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TRI-OLOGY

A PUBLICATION FROM THE DIVISION OF PLANT INDUSTRY, BUREAU OF ENTOMOLOGY, NEMATOLOGY, AND PLANT PATHOLOGY

Dr. Trevor R. Smith, Division Director



BOTANY

Providing information about plants: native, exotic, protected and weedy



ENTOMOLOGY

Identifying arthropods, taxonomic research and curating collections



NEMATOLOGY

Providing certification programs and diagnoses of plant problems



PLANT PATHOLOGY

Offering plant disease diagnoses and information.



Toxomerus geminatus on *Papaver orientale*.
Photograph Courtesy of: Patti J. Anderson, DPI



Florida Department of Agriculture and Consumer Services • Adam H. Putnam, Commissioner



Plecia nearctica, love bug, on *Sambucus nigra* subsp. *canadensis*.
Photograph courtesy of: Jeffrey Weston Lotz, DPI

ABOUT TRI-OLGY

The Florida Department of Agriculture and Consumer Services Division of Plant Industry's Bureau of Entomology, Nematology, and Plant Pathology (ENPP), (including the Botany Section), produces TRI-OLGY four times a year, covering three months of activity in each issue.

The report includes detection activities from nursery plant inspections, routine and emergency program surveys, and requests for identification of plants and pests from the public. Samples are also occasionally sent from other states or countries for identification or diagnosis.

HOW TO CITE TRI-OLGY

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We welcome your suggestions for improvement of TRI-OLGY. Please feel free to contact the [helpline](#) with your comments. 1-888-397-1517.

Thank you,

Dr. Gregory Hodges, Editor
Assistant Director
Division of Plant Industry

Dr. Patti J. Anderson, Managing Editor
Botanist
Division of Plant Industry

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HIGHLIGHTS



1 *Fulmekiola serrata* (Kobus), sugarcane thrips, a new Continental USA record. This pest of sugarcane is native to Asia, but beginning in the 1940s, it has spread and continues to invade sugarcane fields around the world. The sugarcane thrips was first collected in Florida in Hendry County, at the end of January 2017. A survey of sugarcane fields and isolated sugarcane plants in rural and suburban yards showed the species is widespread in the main sugarcane growing counties in South Florida. This is an important pest that may reduce sugarcane yield by as much as 24%.



1 - *Fulmekiola serrata*, sugarcane thrips.
Photograph courtesy of Felipe N. Soto-Adames, DPI

2 *Pseudomonas cichorii* (Swingle) Stapp, was found in late January, in a shipment of *Lactuca sativa* (lettuce) from California. The sample was intercepted at the agricultural interdiction station located on I-10 east bound in Suwannee County, and was found to contain symptoms of midrib rot.



2 - *Pseudomonas cichorii* on *Lactuca sativa* (lettuce).
Photograph courtesy of Cottyn et al. 2010

3 *Bursaphelenchus xylophilus* (Steiner & Buhrer, 1934) Nickle, 1970, the pine wood nematode, was detected in the roots of *Pinus clausa* (sand pine) in Washington County in February 2017. The pine wood nematode is a species that feeds on the resin canal cells of pines and colonizes both above ground parts and roots, causing a syndrome called pine wilt disease. The nematode is native to North America where the damage it causes is usually not serious, although outbreaks of nematode infestations resulting in serious damage to pines have been reported in some areas of the United States and Canada. Nematode infestations can accentuate pine decline due to adverse environmental conditions, such as drought, as was found this year in North Florida.



3 - *Bursaphelenchus xylophilus* (pine wood nematode) infested roots of dying sand pines (*Pinus clausa*).
Photograph courtesy of Jeffrey M. Eickwort, Florida Forest Service

4 *Pyrostegia venusta* (KerGawl.) Miers (flamevine), in the plant family Bignoniaceae, is a perennial vine with vivid orange flowers that appear in dense clusters in early spring. Unfortunately, this plant spreads easily into natural areas. This sample is the first documented report of its escape in Volusia County.



4 - *Pyrostegia venusta* (flamevine).
Photograph courtesy of Patricia Howell, Atlas of FL Plants





BOTANY

Compiled by Patti J. Anderson, Ph.D.

This section identifies plants for the Division of Plant Industry, as well as for other governmental agencies and private individuals. The Botany Section maintains a reference herbarium with over 12,000 plants and 1,400 vials of seeds.

QUARTERLY ACTIVITY REPORT

	JANUARY- MARCH	YEAR TO DATE
Samples submitted by other DPI sections	950	950
Samples submitted for botanical identification only	139	139
Total samples submitted	1,089	1,089
Specimens added to the Herbarium	62	62



Pyrostegia venusta (flamevine).
Photograph courtesy of Patricia Howell

Some of the samples received for identification are discussed below:

1 *Pyrostegia venusta* (KerGawl.) Miers (flamevine), from a genus of three tropical lianas native to South America. Bignoniaceae. This vine is a perennial with attractive to eye popping orange flowers that appear in dense clusters in early spring. The species has compound leaves with two or three leaflets and climbs by branched tendrils. Unfortunately, this beautiful vine spreads easily into natural areas. The species is recommended for planting in USDA zones 9-11, but plant with care. Although it is not listed as a noxious weed or as an invasive species by FLEPPC (Florida Exotic Pest Plant Council), it is known to escape cultivation and spread vegetatively. It has escaped and been found growing outside cultivation in Brevard, Broward, Hillsborough, Indian River, Lake, Okeechobee, Orange, Polk, Seminole and St. Lucie counties. This is the first documented report of escape in Volusia County. (Volusia County; B2017-63; Sol F. Looker and Carolyn P. Hall; 14 February 2017.) (Llamas 2003; Mabberley 2008; Wunderlin and Hansen 2011; <http://gardeningolutions.ifas.ufl.edu/plants/ornamentals/flame-vine.html> [accessed 7 April 2017]; <http://www.se-eppc.org/wildlandweeds/pdf/Fall2005-Hutchinson-pp7-11.pdf> [accessed 7 April 2017]; https://keyserver.lucidcentral.org/weeds/data/media/Html/pyrostegia_venusta.htm [accessed 7 April 2017]; http://fnai.org/Invasives/Pyrostegia_venusta_FNAI.pdf [accessed 7 April].)



Pyrostegia venusta (flamevine) tendril.
Photograph courtesy of Nadiatalent, wikipedia



2 *Sabal minor* (Jacq.) Pers. (dwarf palmetto, blue-stem palmetto), from a genus of 16 species native to areas from the southeastern United States to South America. Palmae. This unarmed (spineless) palm has a single, subterranean stem, 2 m tall. The leaves are costapalmate, like all members of this genus, but in *S. minor* the costa remains small throughout a lifetime of producing grayish green, circular, slightly folded leaves. There are few or no fibers between the leaf segments, and the leaf tips are slightly bifid. At the midpoint of the leaf, the blade is split almost to the costa, dividing the leaf nearly in half. The inflorescence is branched to two orders and grows longer than leaves. When ripe, fruits are spherical to ovoid, brown or black drupes to 6-10 mm long. *Sabal etonia* (scrub palmetto) could be confused with this species, but *S. etonia* has yellow-green leaves with a large costa and abundant marginal fibers. Habit also separates the two species: *S. minor* is a palm of wet places while *S. etonia* is a scrub plant. This sample documents the first time the species has been vouchered in Flagler County. (Flagler County; B2017-76; Sol F. Looker; 23 February 2017.) (Mabberley 2008; Wunderlin and Hansen 2011; <http://idtools.org/id/palms/palmid/factsheet.php?name=Sabal+minor> [accessed 10 April 2017].)



***Sabal minor* (dwarf palmetto).**
Photograph courtesy of Patti J. Anderson, DPI

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- Llamas, K.A. 2003.** Tropical flowering plants: a guide to identification and cultivation. Timber Press. Portland, Oregon. 423 p.
- Mabberley, D.J. 2008.** Mabberley's plant-book: a portable dictionary of plants, their classification and uses, 3rd edition. Cambridge University Press, New York, New York. 1,021 p.
- Wunderlin, R. P. and B. F. Hansen. 2011.** Guide to the vascular plants of Florida, 3rd edition. University Press of Florida, Gainesville, Florida. 783 p.

🔍 BOTANY IDENTIFICATION TABLE

The following table provides information about **new** records submitted in the current volume's time period. The table is organized alphabetically by collector name. The full version with more complete data is downloadable as a [PDF](#) or [Excel](#) spreadsheet.

NEW RECORD	COLLECTOR 1	COLLECTOR 2	COUNTY	SAMPLE NUMBER	COLLECTION DATE	GENUS	SPECIES
🔍	Kelly K. Douglas		Levy	B2017-16	Jan 6, 2017	<i>Casuarina</i>	<i>glauca</i> Sieber ex Spreng.
🔍	Kelly K. Douglas		Suwannee	B2017-17	Jan 10, 2017	<i>Prunus</i>	<i>caroliniana</i> (Mill.) Aiton
🔍	Sol F. Looker	Carolyn P. Hall	Volusia	B2017-63	Feb 14, 2017	<i>Pyrostegia</i>	<i>venusta</i> (Ker-Gawl.) Miers
🔍	Sol F. Looker		Flagler	B2017-76	Feb 23, 2017	<i>Sabal</i>	<i>minor</i> (Jacq.) Pers.
🔍	Susan C. Distelberg		Polk	B2017-91	Feb 26, 2017	<i>Sansevieria</i>	<i>hyacinthoides</i> (L.) Druce





ENTOMOLOGY

Compiled by Susan E. Halbert, Ph.D.

This section provides the division's plant protection specialists and other customers with accurate identifications of arthropods. The Entomology Section also builds and maintains the arthropod reference and research collection (the Florida State Collection of Arthropods (FSCA) with over nine million specimens) and investigates the biology, biological control and taxonomy of arthropods.

QUARTERLY ACTIVITY REPORT

JANUARY-MARCH

Samples submitted	1,157
Lots identified	1,470
Specimens identified	20,867

YEAR TO DATE

Samples submitted	1,157
Lots identified	1,470
Specimens identified	20,867

1 *Anaphothrips sudanensis* Trybom, yellow banded grass or maize thrips, a new Continental USA record. The origin of this species is unclear, as it is now widespread across tropical and subtropical regions of the world. In the Americas, the species is known from Costa Rica, Guatemala, Mexico, Jamaica, Cuba and Puerto Rico. Published records show a single previous interception at a United States port, but this is the first time the maize thrips was collected in Continental United States. Individuals were collected on sugarcane in Hendry and Martin counties, and on roadside weedy grass adjacent to a sugarcane field in Palm Beach County. The wide geographical separation of collections indicates the potential for unimpeded dispersal, although most individuals were short wing females. The maize thrips is a minor pest of corn, sugarcane, rice and citronella throughout the tropical and subtropical regions of the world. Individuals are usually collected by beating grasses. Female maize grass thrips are easy to recognize by their distinctive color pattern: the head, first two abdominal segments and posterior abdominal segments are black, whereas the thorax and middle abdominal segments are yellow or yellowish white. Males are uniformly light yellow. At least seven other similar color pattern combinations have been reported from Asia, Australia and Africa, and it is possible some other combinations might be found in Florida. All Florida maize thrips examined are micropterous (i.e., have short wings), but the wings are so small that even with a dissecting microscope individuals appear to be wingless. (Martin County; E2017-535; Matthew J. McCloskey and John J. Serra; 21 February 2017.) (Felipe N. Soto-Adames.)



1 - *Anaphothrips sudanensis*, maize thrips.
Photograph courtesy of Felipe N. Soto-Adames, DPI

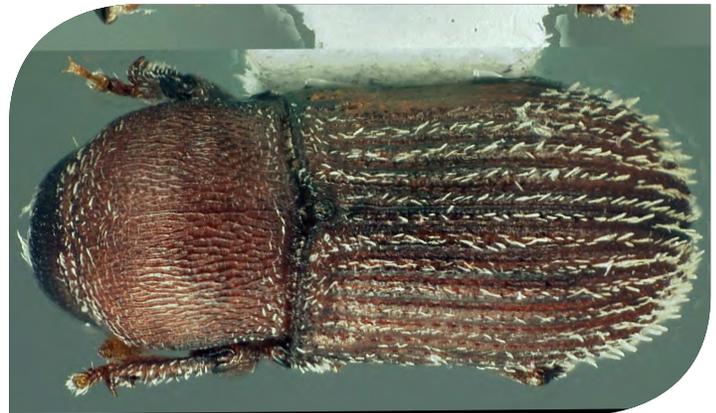


2 *Aristotelia* species Hübner, a gelechiid moth, a new Continental USA record. This species is related to *A. roseosuffusella* (Clemens), but the males are easily distinguished by hair tufts on the hind wings and distinctive genitalia. The rearing record on *Pithecellobium keyense* fits with related species that feed on Fabaceae, such as *A. roseosuffusella* on clover. This new species is not reported to be a pest, but it could compete with other Lepidoptera that feed on the same host. The FSCA has older specimens caught at light on Big Pine Key in 1972, and Key Largo and No Name Key in 1986. (Monroe County; E2017-171; Sarah R. Steele Cabrera and Matthew J. Standridge, University of Florida; 28 November 2016.) (James E. Hayden.)



2 - *Aristotelia* species, a gelechiid moth.
Photograph courtesy of James E. Hayden, DPI

3 *Cnesinus setulosus* Blandford, a new Continental USA record. A single specimen was collected in a light trap on August 11, 2010, at Crocodile Lake National Wildlife Refuge in North Key Largo. Both sexes are similar in size, 1.8-2.5 mm, displaying very little sexual dimorphism. *Cnesinus setulosus* is easily distinguished from the native *C. strigicollis* by its more narrowly separated eyes, more strongly angled declivity, more scale-like interstitial setae, and smaller size. This species occurs from Eastern Mexico through Central America. The female bores into twigs and branches 0.5-2.0 cm in diameter, where she and a male will excavate an unbranched tunnel; eggs are laid among the frass. Larvae expand this chamber instead of excavating individual tunnels. *Cnesinus setulosus* is known from several hosts, including *Conocarpus*, *Ficus*, *Acacia*, and *Phaseolus*. It is not a pest in its native range. For more information, please see Atkinson (2017) and Wood (1982). (Monroe County; E2017-75; David R. Fine, amateur lepidopterist; 11 August 2010.) (Katherine E. Fairbanks.)



3 - *Cnesinus setulosus*, a bark beetle.
Photograph courtesy of Katherine Fairbanks, DPI-CAPS

4 *Eulepte* species Hübner, a crambid moth, a new Continental USA record. This is an apparently undescribed species of Caribbean origin. The one new female specimen from Miami could represent a new introduction to Florida, or maybe it has been present for years, but is very uncommon. Two males were collected in Homestead in the 1980s. The specimens from Florida match specimens in the Florida State Collection of Arthropods collected in the Dominican Republic, which enabled association of the sexes. *Eulepte* species are not pests. The predicted host plants are in the family Bignoniaceae. (Miami-Dade County; E2017-525; Haydee I. Escobar; 6 February 2017.) (James E. Hayden.)



4 - *Eulepte* species, a crambid moth.
Photograph courtesy of James E. Hayden, DPI

5 *Folsomides centralis* Denis, grey soil springtail, a new Continental USA record. *Folsomides centralis* is member of a medium size, cosmopolitan genus. Although originally described from Costa Rica, the vagility of the species makes it difficult to identify its original distribution. The only certainty is that it must have originated in a tropical or subtropical region of the world, because Florida is one of the northernmost localities from which the species has been reported. In the Americas, the species is known from Brazil, Peru, Ecuador, Venezuela, Central America, Mexico, Cuba and Puerto Rico. *Folsomides centralis* is not a pest species; it most likely feeds on fungi, bacteria and decaying plant tissues. It is typically found in disturbed habitats. This is the only North American species of *Folsomides* with six eyes and light grey pigment uniformly distributed throughout the body. The only other species in the genus *Folsomides* reported from Florida, *F. parvulus*, is white, completely devoid of pigment, except for two very well-marked black eyes. (Marion County; E2017-1044; Benjamin D. Waldo, University of Florida; 1 June 2016.) (Felipe N. Soto-Adames.)



5 - *Folsomides centralis*, grey soil springtail.
Photograph courtesy of Felipe N. Soto-Adames, DPI



6 *Fulmekiola serrata* (Kobus), sugarcane thrips, a new Continental USA record. This pest of sugarcane is native to Asia, but beginning in the 1940s, escaped its native lands and continues to invade sugarcane fields around the world. The species was introduced to Barbados in the southern Caribbean in the 1980s, by 1988 had moved to Puerto Rico, and in 1998 the species reached Cuba. The sugarcane thrips was first collected in Florida in Hendry County, at the end of January 2017. A survey of sugarcane fields and isolated sugarcane plants in rural and suburban yards showed that the species is widespread in the main sugarcane growing counties in South Florida (Martin, Palm Beach, Hendry and Glades). It is even present in Alachua County. This is an important pest that may reduce sugarcane yield by as much as 24%. Adults and larvae are found in the spindle (the rolled, youngest leaf) and in the space between the spindle and the second youngest leaf. To the naked eye, adults are black; whereas, larvae are yellow. The sugarcane thrips is the only member of the genus *Fulmekiola*, and it is characterized by having very long pre-ocellar setae and spines on the posterior margin of abdominal segments 1-8. (Hendry County; E2017-262; Julien M. Beuzelin, University of Florida; 24 January 2017.) (Felipe N. Soto-Adames.)



6 - *Fulmekiola serrata*, sugarcane thrips.
Photograph courtesy of Felipe N. Soto-Adames, DPI

7 *Salina celebensis* (Schäffer), Sulawesi grass springtail, a new Continental USA record. The Sulawesi grass springtail is one of the most common species of springtails on grasses and leaf litter in East Asia. The species has been reported from India to Japan, from China to Indonesia, and in many islands in Oceania all the way to Hawaii. In the Americas, the species was reported previously from Brazil, but this is the first time it has been collected in the continental United States. *Salina celebensis* is not a pest, and if observations on the life history of other members of the genus are an indication, the species feeds mostly on fungal spores and pollen. This is the fifth member of the genus *Salina* reported from Florida. The Sulawesi grass springtail shows great variation in color pattern across its distribution in Asia, but the Florida population belongs to the *maculosa* form, and it is easy to distinguish from other Florida members of the genus by the presence of paired dorso-lateral dots on the third thoracic to the fifth abdominal segments. (Brevard County; E2017-141; Mark S. McGowan, USDA; 17 January 2017.) (Felipe N. Soto-Adames.)



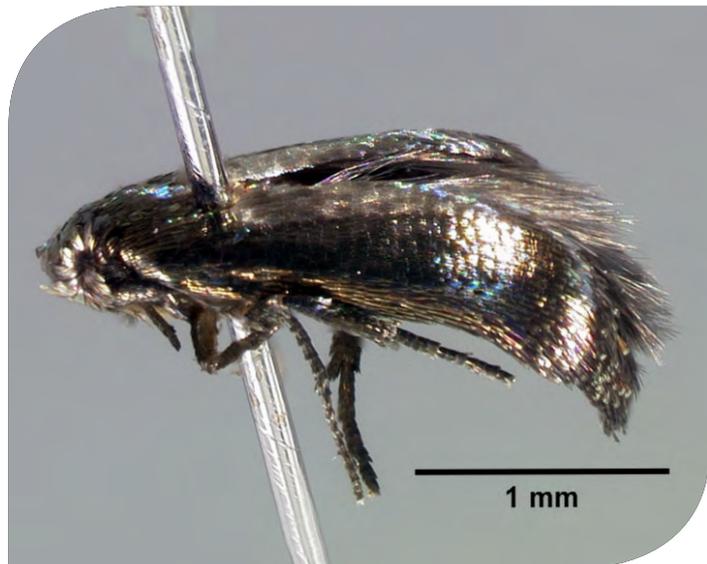
7 - *Salina celebensis*, Sulawesi grass springtail. Adult.
Photograph courtesy of Felipe N. Soto-Adames, DPI



7 - *Salina celebensis*, Sulawesi grass springtail. Detail of abdominal segments 1-5.
Photograph courtesy of Felipe N. Soto-Adames, DPI



8 *Siskiwitia* species Hodges, a cosmopterigid moth, a new Continental USA record. This is not the native *Siskiwitia falcata* Hodges, which has differently shaped male valvae and inhabits sandhill habitats. The host plant and female were previously unknown for this genus. The wings are glossy brown and curved downward, so the live moths look like small beetles. The specimens were raised while surveying for a new *Calliprora* species that is infesting *Leucaena leucocephala* (white leadtree) (see TRI-OLOGY 55(2) April - June 2016). (Pinellas County; E2017-65; James E. Hayden; 8 January 2017.) (Dr. James E. Hayden.)



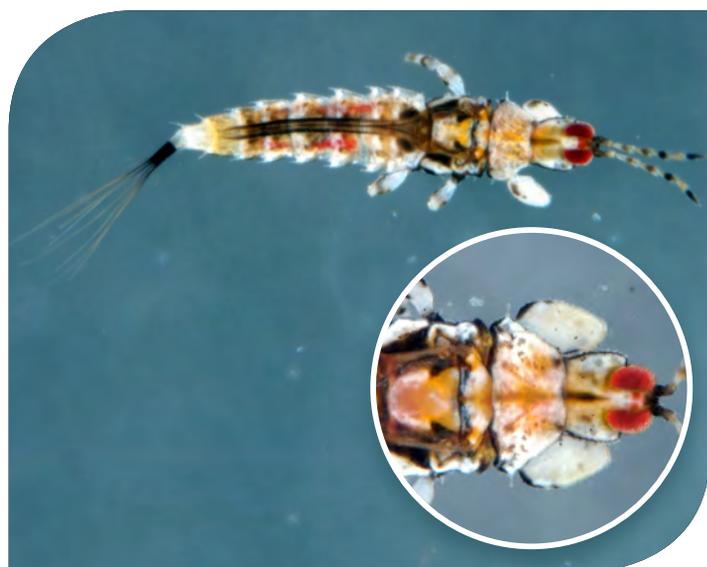
8 - *Siskiwitia* species, a cosmopterigid moth. Photograph courtesy of James E. Hayden, DPI

9 *Mesaphorura yosiii* (Rusek), white soil springtail, new Florida State Record. *Mesaphorura* is the largest genus of the family Tullbergiidae and consists of minute, white springtails, most of which do not surpass 1.0 mm in length. Most species live in soil, between 2-16 cm deep. *Mesaphorura yosiii* was described originally from China, but it is a widespread form found throughout the Northern Hemisphere. In the Americas, the species is found in Brazil, Puerto Rico, Cuba, Mexico, the United States and western Canada, but it has never before been reported from Florida. This is the first member of family Tullbergiidae reported from Florida. The wide range of habitats from which *M. yosiii* has been reported suggests it might represent a species complex. (Marion County; E2017-1044; Benjamin D. Waldo, University of Florida; 1 June 2016.) (Dr. Felipe N. Soto-Adames.)



9 - *Mesaphorura yosiii*, white soil springtail. Photograph courtesy of Felipe N. Soto-Adames, DPI

10 *Neurothrips apache* Hood, western long-tailed fungus thrips, a new Florida State record. This species was described from New Mexico and Arizona and was subsequently reported from California. Almost nothing is known about its natural history, other than that it lives on bark and dead twigs, apparently feeding on fungi, and that it can tolerate exposure to high temperatures. Although associated with dead or dying twigs and branches, this species is not a pest; rather, its presence suggests a tree or shrub in distress. *Neurothrips apache* is very similar to *N. magnafemoralis*, the eastern long-tailed fungus thrips, but males of the two species have very different sternal sensory plates: *N. apache* has paired oval or elliptical plates laterally on the sternum; whereas *N. magnafemoralis* has a single, rectangular plate occupying most of the sternum. Members of *Neurothrips* are relatively large (about 2.6 mm long) and are some of the most colorful thrips in North America. (Miami-Dade County; E2016-5828; Daniel Carrillo, University of Florida, Tropical Research and Education Center; 30 November 2016.) (Dr. Felipe N. Soto-Adames.)



10 - *Neurothrips apache*, western long-tailed fungus thrips. Detail of head. Photograph courtesy of Felipe N. Soto-Adames, DPI



11 *Stephanothrips japonicus* Saikawa, long-tailed leaf litter thrips, new Florida State Record. The genus *Stephanothrips* includes small leaf litter thrips characterized by a reduced number of eyes, head with outstanding frontal macrochaetae, antennae with 4-5 segments, and a relatively long tube with medial dorsal setae just slightly shorter than the lateral setae. All species have well sclerotized head and prothorax, and a characteristic helmet-shaped head. *Stephanothrips japonicus* was described from Japan, but more recently it has been reported from Taiwan, China and the United States (Georgia). Very little is known about the life history of this (and most other *Stephanothrips*) species. Although the Japanese specimens on which the original description of the species was based were collected on moss, most specimens from East Asia and the United States (including the ones from Florida) were collected in leaf litter. As with other leaf litter Phlaeothripidae, it is assumed *S. japonicus* is a fungus feeder. Males have been collected only in China, most populations sampled have only females and the species probably is parthenogenic. Six species of *Stephanothrips* have been reported from North America, but *S. japonicus* is the only one with 5-segmented antennae, one pair of frontal head macrochaeta and lacking a tarsal hook (hamus) on the prothoracic legs. (Alachua County; E2017-800; Felipe N. Soto-Adames; 11 January 2017.) (Dr. Felipe N. Soto-Adames.)



11 - *Stephanothrips japonicus*, long-tailed leaf litter thrips. Photograph courtesy of Felipe N. Soto-Adames, DPI

12 *Trupanea eclipa* Benjamin, a fruit fly, a New County Record. Although the species was found resting on *Citrus sinensis*, the host of *Trupanea eclipa* is *Eclipta alba* (Asteraceae). It is not an economic pest. (Highlands County; E2017-1068; Catherine D. Turner, USDA; 17 March 2017.) (Dr. Gary J. Steck.)



11 - Detail of head to abdominal segment 2 of *Stephanothrips japonicus*. Photograph courtesy of Felipe N. Soto-Adames, DPI

13 *Bactrocera dorsalis* Hendel, Oriental fruit fly, a regulatory incident. A single male specimen was trapped in a Jackson trap baited with methyl eugenol in a sweet orange tree in Mt. Dora. Increased trap densities in an 81-square mile area around the detection site will be maintained and traps monitored closely for an estimated two life cycles (until approximately 27 April 2017) if no further flies are found. (Lake County; E2017-132; Nora Marguez; 12 January 2017.) (Dr. Gary J. Steck.)



12 - *Trupanea eclipa*, a fruit fly. Photograph courtesy of Gary J. Steck, DPI

14 *Tinea translucens* Meyrick, a tropical casemaking clothes moth, a Notable Find. This pest is closely related to the common casemaking clothes moth, *Tinea pellionella* Linnaeus, and it has similar behavior: the larvae infest fabrics and carpets and make cases to protect themselves. *Tinea translucens* prefers warmer, more humid climates than *T. pellionella*. It is commonly misidentified as *T. pellionella*, and dissection of one or more adult moths is necessary. Review of older specimens in the Florida State Collection of Arthropods shows that *T. translucens* has been present in Florida since at least 1970 and could possibly account for a majority of samples. Nevertheless, any species in the *T. pellionella* complex could be transported in the global trade. (Alachua County; E2017-1082; Susan M. Conner, homeowner; 23 March 2017.) (Dr. James E. Hayden.)



14 - *Tinea translucens*, a clothes moth. Photograph courtesy of James E. Hayden, DPI

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- Wood, S.L. 1982. The bark and ambrosia beetles of North and Central America (Coleoptera: Scolytidae), a taxonomic monograph. Great Basin Naturalist Memoirs No. 6.

🔍 ENTOMOLOGY IDENTIFICATION TABLE

Following are tables with entries for records of new hosts or new geographical areas for samples identified in the current volume's time period, as well as samples of special interest. An abbreviated table, with all the new records, but less detail about them, is presented on this page and another version with more complete data is downloadable as a [PDF](#) or [Excel](#) spreadsheet.

The tables are organized alphabetically by plant host, if the specimen has a plant host. Some arthropod specimens are not collected on plants and are not necessarily plant pests. In the table below, those entries that have no plant information included are organized by arthropod name.

PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Agave</i> sp.	agave	<i>Paracoccus gilliana</i>	a mealybug	REGULATORY INCIDENT
<i>Camellia japonica</i>	common camellia	<i>Deroceras reticulatus</i>	gray garden slug	REGULATORY INCIDENT
<i>Citrus sinensis</i>	sweet orange, navel orange	<i>Bactrocera dorsalis</i> complex	Oriental fruit fly complex	QUARANTINABLE PEST
<i>Citrus sinensis</i>	sweet orange, navel orange	<i>Trupanea eclipa</i>	a fruit fly	COUNTY
<i>Citrus</i> sp.			white grub	REGULATORY INCIDENT
<i>Citrus</i> sp.		<i>Kleidocerys virescens</i>	a seed bug	COUNTY
<i>Citrus</i> sp.		<i>Neurothrips magnafemoralis</i>	eastern long-tailed fungus thrips	COUNTY
<i>Citrus</i> sp.		<i>Parthenicus juniperi</i>	a plant bug	COUNTY
<i>Citrus</i> sp.		<i>Salina celebensis</i>	Sulawesi grass springtail	CONTINENTAL USA
<i>Cupressus arizonica</i>	Arizona cypress	<i>Eudocimus mannerheimii</i>	a weevil	HOST
<i>Cynodon dactylon</i>	Bermuda grass	<i>Folsomides centralis</i>	grey soil springtail	CONTINENTAL USA
<i>Cynodon dactylon</i>	Bermuda grass	<i>Mesaphorura yosiii</i>	white soil springtail	STATE
<i>Jasminum dichotomum</i>	gold coast jasmine	<i>Thrips orientalis</i>	star jasmine thrips	COUNTY
<i>Jasminum officinale</i>	poet's jasmine; true jasmine; jasmin de cinco-hojas	<i>Helix aspersa</i>	brown garden snail	REGULATORY INCIDENT
<i>Leucaena leucocephala</i>	white leadtree	<i>Siskiwitia</i> sp.	cosmopterigid moth	CONTINENTAL USA
<i>Lysiloma latisiliquum</i>	wild tamarind, false tamarind	<i>Neurothrips apache</i>	western long-tailed fungus thrips	STATE
<i>Mosiera longipes</i>	mangrove berry	<i>Acanalonia pumila</i>	an acanaloniid planthopper	HOST
<i>Persea borbonia</i>	redbay	<i>Xyleborus glabratus</i>	redbay ambrosia beetle	COUNTY
<i>Pinus</i> sp.	pine	<i>Bleptina</i> sp.	a leaf litter moth	COUNTY
<i>Pithecellobium keyense</i>	Florida Keys blackbead	<i>Aristotelia</i> sp.	a gelechiid moth	CONTINENTAL USA
<i>Pithecellobium keyense</i>	Florida Keys blackbead	<i>Pleuroprucha insulsaria</i>	an inchworm moth	COUNTY & HOST
<i>Pithecellobium keyense</i>	Florida Keys blackbead	<i>Sarasota plumigerella</i>	a pyralid moth	HOST
<i>Pithecellobium keyense</i>	Florida Keys blackbead	<i>Synchlora xysteraria</i>	emerald moth	HOST
<i>Pithecellobium keyense</i>	Florida Keys blackbead	<i>Tyrissa multilinea</i>	a noctuid moth	HOST
<i>Podocarpus elongatus</i>	Breede River yellowwood	<i>Neophyllaphis podocarpi</i>	an aphid	HOST
<i>Prunus persica</i>	peach, nectarine	<i>Corythucha gossypii</i>	cotton lace bug	HOST
<i>Prunus persica</i>	peach, nectarine	<i>Lysimena fuscata</i>	a longhorn beetle	COUNTY



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Pueraria montana</i>	kudzu; kudzu vine; foot-a-night-vine; vine-that-ate-the-South; ko-hemp	<i>Megacopta cribraria</i>	bean plataspid	COUNTY
<i>Punica granatum</i>	pomegranate		white grub	REGULATORY INCIDENT
<i>Saccharum officinarum</i>		<i>Anaphothrips sudanensis</i>	maize thirps	COUNTY
<i>Saccharum officinarum</i>		<i>Anaphothrips sudanensis</i>	maize thirps	CONTINENTAL USA
<i>Saccharum officinarum</i>		<i>Fulmekiola serrata</i>	sugarcane thrips	COUNTY
<i>Saccharum officinarum</i>		<i>Fulmekiola serrata</i>	sugarcane thrips	COUNTY
<i>Saccharum officinarum</i>	sugarcane	<i>Fulmekiola serrata</i>	sugarcane thrips	COUNTY
<i>Saccharum officinarum</i>	sugarcane	<i>Fulmekiola serrata</i>	sugarcane thrips	COUNTY
<i>Saccharum</i> sp.		<i>Fulmekiola serrata</i>	sugarcane thrips	COUNTY
<i>Saccharum</i> sp.		<i>Fulmekiola serrata</i>	sugarcane thrips	CONTINENTAL USA
<i>Senna obtusifolia</i>	sicklepod; coffeeweed	<i>Aphis middletonii</i>	erigeron root aphid	HOST
<i>Solidago sempervirens</i>	seaside goldenrod	<i>Nysius tenellus</i>	a seed bug	HOST
<i>Tabebuia</i> sp.		<i>Calx cubensis</i>	common Cuban flat springtail	COUNTY
<i>Trachospermum asiaticum</i>	Asian jasmine	<i>Deroceras reticulatum</i>	gray garden slug	REGULATORY INCIDENT
<i>Zanthoxylum fagara</i>	wild-lime, lime prickly-ash	<i>Leuronota fagarae</i>	wild lime psyllid	COUNTY
		<i>Agrilus subcinctus</i>	a buprestid beetle	COUNTY
		<i>Agrilus subcinctus</i>	a buprestid beetle	COUNTY
		<i>Anaphothrips sudanensis</i>	maize thirps	COUNTY
		<i>Anaphothrips sudanensis</i>	maize thirps	COUNTY
	weeds	<i>Brachycoryna pumila</i>	a leaf beetle	COUNTY
		<i>Cnesinus setulosus</i>	a scolytid beetle	CONTINENTAL USA
		<i>Cnestus mutilatus</i>	camphor shot hole borer	COUNTY
		<i>Deroceras reticulatum</i>	gray garden slug	REGULATORY INCIDENT
		<i>Enchenopa binotata</i>	a treehopper	COUNTY
		<i>Eulepte</i> sp.	a crambid moth	CONTINENTAL USA
		<i>Franklinothrips vespiformis</i>	a thrips	COUNTY
		<i>Greenidea psidii</i>	guava aphid	COUNTY
		<i>Leptodictya tabida</i>	sugarcane lacebug	COUNTY
		<i>Piezogaster calcarator</i>	a coreid bug	COUNTY
		<i>Salina bidentata</i>	two-teethed green grass springtail	COUNTY



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
		<i>Seira brasiliana</i>	a springtail	COUNTY
		<i>Stephanothrips japonicus</i>	long-tailed leaf litter thrips	STATE
		<i>Tenodera aridifolia</i>	Chinese mantis	REGULATORY INCIDENT
		<i>Tinea translucens</i>	tropical clothes moth	COUNTY; NOTABLE FIND
		<i>Xyleborinus andrewesi</i>	a scolytid beetle	COUNTY





NEMATOTOLOGY

Compiled by Jeffrey Eickwort, M.S., David Davison, M.S., Anthony Ayers, B.S., Jason D. Stanley, M.S., Janete A. Brito, Ph.D., and Renato N. Inserra, Ph.D.

This section analyzes soil and plant samples for nematodes, conducts pest detection surveys and provides diagnoses of plant problems, in addition to completing identification of plant parasitic nematodes involved in regulatory and certification programs. State of Florida statutes and rules mandate the predominant regulatory activities of the section. Analyses of plant and soil samples include those from in-state programs, plant shipments originating in Florida destined for other states and countries, as well as samples intercepted in Florida from outside the United States.

QUARTERLY ACTIVITY REPORT

	JANUARY - FEBRUARY	YEAR TO DATE
Morphological identifications	3,750	3,750
Molecular identifications	721	721
Total identifications	4,471	4,471

1 *Bursaphelenchus xylophilus* (Steiner & Buhner, 1934) Nickle, 1970, the pine wood nematode, was detected in the roots of *Pinus clausa* (sand pine). (Washington County; N17-00201; Jeffrey Eickwort, Florida Forest Service; 23 February 2017.)

The pine wood nematode is a species that feeds on the resin canal cells of pines. This nematode colonizes both above ground parts and roots, causing a syndrome called pine wilt disease. The nematode is native to North America where the damage it causes is usually not serious, although outbreaks of nematode infestations resulting in serious damage to pines have been reported in some areas of the United States and Canada. Nematode infestations can accentuate pine decline due to adverse environmental conditions, such as drought. In Florida, the pine wood nematode was reported damaging sand pines in Apalachicola and Ocala national forests in 1980. The infestations of the nematode are spread by cerambycid longhorn beetles, commonly called sawyer beetles, which carry the nematode from infested to healthy pines. The third stage juveniles and the resistant stage, dauer juveniles, into which they molt, are the dispersal life stages of the nematode. The resistant dauer juveniles are abundant in dying pines and logs. They penetrate the spiracles of the adult sawyer beetles emerging from pupae in infested tissues of dying pines, colonize the tracheae of the insect, and gather in the tip of the insect's abdomen.

Sawyer beetles transmit the nematode directly when they move from nematode-infested dying trees and logs to feed on the shoots of healthy pines. This allows the dauer juveniles to leave the insect body, then enter pine tissues through wounds in tree shoots. Dauer juveniles develop into adults that feed and reproduce in the resin canals, causing tree decline.



Bursaphelenchus xylophilus (pine wood nematode) infested the roots of dying sand pines (*Pinus clausa*).

Photograph courtesy of Jeffrey M. Eickwort, Florida Forest Service



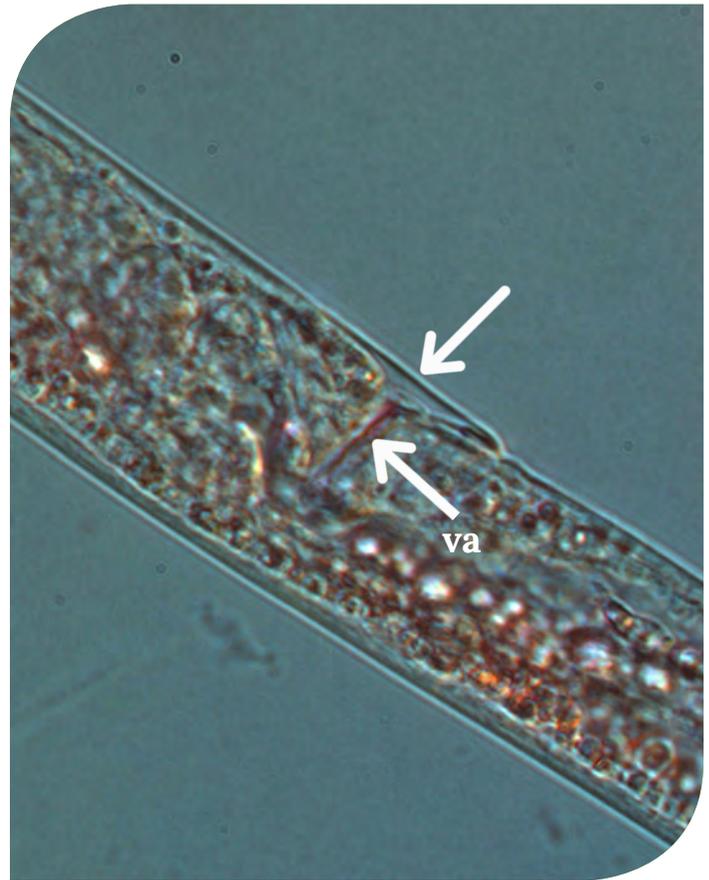
Bursaphelenchus xylophilus Anterior body portion of female.

Photograph courtesy of Jason D. Stanley, DPI



The sawyer beetles can also indirectly transmit the nematode during egg deposition, if they carry the dauer juveniles into trees that are stressed and dying from environmental and pathological factors. These dauer juveniles in the dying pine tissues molt into adults, which feed and reproduce on fungi infecting the wood, increasing the nematode populations in the logs. These infested logs can be transported long distances, and thereby disseminate the nematode. Nematode infested logs from North America have spread the nematode to other countries including China, Japan and South Korea. The sawyer beetle vectors of the pine wood nematode in North America include three species of the genus *Monochamus*: *M. caroliniensis*, a common vector of the nematode in Florida, *M. scutellatus* and *M. titillator*. While the damage of the pine wood nematode in North America is considered negligible, it is very serious in the Far East and in Spain where the nematode causes serious damage to local pine trees.

A population of *B. xylophilus* was recently found in the roots of sand pines declining due to the persistent drought conditions in Washington County. The presence of the nematode was indirectly detected, because no routine nematological techniques with Baermann funnels were used to extract the nematode. The pine root segments were incubated in petri dishes with acidified potato dextrose agar (APDA) medium for the detection of fungi, rather than nematodes. A few dauer juveniles of the nematode present in the pine root segments found a perfect environment to molt into adults, eventually feeding and reproducing in large numbers on the fungal mycelium of *Pythium* sp. growing in the APDA medium. The nematode specimens found in the petri dishes were used for the identification of the nematode at species level.



Bursaphelenchus xylophilus female. Vulvar area showing the characteristic vulvar flap (arrowed) covering the vulva. Note the vagina (va). Photograph courtesy of Jason D. Stanley, DPI

REFERENCES

- Dwinell, L.D. and P.S. Lehman. 2004.** Plant-parasitic nematodes which are exotic pests in agriculture and forestry. Pp. 51-70. In K.O. Britton (ed.). *Biological Pollution. An Emerging Global Menace*. St. Paul, Minnesota: The American Phytopathological Society. 2,117.
- Mamiya, Y. 1984.** The pine wood nematode. Pp.589-626. In W.R. Nickle (ed.). *Plant and Insect Nematodes*. New York and Basel: Marcel Dekker Inc. 215.
- Wilkinson, R.C. and A.C. Tarjan. 1980.** *Monochamus caroliniensis*: Vector of pinewood nematode on sand pine in Florida. *Cooperative Plant Pest Report* 5. 383.



Bursaphelenchus xylophilus male. Posterior body portions showing the copulatory apparatus consisting of the spicule (s) and the bursa (b). Photograph courtesy of Jason D. Stanley, DPI

COLLECTORS

Collectors submitting five or more samples that were processed for nematological analysis from January through March 2017.

COLLECTOR NAME	SAMPLES PROCESSED
Bentley, Michael A.	16
Blaney, Richard L.	23
Brown, Lance A.	34
Burgos, Frank A.	205
Carbon, Peter	13
Clanton, Keith B.	125
Flores, Mary A.	83
Douglas, Kelly K.	27
Echols, M. Janie	24
Frechette, Jeanie P.	6
Gonzalez, Kathy A.	42
Gourlay, Anna J.	19
Gubler, Anthony P.	13
Krok, Jesse M.	15
Landress, Craig J.	9
LeBoutillier, Karen W.	281
McCarthy, Sean P.	5
Nolen, Ashley M.	13
Ochoa, Ana L.	129
Smith, Larry W.	6
Spriggs, Charles L.	95
Strange, Lisa S.	77
Terrell, Mark R.	12
Violett, Larry L.	6
Warden, George A.	9
Yates, Johnny J.	8

CERTIFICATION AND REGULATORY SAMPLES

	JANUARY-MARCH	YEAR TO DATE
Multistate certification for national and international export	1,906	1,906
California certification	414	414
Pre-movement (citrus nursery certification)	96	96
Site or pit approval (citrus nursery and other certifications)	13	13

OTHER SAMPLES

	JANUARY-MARCH	YEAR TO DATE
Identifications (Invertebrate)	3	3
Plant problems	19	19
Random intrastate surveys	169	169

IDENTIFICATIONS

	JANUARY-MARCH	YEAR TO DATE
Morphological identifications	3,750	3,750
Molecular identifications*	721	721

* The majority of these analyses involved root-knot nematode species.



PLANT PATHOLOGY

Compiled by Jodi Hansen, M.S., Regina Fairbanks, B.S., David Davison, M.S., and Debra Jones, M.S.



The Plant Pathology section provides plant disease diagnostic services for the department. The agency-wide goal of protecting the flora of Florida very often begins with accurate diagnoses of plant problems. Management recommendations are offered where appropriate and available. Our plant pathologists are dedicated to keeping informed about endemic plant diseases along with those diseases and disorders active outside Florida in order to be prepared for potential introductions of new pathogens to our area.

QUARTERLY ACTIVITY REPORT

	JANUARY-MARCH	YEAR TO DATE
Citrus black spot	22	22
Citrus canker	59	59
Citrus greening / HLB	375	375
General Pathology	804	804
Honeybees	10	10
Interdictions	16	16
Laurel wilt	10	10
Soil	25	25
Sudden oak death	3	3
Sweet orange scab-like disease	1	1
Texas Phoenix palm decline	5	5
Water	0	0
Miscellaneous	0	0
Total	1,330	1,330



Pseudomonas cichorii on *Lactuca sativa* (lettuce)
Photograph courtesy of Cottyn et al. 2010



Pseudomonas cichorii on *Lactuca sativa* (lettuce)
Photograph courtesy of Cottyn et al. 2010

1 Bacterial midrib rot of lettuce caused by *Pseudomonas cichorii* (Swingle) Stapp:

In late January, a shipment of *Lactuca sativa* (lettuce) originating in California was stopped at the agricultural interdiction station located on I-10 east bound in Suwannee County and was found to contain symptoms of midrib rot. A symptomatic leaf was submitted to the Plant Pathology section in Gainesville. Laboratory diagnostics determined the organism causing the midrib rot to be *Pseudomonas cichorii*. Symptoms of bacterial midrib rot appear as a dark-brown necrosis of the midrib of one or more of the middle to inner head leaves. The necrosis often extends into the leaf blade tissue surrounding the midrib. Midrib rot presents a serious threat to greenhouse grown lettuce. Incidence of the disease can be significantly reduced when surface drip irrigation is used instead of overhead sprinkler irrigation.

Pseudomonas cichorii symptom expression occurs at the end of head maturation and is strongly influenced by the lettuce cultivar. Infection of crisphead lettuce results in symptoms of varnish spot or tar; whereas, infection of butterhead lettuce results in midrib rot. Varnish spot or tar occurs on the blades and petioles of inner leaves and is characterized by shiny, dark brown, firm necrotic spots that are a few mm wide. This find represents a new host record. (Suwannee County; P2017-91449; Dyrana Russell, DPI/CAPS; 25 January 2017.)

REFERENCES:

Cottyn, B., S. Baeyen, E. Pauwelyn, I. Verbaendert, P. De Vos, P. Bleyaert, M. Hofte, and M. Maes, (2010). Development of a real-time PCR assay for *Pseudomonas cichorii*, the causal agent of midrib rot in greenhouse grown lettuce, and its detection in irrigating water. Plant Pathology. Volume 60, Issue 3, pages 453-461, 23 Nov. 2010 DOI: [10.1111/j.1365-3059.2010.02388.x](https://doi.org/10.1111/j.1365-3059.2010.02388.x)



🔍 PLANT PATHOLOGY IDENTIFICATION TABLE

Following table provides information about samples identified between January-March 2017. The table is organized alphabetically by plant species, with new records listed on the right.

PLANT SPECIES	COMMON NAME	CASUAL AGENT	DISEASE NAME	LOCATION TYPE	SPECIMEN NUMBER	COUNTY	COLLECTOR	NEW RECORDS	NOTES
<i>Anethum graveolens</i>	dill	<i>Itersonilia perplexans</i>	decline	farm	91843	Hendry	owner	host	<i>Itersonilia perplexans</i> is a foliar disease with initial symptoms consisting of a gray-green discoloration and wilting of the leaf tips, leading to discoloration and collapse, which give foliage a blighted appearance.
<i>Asplenium dimorphum</i>	gem fern, Norfolk Island spleenwort	<i>Cercospora coniogrammes</i>	leaf spot	nursery	89599	Glades	Kathy A. Gonzalez	host	<i>Cercospora coniogrammes</i> has been found previously in only Australia and Brazil. It is known to cause leaf spots only on fern hosts at this time. Leaf spots occur on both sides of the leaves, are sub-circular to angular, gray to light brown, 1-3 mm diam., enclosed by a thick brown margin. The margin can be up to 4 mm diam.
<i>Athyrium niponicum</i>	Japanese painted fern	<i>Cercospora coniogrammes</i>	leaf spot	nursery	89603	Glades	Kathy A. Gonzalez	host	<i>Cercospora coniogrammes</i> has been found previously in only Australia and Brazil. It is known to cause leaf spots only on fern hosts at this time. Leaf spots occur on both sides of the leaves, are sub-circular to angular, gray to light brown, 1-3 mm diam., enclosed by a thick brown margin. The margin can be up to 4 mm diam.
<i>Citrus</i> sp.	citrus	<i>Candidatus Liberibacter asiaticus</i>	citrus greening	residential	91831	Columbia	owner	county	Citrus greening disease is caused by phloem-limited bacteria in the genus <i>Candidatus Liberibacter</i> . Citrus greening disease or huanglongbing (yellow dragon disease) may be the most serious citrus disease in the world. It is the major limiting factor for citrus production in parts of Asia and Africa.



PLANT SPECIES	COMMON NAME	CASUAL AGENT	DISEASE NAME	LOCATION TYPE	SPECIMEN NUMBER	COUNTY	COLLECTOR	NEW RECORDS	NOTES
<i>Lactuca sativa</i>	lettuce	<i>Pseudomonas cichorii</i>	bacterial midrib rot	interdiction station	91449	Suwannee	Dyrana N. Russell, DPI/CAPS	host	<i>Pseudomonas cichorii</i> causes leaf spot and blight diseases of ornamentals and vegetables. Symptoms vary depending on the part and the infected part of the plant. <i>P. cichorii</i> appears first as water-soaked lesions that develop either at the leaf margin, near the midvein or are randomly distributed as leaf spots. Developing lesions are roughly circular and are rarely confined to the inter-veinal areas. These enlarge and turn dark brown or black. Lesions are sometimes surrounded by bright yellow halos. Lesions may coalesce to form very large necrotic areas and can affect the whole leaf.
<i>Persea palustris</i>	swamp bay	<i>Raffaelea lauricola</i>	wilt	residential	91826	Okaloosa	Maria Wilson, Florida Forest Service	county	Laurel wilt is a deadly disease of redbay (<i>Persea borbonia</i>) and other tree species in the Laurel family (Lauraceae). The disease is caused by a fungus (<i>Raffaelea lauricola</i>) that is introduced into host trees by a nonnative insect, the redbay ambrosia beetle (<i>Xyleborus glabratus</i>).
<i>Sabal palmetto</i>	cabbage palm	TPPD	Texas Phoenix palm decline	roadside	91858	Volusia	Keven S. Loadholtz, Karen K. Coffey	county	Texas Phoenix palm decline (TPPD) is a disease of palms that is caused by a phytoplasma that produce lethal yellows or palm decline in palms (16 Sr-IV group of phytoplasmas). This group of organisms is vast and varied in host range and vector associations.





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