp. (see below); stem galls (reared).

**Notes:** Uncommon and localized, rarely collected. This species is restricted to the southeastern coastal plain of the U.S. with few records outside of Florida. Benjamin (1934) recorded *Chrysopsis gossypina hyssoipifolia* (as *Heterotheca trichophylla*) as the host for *P. quadrifasciata*; however, the concept of “*trichophylla*” at that time likely encompassed other then unrecognized species of this genus having generally glabrous phyllaries beyond those in the current *C. gossypina* (Michx.) Ell. complex. We have found galls of this species in *C. linearifolia* Semple, *C. scabrella* Torr. & Grey, and *C. gossypina* (and/or

*gossypina* x *scabrella*?). Adults of *P. quadrifasciata* have also been collected in association with other species of *Chrysopsis* in Florida.

**Subfamily Tephritinae**  
**Tribe Noetini Norrbom & Korneyev**

**Genus *Acidigona* Loew**

***A. melanura* (Loew), 1873**

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** Species of *Hieracium* L. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Rarely collected.

**Subfamily Tephritinae**  
**Tribe Eutretini Munro**

**Genus *Acrotaenia* Loew**

***A. testudinea* (Loew), 1873 \***

**FL Records:** Foote (1960), FSCA.

**FL Distribution:** Florida Keys (historical); **no known population present in the state.**

**FL Host(s):** Unknown.

**Notes:** A single specimen trapped on Big Pine Key, probably a waif. This species appears common elsewhere in the circum-Caribbean.

**Genus *Eutreta* Loew**

***E. caliptera* (Say), 1830**

**FL Records:** FSCA.

**FL Distribution:** North (presently known only from Alachua county).

**FL Host(s):** Not recorded for Florida.

**Notes:** This species appears rare in Florida; only 2 specimens are known; however, it is probably more generally distributed in northern Florida than these



records indicate. This species is widespread in eastern North America and apparently reaches its southeastern limit of distribution in northern Florida. *Eutreta caliptera* has been recorded to form galls in a wide range of Asteraceae elsewhere in eastern North America (Stoltzfus 1977, Sutton *et al.* 2002). An empty gall with the remains of a tephritid puparium presumably of this species was found in *Erechtites hieraciifolia* (L.) Raf. (Asteraceae) in north central Florida, a common host of *E. caliptera* in the southern Appalachian mountain region (Sutton *et al.* 2002).

### Genus *Paracantha* Coquillett

#### *P. culta* (Wiedemann), 1830

**FL Records:** Johnson (1895, 1913) (as *Carphoricha culta* Wied.), Doane (1899) (as *P. cultaris* (Coquillett)), Benjamin (1934), FSCA, USNM.

**FL Distribution:** North and Central.

**FL Host(s):** *Cirsium horridulum* Michx. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Probably not uncommon in northern Florida but infrequently collected.

#### *P. forficula* Benjamin, 1934

**FL Records:** Philips (1923) (as *P. culta*), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Coastal regions of the Peninsula.

**FL Host(s):** *Borrichia frutescens* (L.) DC. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Moderately common but infrequently collected.

### Subfamily Tephritinae Tribe Tephritini Newman

### Genus *Acinia* Robineau-Desvoidy

#### *A. picturata* (Snow), 1894

**FL Records:** Snow (1894) (as *Tephritis picturata* Snow), Johnson (1895) (as *Tephritis fucata* Fab.),

Johnson (1913) (as *Tephritis fucata*, *T. picturata* Snow), Benjamin (1934) (as *A. fucata* (Fab.)), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Species of *Pluchea* Cass. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Common.

### Genus *Dioxyna* Frey

#### *D. picciola* (Bigot), 1857

**FL Records:** Loew (1873) (as *Trypeta humilis* Loew), Osten Sacken (1878) (as *T. humilis* Loew), Johnson (1895) (as *Ensina humilis* Loew), Johnson (1913) (as *Ensina picciola* Bigot), Benjamin (1934) (as *Paroxyna* Hendel), Foote *et al.* 1993 (as *D. sororcula* (Wiedemann)), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Numerous species of Asteraceae (Benjamin 1934); flowers (reared).

**Notes:** Common. Often swept from a wide range of Asteraceae; commonly reared from *Bidens alba* (L.) DC.

#### *D. thomae* (Curran), 1928

**FL Records:** Benjamin (1934) (as *Paroxyna* Hendel), FSCA, USNM.

**FL Distribution:** Widespread Peninsular.

**FL Host(s):** *Bidens bipinnata* L. (Asteraceae) (Benjamin 1934); seeds (reared).

**Notes:** Moderately common but rarely collected.

### Genus *Dyseuaresta* Hendel

#### *D. mexicana* (Wiedemann), 1830

**FL Records:** Johnson (1913) (as *Euaresta mexicana* Wied.), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread Peninsular.

**FL Host(s):** Presumed to be *Melanthera nivea* (L.) Small (Asteraceae) (Benjamin 1934).

**Notes:** Common in the southern part of the state, often associated with *M. nivea* but not yet reared. This is a generally circum-Caribbean species reaching the southern United States.

### Genus *Euaresta* Loew

#### *E. aequalis* (Loew), 1862

**FL Records:** Stone *et al.* (1965) (“..throughout U.S.”), Ibrahim (1980), FSCA, USNM.

**FL Distribution:** Panhandle.

**FL Host(s):** *Xanthium strumarium* L. (Asteraceae); in seed pods.

**Notes:** Rarely collected, localized. This is a widespread northern species that reaches its southeastern limit of distribution in the Florida panhandle.

#### *E. bella* (Loew), 1862

**FL Records:** Johnson (1895, 1913), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Presumed to be *Ambrosia artemisiifolia* L. (Asteraceae) (Benjamin 1934).

**Notes:** Common. Often found in association with the only recorded host, *A. artemisiifolia* (Novak *et al.* 1967).

### Genus *Euarestoides* Benjamin

#### *E. abstersus* (Loew), 1862

**FL Records:** Johnson (1895, 1913) (as *Urellia abstersa* Loew), Benjamin (1934) (as *Trupanea* Schrank, subgenus *Euarestoides*), FSCA, USNM.

**FL Distribution:** Widespread Peninsular.

**FL Host(s):** *Carphephorus paniculatus* (J.F. Gmel.) Herb. (Asteraceae) (Benjamin 1934, as *Trilisa paniculata* (J.F. Gmel.) Cass.); flowers (reared).

**Notes:** Rarely collected and poorly known.

### Genus *Neotephritis* Hendel

#### *N. finalis* (Loew), 1862

**FL Records:** FSCA.

**FL Distribution:** Extreme North.

**FL Host(s):** Not known for Florida.

**Notes:** Very rare in Florida, only a single specimen known. This is a very widespread U.S. species that probably reaches its southeastern limit of distribution in northern Florida. *Neotephritis finalis* has been recorded from many species of Asteraceae elsewhere in North America (Goeden *et al.* 1987).

### Genus *Paroxyna* Hendel

#### *P. clathrata* (Loew), 1862\*\*\*

**FL Records:** Stone *et al.* (1965) (“..throughout U.S.”).

**FL Distribution:** unlikely to occur in Florida.

**Host(s):** Not recorded for Florida.

**Notes:** Generally restricted to the western U.S.

### Genus *Stenopa* Loew

#### *S. vulnerata* (Loew), 1873\*\*\*

**FL Records:** Stone *et al.* (1965) (“..throughout U.S.”), Ibrahim (1980).

**FL Distribution:** unlikely to occur in Florida.

**FL Host(s):** Not recorded for Florida.

**Notes:** A dubious literature record. This is a northern species that reaches its southeastern limit of distribution in the southern Appalachian Mountains. The Ibrahim (1980) reference comes from Stone *et al.* (1965).

### Genus *Tephritis* Latreille

***T. subpura*** (Johnson), 1909

**FL Records:** Benjamin (1934) (as *Trupanea* Schrank, subgenus *Tephritoides*), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Species of *Baccharis* L. (Asteraceae) (Benjamin 1934); twig mines (reared), flowers.

**Notes:** moderately common especially near the coasts.

***T. pura*** (Loew), 1873 \*\*\*

**FL Records:** Stone *et al.* (1965) ("Maine to Fla.).

**FL Distribution:** unlikely to occur in Florida.

**FL Host(s):** Not recorded for Florida.

**Notes:** A dubious literature record, the southeastern limit of distribution of this species appears to lie in the southern Appalachian mountain region.

**Genus *Trupanea*** Schrank***T. actinobola*** (Loew), 1873

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**FL Host(s):** Species of Asteraceae (Benjamin 1934); flowers (reared).

**Notes:** Common. Often swept and reared from *Erigeron* L. species in the spring and early summer and from *Aster elliotii* Torr. & Grey in the fall.

***T. ageratae*** Benjamin, 1934

**FL Records:** Benjamin (1934), USNM.

**FL Distribution:** Lower Keys only.

**Host(s):** *Ageratum maritimum* Kunth (Benjamin 1934, as *A. littorale* Gray); flowers.

**Notes:** Only a single Florida specimen known (the holotype); also known from Cuba (Norrbom *et al.* 1998). The lower Florida Keys likely represent the

extreme northern limit of distribution for this species.

***T. dacetoptera*** Phillips, 1923

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** North and Central.

**Host(s):** *Gnaphalium obtusifolium* L. (Asteraceae) (Benjamin 1934); flowers and "tender growing tips" (Benjamin 1934) (reared from plants).

**Notes:** Not commonly collected. *Pityopsis graminifolia* (Michx.) Nutt. (as *Chrysopsis microcephala* Small) was also recorded as a host by Benjamin (1934) but this has not been verified.

***T. eclipta*** Benjamin, 1934

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread Peninsular.

**Host(s):** *Eclipta alba* (L.) Hassk. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Infrequently collected but may be locally abundant.

***T. mevarna*** (Walker), 1849

**FL Records:** Walker (1849) (as *Trypeta mevarna*), Johnson (1895) (as *Urellia solaris* Loew, *U. mevarna* (Walker)), Johnson (1913) (as *Urellia mevarna* Walker), Benjamin (1934), FSCA, USNM.

**Host(s):** Species of *Pityopsis* Nutt. (Asteraceae) (Benjamin 1934 as *Heterotheca* Cass.); "tender growing tips".

**FL Distribution:** Throughout, except far South.

**Notes:** Infrequently collected.

**Genus *Xanthaciura*** Hendel***X. chrysur*** (Thomson), 1869

**FL Records:** Ibrahim (1980), FSCA.

**FL Distribution:** Central and South, coastal.

**Host(s):** Unknown.

**Notes:** Rarely collected. This is a generally neotropical species that reaches its northern limit of distribution in southern Florida.

**X. connexionis** Benjamin, 1934

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** Central and Southern.

**Host(s):** Several species of Asteraceae (Benjamin 1934); flowers.

**Notes:** Moderately common in southern Florida. This is a generally circum-Caribbean species that reaches its northern limit of distribution in peninsular Florida.

**X. insecta** (Loew), 1862

**FL Records:** Osten Sacken (1878) (as *Trypeta (Aciura) insecta*), Johnson (1895, 1913) (as *Aciura insecta*), Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**Host(s):** Species of Asteraceae (Benjamin 1934); flowers (reared).

**Notes:** Extremely common and abundant. Often swept and/or reared from *Bidens alba* (L.) DC.

**X. tetraspina** (Phillips), 1923

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** Throughout.

**Host(s):** *Conoclinium coelestinum* (L.) DC. (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Moderately common.

#### *Incertae Sedis*

**Genus *Tomoplagia*** Coquillett

**T. obliqua** (Say), 1830

**FL Records:** Benjamin (1934), FSCA, USNM.

**FL Distribution:** Widespread throughout.

**Host(s):** Species of *Vernonia* Schreber (Asteraceae) (Benjamin 1934); flowers (reared).

**Notes:** Common. Reared from flowers of *V. gigantea* (Walt.) Trel. and/or *V. novaeboracensis* (L.) Michx.

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#### **References cited**

- Aldrich, J. M.** 1905. A Catalog of North American Diptera (or two-winged flies). Smithsonian Miscellaneous Collections 46(1444): 1-680.
- Aldrich, J. M.** 1929. A revision of two-winged flies of the genus *Procecidochares* in North America with an allied new genus. Proceedings of the United States National Museum 76(2): 1-13.
- Benjamin, F. H.** 1934. Descriptions of some native trypetid flies with notes on their habits. United States Department of Agriculture Technical Bulletin 401: 95 p.
- Blanc, F. L.** 1995. Accumulated collection data on the Tephritidae of North America north of Mexico. Unpublished database. Part of data used for distribution maps in Foote, *et al.* 1993.
- Brown, A. C.** 1937. Report of the Grove Inspection Department, July 1, 1934 to June 1, 1936, pp. 15-27. *In* State Plant Board of Florida, 11<sup>th</sup> Biennial Report, Gainesville.
- Brown, J. M., W. G. Abrahamson, and P. A. Way.** 1996. Mitochondrial DNA phylogeography of host races of the goldenrod ball gallmaker, *Eurosta solidaginis* (Diptera: Tephritidae). *Evolution* 50: 777-786.
- Brues, C. T.** 1933. Charles Willison Johnson, 1863-1932. *Entomology News* 44: 113-116.
- Bush, G. L.** 1966. The taxonomy, cytology, and evolution of the genus *Rhagoletis* in North America (Diptera, Tephritidae). *Bulletin of the Museum of Comparative Zoology* 134: 431-562.
- Calvert, P. P.** 1927. Obituary. *Entomology News* 38: 128.
- Clark, R. A., G. J. Steck, and H. V. Weems, Jr.** 1996. Detection, quarantine, and eradication of exotic fruit flies in Florida, pp. 29-54, *In* D.



- Rosen, F. D. Bennett, and J. L. Capinera (eds.), Pest management in the subtropics: integrated pest management – a Florida perspective. Intercept, Andover, UK.
- Curran, C. H.** 1932. New North American Diptera, with notes on others. *American Museum Novitates* 526: 1-13.
- Doane, R. W.** 1899. Notes on Trypetidae with descriptions of new species. *Journal of the New York Entomological Society* 7: 177-193.
- Foote, R. H.** 1960. Notes on some North American Tephritidae, with descriptions of two new genera and two new species. *Proceedings of the Biological Society of Washington* 73: 107-117.
- Foote, R. H.** 1964. A new synonym in the genus *Eurosta* (Tephritidae). *Proceedings of the Entomological Society of Washington* 66: 61.
- Foote, R. H., F. L. Blanc, and A. L. Norrbom.** 1993. Handbook of the fruit flies (Diptera: Tephritidae) of America north of Mexico. Cornell University Press, Ithaca NY. 571 pp.
- Freidberg, A. and W. N. Mathis.** 1986. Studies of Terelliinae (Diptera: Tephritidae): a revision of the genus *Neaspilota* Osten Sacken. *Smithsonian Contributions to Zoology* 439: iv + 75 p.
- Goeden, R. D., T. D. Catadal, and G. A. Cavanaugh.** 1987. Life history of *Neotephritis finalis* (Loew) on native Asteraceae in southern California (Diptera: Tephritidae). *Proceedings of the Entomological Society of Washington* 89: 552-558.
- Ibrahim, B. R.** 1980. Fruit Flies of Florida (Diptera: Tephritidae). Dissertation, University of Florida, Gainesville vii + 356 p.
- Ibrahim, B. R.** 1982. A new species of *Neaspilota* (Diptera: Tephritidae) from Florida. *Florida Entomologist* 65: 297-300.
- Johnson, C. W.** 1895. Diptera of Florida. *Proceedings of the Academy of Natural Sciences of Philadelphia* 1895: 303-340.
- Johnson, C. W.** 1909. Notes on the distribution of some Trypetidae with description of a new species. *Psyche* 16: 113-114.
- Johnson, C. W.** 1913. Insects of Florida. *Bulletin of the American Museum of Natural History*. 32: 37-90.
- Korneyev, V. A.** 1999. Phylogenetic relationships among higher groups of Tephritidae, pp. 73-113, in M. Aluja & A. L. Norrbom (eds.) *Fruit flies (Tephritidae): Phylogeny and evolution of behavior*, CRC Press, Boca Raton, Florida xviii + 944 pp.
- Landolt, P.J.** 1994. Fruit of *Morrenia odorata* (Asclepiadaceae) as a host for the papaya fruit fly, *Toxotrypana curvicauda* (Diptera: Tephritidae). *Florida Entomologist* 77: 287-288.
- Liquido, N. J., L. A. Shinoda, and R. T. Cunningham.** 1991. Host plants of the Mediterranean fruit fly, *Ceratitidis capitata* (Wiedemann) (Diptera: Tephritidae): an annotated world review. *Miscellaneous Publications 77*, Entomological Society of America, Lanham, Md. 52pp.
- Loew, H.** 1862. Monographs of the Diptera of North America. Part I. On the North American Trypetidae. *Smithsonian Miscellaneous Collections* 6(1): 1-221.
- Loew, H.** 1873. Monographs of the Diptera of North America. Part III. Review of the North American Trypetina. *Smithsonian Miscellaneous Collections* 11(256): 1-351.
- McAlister, L. C.** 1936. Observations on the West Indian fruit fly at Key West in 1932-1933. *Journal of Economic Entomology* 29: 440-445.
- Newell, W.** 1933. West Indian fruit fly at Key West, pp. 17-20. *In Fla. State Plant Board Biennial Report* 9.
- Newell, W.** 1935. West Indian fruit fly at Key West, pp. 22-27. *In Fla. State Plant Board Biennial Report* 10.
- Norrbom, A. L. & K. C. Kim.** 1988. Revision of the *schausi* group of *Anastrepha* Schiner (Diptera: Tephritidae), with a discussion of the terminology of the female terminalia in the Tephritoidea. *Annals of the Entomological Society of America* 81: 164-173.
- Norrbom, A. L., L. E. Carroll, C. Thompson, I. M. White, and A. Freidberg.** 1998. Systematic database of names, pp. 65-299. *In* Thompson, F. C. (ed.). *Fruit fly expert identification system and systematic information database*, Myia Vol. 9, Backhuys Publishers, Leiden, viii + 524 p.
- Novak, J. A., W. B. Stoltzfus, E. J. Allen, and B. A. Foote.** 1967. New host records for North American fruit flies. *Proceedings of the Entomological Society of Washington* 69: 146-148.
- Osten Sacken, C. R.** 1878. Catalogue of the described Diptera of North America, 2<sup>nd</sup> ed. Smithsonian Institution, Smithsonian Miscellaneous Collections 16(270): 1-276.
- Payne, J.A. & S.H. Berlocher.** 1995. Distribution and host plants of the blueberry maggot fly, *Rhagoletis mendax* (Diptera: Tephritidae) in southeastern North America. *Journal of the Kansas Entomological Society* 68: 133-142.

- Pereira, R., G. J. Steck, E. Varona and J. Sivinski.** 2006. Aspects of the natural history, biology, and behavior of *Anastrepha interrupta* (Diptera: Tephritidae). Florida Entomologist (in press)
- Philips, V.T.** 1923. A revision of the Trypetidae of northeastern America. Journal of the New York Entomological Society 31: 119-155.
- Say, T.** 1830. Descriptions of North American dipterous insects. Journal of the Academy of Natural Sciences of Philadelphia 6: 183-188.
- Smith J. J. and G. L. Bush** 1999. Phylogeny of the subtribe Carpomyina (Trypetinae), emphasizing relationships of the Genus *Rhagoletis*, pp. 187-217. In Aluja, M. and A. L. Norrbom, eds. Fruit flies (Tephritidae): Phylogeny and evolution of behavior. CRC Press, Boca Raton. 968 pp.
- Snow, W. A.** 1894. Descriptions of North American Trypetidae, with notes. Kansas University Society Quarterly 2: 159-174.
- Steck, G. J.** 1998. Mexican fruit fly, *Anastrepha ludens* (Loew) (Diptera: Tephritidae). Entomology Circular No. 391, Florida Department Agriculture & Consumer Services, 2 pp.
- Steck, G. J.** 2001. Concerning the occurrence of the West Indian fruit fly in Florida. Florida Entomologist 84: 320-321.
- Steyskal, G. C.** 1972. A new species of *Myoleja* with a key to North American species (Diptera: Tephritidae). Florida Entomologist 55: 207-211.
- Steyskal, G. C.** 1977. Two new Neotropical fruit flies of the genus *Anastrepha*, with notes on generic synonymy (Diptera: Tephritidae). Proceedings of the Entomological Society of Washington 77: 75-81.
- Steyskal, G. C. and R. H. Foote.** 1977. Revisionary notes on North American Tephritidae (Diptera), with keys and descriptions of new species. Proceedings of the Entomological Society of Washington 77: 146-155.
- Stoltzfus, W. B.** 1977. The taxonomy and biology of *Eutreta* (Diptera: Tephritidae). Iowa State Journal of Research 51: 369-438.
- Stone, A.** 1939. A new genus of Trypetidae near *Anastrepha* (Diptera). Journal of the Washington Academy of Sciences 29: 340-350.
- Stone, A.** 1942. The fruitflies of the genus *Anastrepha*. United States Department of Agriculture Miscellaneous Publication No. 439, 112 pp.
- Stone, A., C. W. Sabrosky, W. W. Wirth, R. H. Foote, and J. R. Coulson [eds.].** 1965. A catalog of the Diptera of America north of Mexico. United States Department of Agriculture, Government Printing Office, Washington, D.C. iv + 1696 pp.
- Sutton, B. D., G. J. Steck, and D. Defoe.** 2002. New records of Tephritidae (Diptera) from Great Smoky Mountains National Park - II. Insecta Mundi 16: 1-8.
- Swanson, R. W. and R. M. Baranowski.** 1972. Host range and infestation by the Caribbean fruit fly, *Anastrepha suspensa* (Diptera: Tephritidae), in south Florida. Proceedings of the Florida State Horticultural Society 85: 271-274.
- Walker, F.** 1849. List of the specimens of dipterous insects in the collection of the British Museum. Part IV (Family Muscidae), pp. 689-1172. London.
- Weems, H. V., Jr.** 1964. Oriental fruit fly (*Dacus dorsalis* Hendel) (Diptera: Tephritidae). Florida Department of Agriculture, Division of Plant Industry, Entomology Circular 21: 2 pp.
- Weems, H. V., Jr.** 1966. Caribbean fruit fly. Proceedings of the Florida State Horticultural Society 79: 401-405.
- Weems, H. V., Jr.** 1969. Papaya fruit fly (*Toxotrypana curvicauda* Gerstaecker), 1860 (Diptera: Tephritidae). Florida Department of Agriculture, Division of Plant Industry, Entomology Circular 86, 2 pp.
- Weems, H. V., Jr.** 1981. Mediterranean fruit fly, *Ceratitis capitata* (Wiedemann) (Diptera: Tephritidae). Florida Department of Agriculture, Division of Plant Industry, Entomology Circular 230, 12 pp.
- Weems, H. V., Jr.** 1987. Guava fruit fly, *Dacus (Strumeta) correctus* (Bezzi) (Diptera: Tephritidae). Florida Department of Agriculture, Division of Plant Industry, Entomology Circular 291, S 4pp.
- Wiedemann, C. R. W.** 1830. Aussereuropäische zweiflügelige Insekten, Vol 2. pp. xii + 684, pls. 7-10.

## Appendix I: Alphabetical List of the Tephritid Species Native to Florida

- Acidigona melanura* (Tephritinae: Noetini)  
*Acinia picturata* (Tephritinae: Tephritini)  
*Anastrepha edentata* (Dacinae: Toxotrypanini)  
*Anastrepha interrupta* (Dacinae: Toxotrypanini)  
*Anastrepha nigrifascia* (Dacinae: Toxotrypanini)  
*Anastrepha suspensa* (Dacinae: Toxotrypanini)  
*Dioxya picciola* (Tephritinae: Tephritini)  
*Dioxya thomae* (Tephritinae: Tephritini)  
*Dyseuaresta mexicana* (Tephritinae: Tephritini)  
*Euaresta aequalis* (Tephritinae: Tephritini)  
*Euaresta bella* (Tephritinae: Tephritini)  
*Euarestoides abstersus* (Tephritinae: Tephritini)  
*Euleia fratria* (Trypetinae: Trypetini)  
*Eurosta cribrata* (Tephritinae: Dithrycini)  
*Eurosta floridensis* (Tephritinae: Dithrycini)  
*Eurosta lateralis* (Tephritinae: Dithrycini)  
*Eurosta solidaginis* (Tephritinae: Dithrycini)  
*Eutreta caliptera* (Tephritinae: Eutretini)  
*Neaspilota achilleae* (Trypetinae: Terelliini)  
*Neaspilota dolosa* (Trypetinae: Terelliini)  
*Neaspilota floridana* (Trypetinae: Terelliini)  
*Neaspilota punctistigma* (Trypetinae: Terelliini)  
*Neotephritis finalis* (Tephritinae: Tephritini)  
*Paracantha culta* (Tephritinae: Eutretini)  
*Paracantha forficula* (Tephritinae: Eutretini)  
*Paramyiolia rhino* (Trypetinae: Trypetini)  
*Parastenopa limata* (Trypetinae: Trypetini)
- Peronyma quadrifasciata* (Tephritinae: Dithrycini)  
*Procecidochares atra* (Trypetinae: Cecidocharini)  
*Procecidochares australis* (Trypetinae: Cecidocharini)  
*Procecidochares gibba* (Trypetinae: Cecidocharini)  
*Procecidochares polita* (Trypetinae: Cecidocharini)  
*Rhagoletis chionanthi* (Trypetinae: Carpomyini)  
*Rhagoletis cingulata* (Trypetinae: Carpomyini)  
*Rhagoletis juniperina* (Trypetinae: Carpomyini)  
*Rhagoletis mendax* (Trypetinae: Carpomyini)  
*Rhagoletis* sp. nr. *mendax* (Trypetinae: Carpomyini)  
*Rhagoletis osmanthi* (Trypetinae: Carpomyini)  
*Rhagoletis pomonella* (Trypetinae: Carpomyini)  
*Rhagoletis suavis* (Trypetinae: Carpomyini)  
*Tephritis subpura* (Tephritinae: Tephritini)  
*Tomoplagia obliqua* (Tephritinae: Incertae Sedis)  
*Toxotrypana curvicauda* (Dacinae: Toxotrypanini)  
*Trupanea actinobola* (Tephritinae: Tephritini)  
*Trupanea ageratae* (Tephritinae: Tephritini)  
*Trupanea dacetoptera* (Tephritinae: Tephritini)  
*Trupanea eclipta* (Tephritinae: Tephritini)  
*Trupanea mevarna* (Tephritinae: Tephritini)  
*Xanthaciura chrysur*a (Tephritinae: Tephritini)  
*Xanthaciura connexionis* (Tephritinae: Tephritini)  
*Xanthaciura insecta* (Tephritinae: Tephritini)  
*Xanthaciura tetraspina* (Tephritinae: Tephritini)  
*Zonosemata electa* (Trypetinae: Carpomyini)

