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# TRI-OLOGY

A PUBLICATION FROM THE DIVISION OF PLANT INDUSTRY, BUREAU OF ENTOMOLOGY, NEMATOTOLOGY, AND PLANT PATHOLOGY  
Division Director, Trevor R. Smith, Ph.D.



## BOTANY

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



## ENTOMOLOGY

Identifying arthropods, taxonomic  
research and curating collections



## NEMATOTOLOGY

Providing certification programs and  
diagnoses of plant problems



## PLANT PATHOLOGY

Offering plant disease diagnoses  
and information



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



*Ocyptamus fuscipennis* (Say) 1823  
 Photograph courtesy of Jeffrey W. 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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## ACKNOWLEDGEMENTS

The editors would like to acknowledge the work of all those who contributed information and explanations by providing data, photographs or text, and by carefully reading early drafts.







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

Thank you,

Gregory Hodges, Ph.D.  
 Editor  
 Assistant Director, Division of Plant Industry

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

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Cover Photo  
*Zizia aurea* (L.) Koch (golden Alexanders).  
 Photograph courtesy of Patti J. Anderson, DPI



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# HIGHLIGHTS

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**1 *Spondias dulcis* Park. (June plum, ambarella, golden apple)** is native to eastern Indonesia, Papua New Guinea and Polynesia, and has been introduced to tropical areas worldwide, where it is cultivated for its fruit and its ornamental value. The plant is occasionally grown in South Florida, as far north as Palm Beach and Collier counties. The fruit, produced in prolific quantities, is an oval drupe with a thick, inedible skin that turns from green to golden yellow as it ripens.



1 - *Spondias dulcis* (June plum, ambarella, golden apple) small tree.  
Photograph courtesy of [Top Tropicals](#)

**2 *Periconiella lygodii*** was submitted presenting as a leaf spot on *Lygodium japonicum* (Japanese climbing fern) from a natural area located next to an industrial business in Duval County. The first record of this fungus occurring on *L. japonicum* was reported in the Philippines in 2008. This collection of *P. lygodii* is a new state record.



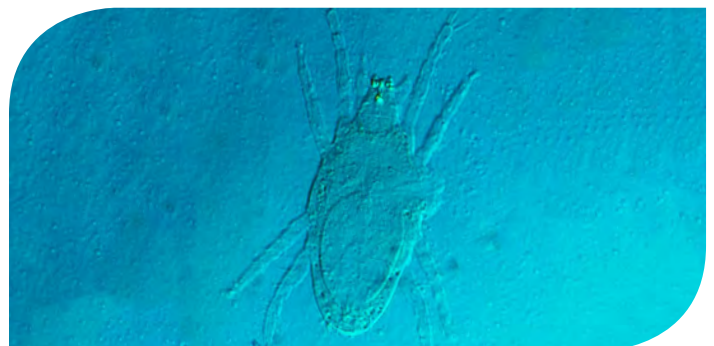
2 - *Periconiella lygodii* leaf spot symptoms on *Lygodium japonicum* (Japanese climbing fern).  
Photograph courtesy of Robert M. Leahy USDA/CAPS and Bradley A. Danner DPI/CAPS

**3 *Aphelenchoides besseyi* Christie, 1942, the rice white-tip nematode or summer crimp nematode of strawberries,** was detected in the buds of *Fragaria x ananassa* (strawberry). *Aphelenchoides besseyi* is a damaging parasite of rice in many rice-producing areas of the United States. This foliar nematode is frequently detected on ornamentals in Florida and can be a parasite of the buds of strawberries grown in Florida.

**4 *Neopronematus neglectus* (Kuznetzov), a mite, new Western Hemisphere record,** was originally described from the Black Sea region in the Old World. It is not a plant feeder and is likely to be a fungivore and/or predator.



3 - *Fragaria x ananassa* (garden strawberry) showing damage caused by *Aphelenchoides besseyi*.  
Photograph courtesy of Jason D. Stanley, DPI



4 - *Neopronematus neglectus* (Kuznetzov), whole body of mite.  
Photograph courtesy of Samuel J. Bolton, DPI





# 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

	APRIL- JUNE	2017 - YEAR TO DATE
Samples submitted by other DPI sections	1,279	2,229
Samples submitted for botanical identification only	134	273
Total samples submitted	1,413	2,502
Specimens added to the Herbarium	77	139



1a - *Cephalanthus occidentalis* (common buttonbush).  
Photograph courtesy of [Patricia Howell](#)



1b - *Cephalanthus occidentalis* (common buttonbush) close view of flower.  
Photograph courtesy of [Shirley Denton](#)

Some of the samples received for identification are discussed below:

**1** *Cephalanthus occidentalis* L. (common buttonbush), from a genus of six species native to tropical and warm regions. Rubiaceae. This widespread species is found in most counties of Florida and from Canada through the eastern half of the United States, as well as Mexico, California and the West Indies. This shrub or small tree grows to 4 m tall, along or in swamps, ponds, lakes and rivers and can be used as an ornamental plant in wet soils. The glossy, green leaves with entire margins are opposite or whorled in groups of three to four at a node. The veins and midrib are prominent as is the interpetiolar stipule. Flowers are clustered in a spherical 2-3 cm head of individual, tubular, four-lobed, white flowers. The pistil is exerted from each tube in an arrangement that reminds some people of a pin cushion pierced by straight pins. All parts of the plant contain phytochemicals that have proved toxic to horses, but other animals reportedly consume the plant without injury. (Palm Beach County; B2017-244; Matthew M. Miller; 2 June 2017 and Hendry County; B2017-272; Olga Garcia, USDA; 27 June 2017.) (Hall *et al.* 2011; Hammer 2002; Mabberley 2008; Perkins and Payne 1978; Wunderlin and Hansen 2011; [http://www.wildflower.org/plants/result.php?id\\_plant=CEOC2](http://www.wildflower.org/plants/result.php?id_plant=CEOC2) [accessed 7 July 2017]; <https://plants.ifas.ufl.edu/plant-directory/cephalanthus-occidentalis/> [accessed 5 July 2017].)



**2** *Spondias dulcis* Park. (Synonym *S. cytherea* Sonn.; **June plum, ambarella, golden apple**) is from a genus of 10 species of trees native from Indomalesia to Southeast Asia and tropical America. Anacardiaceae. Native to eastern Indonesia, Papua New Guinea and Polynesia, *Spondias dulcis* has been introduced to tropical areas worldwide, where it is cultivated for its fruit and its ornamental value. The plant is occasionally grown in South Florida, as far north as Palm Beach and Collier counties. A fast-growing, drought-tolerant, dry-season deciduous tree, it can reach a height of 10-20 m. Its alternate pinnately compound leaves have 9-25 elliptic leaflets, 6-8 cm long, with slightly toothed margins. Tiny, whitish flowers are borne on terminal panicles. The fruit, produced in prolific quantities, is an oval drupe, 4-8 cm long, with a thick, inedible skin that turns from green to golden yellow as it ripens. The ripe flesh is juicy and flavorful, if somewhat tart and fibrous, with a consistency like that of a mango. This bright yellow pulp surrounds a hard, fibrous, woody pit containing one to five seeds. Ripe fruits are eaten fresh, juiced to make a breakfast drink (like orange juice) or made into jams and preserves. Crunchy immature fruits are made into pickles and relishes or sliced and eaten with salt, lime juice or chili sauce. Two related species with smaller fruits, *S. mombin* L. (yellow mombin, Spanish plum) and *S. purpurea* L. (purple mombin, jocote), are also cultivated in South Florida; *S. purpurea* has naturalized in Collier County. In the month of June, the Botany Section received six *Spondias* specimens for identification, all from residential landscapes in Miami-Dade and Broward counties. Three were *S. dulcis*. (Miami-Dade County; B2017-247; Miguel L. Justiz, USDA; 7 Jun 2017 and B2017-255 and B2017-256; Miguel L. Justiz, USDA; 14 Jun 2017.) (Blancke 2016; Boning 2006; Llamas 2003; Mabberley 2008; <http://florida.plantatlas.usf.edu/Plant.aspx?id=1542> [accessed 20 June 2017].) (Dr. Paul T. Corogin.)



2a - *Spondias dulcis* (ambarella, June plum, golden apple) small tree. Photograph courtesy of [Top Tropicals](#).



2b - *Spondias dulcis* (ambarella, June plum, golden apple) ripe fruit. Photograph courtesy of [Cesar Calderon](#), USDA APHIS PPQ, Bugwood.org



2c - *Spondias purpurea* (purple mombin, jocote), leaves and branch with ripening fruit. Photograph courtesy of [Top Tropicals](#)





## REFERENCES

- Blancke, R. 2016.** Tropical fruits and other edible plants of the world: an illustrated guide. Cornell University Press, Ithaca, New York. 339 p.
- Boning, C.R. 2006.** Florida's best fruiting plants. Pineapple Press, Inc., Sarasota, Florida. 232 p.
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- Perkins, K.D. and W.W. Payne. 1978.** Guide to the poisonous and irritant plants of Florida. Florida Cooperative Extension Service. University of Florida, Gainesville, Florida. 91 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 county** records submitted in the current volume's time period. The table is organized alphabetically by collector name. The full version of all botany samples for the period is downloadable as a [PDF](#) or [Excel Spreadsheet](#).

NEW RECORD	COLLECTOR 1	COLLECTOR 2	COUNTY	SAMPLE NUMBER	COLLECTION DATE	GENUS	SPECIES
	Mark R. Terrell		Hendry	B2017-238	May 25, 2017	Euphorbia	graminea Jacq.
	Michael C. McMahan		Okaloosa	B2017-245	May 25, 2017	Passiflora	incarnata L.
	Nora Marquez		Lake	B2017-175	April 17, 2017	Ardisia	crenata Sims
	Travis J. Streeter		Hillsborough	B2017-241	May 24, 2017	Ficus	pumila L.



# ENTOMOLOGY

Compiled by Susan E. Halbert, Ph.D.



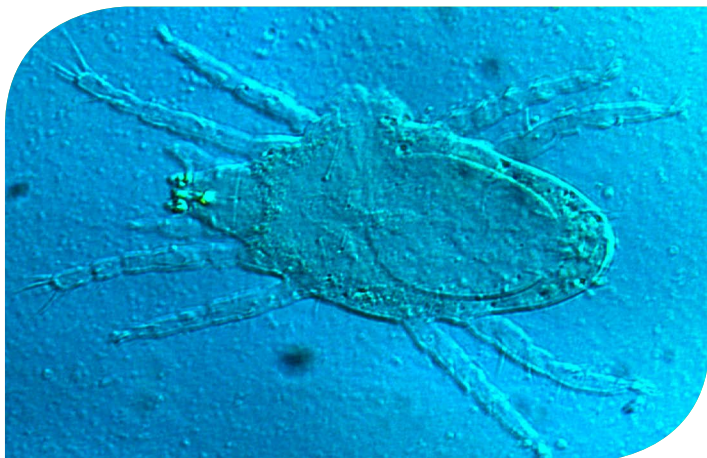
This section provides the division's plant protection specialists and other customers with accurate identifications of arthropods. The Entomology Section also builds and maintains the arthropod reference and research collection (the Florida State Collection of Arthropods (FSCA) with over 9 million specimens) and investigates the biology, biological control and taxonomy of arthropods.

## QUARTERLY ACTIVITY REPORT

	APRIL- JUNE
Samples submitted	1,503
Lots identified	1,840
Specimens identified	13,142

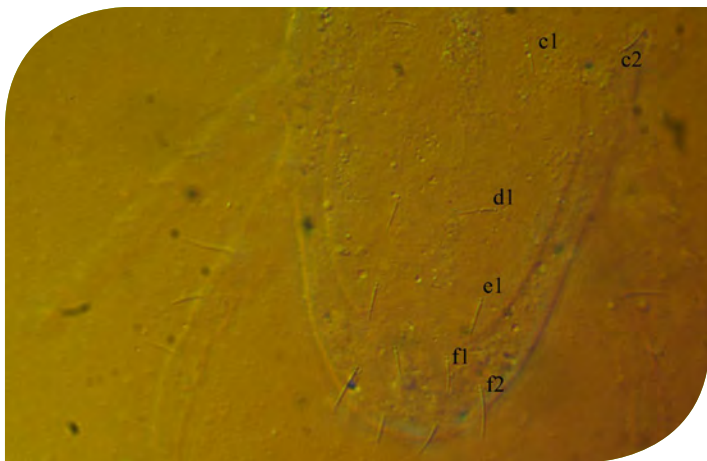
  

	2017 - YEAR TO DATE
Samples submitted	2,660
Lots identified	3,310
Specimens identified	34,009



1a - *Neopronematus neglectus*, whole body of mite.  
Photograph courtesy of Samuel J. Bolton, DPI

**1 *Neopronematus neglectus* (Kuznetsov), a mite, new Western Hemisphere record.** Although not previously identified here, this is a relatively common mite throughout Florida and possibly elsewhere in the Americas. This species was originally described from the Black Sea region in the Old World. It has also been found in Hungary and Iran. It is not a plant feeder and is likely to be a fungivore and/or predator. This species can be distinguished from other species of the genus by the relatively short setae on the opisthosoma, and a relatively short sensory structure (solenidion) on tarsus I. (Duval County; E2017-2086; Lisa M. Hassell; 24 May 2017.) (Dr. Samuel J. Bolton.)



1b - *Neopronematus neglectus*, the dorsum of the opisthosoma with setae labeled.  
Photograph courtesy of Samuel J. Bolton, DPI

**2 *Crociosema* sp., a tortricid moth, new Continental USA record.** This seems to be an undescribed species. It was reared on gray nickerbean plants (*Caesalpinia bonduc*) gathered to feed endangered Miami Blue butterfly caterpillars. The moth eclosed in March 2017. Older specimens cannot be found in the FSCA. Some congeners are pests, such as *C. plebejana* (Zeller) on cotton and okra, and *C. longipalpata* (Möschler) on litchi. Other relatives feed on legumes, so the host fits a pattern. In addition to unique genitalia, the specimen has a distinctive combination of male characters, including androconia on the wings and abdomen, that are intermediate between the *C. plebejana* and *C. lantana* groups. (Monroe County; E2017-1519; Sarah R. Steele Cabrera and Matthew J. Standridge, Florida Museum of Natural History, University of Florida; 22 February 2017.) (Dr. James E. Hayden.)



2 - *Crociosema* species (a tortricid moth).  
Photograph courtesy of James E. Hayden, DPI



**3 *Hylurgopinus rufipes* (Eichhoff), the native elm bark beetle, new Florida State Record.** A single specimen of *H. rufipes* was collected on March 21, 2017, in a green Lindgren funnel trap with a z3-hexen-1-ol lure, in Ocala at Silver River State Park. The female and male are similar in size and character, 2.2-2.5 mm long and clothed in inconspicuous hair-like setae. This is the only species in the genus, and it occurs east of the Rocky Mountains from Canada to the southern United States. *Hylurgopinus rufipes* is known primarily from *Ulmus* spp., although it has been recorded from *Fraxinus*, *Tilia* and *Prunus*. (Marion County; E2017-1745; Bradley A. Danner, DPI/CAPS and Robert M. Leahy, USDA/CAPS; 21 March 2017.) (Katherine E. O. Fairbanks.)



3 - *Hylurgopinus rufipes* (elm bark beetle).  
Photograph courtesy of Katherine E. O. Fairbanks, DPI

**4 *Rhinacloa callicrates* Herring, Parkinsonia bug, new Florida State Record.** This bug appears to be specific to *Parkinsonia aculeata*. It is native to the western United States (California and Arizona) and Mexico. *Parkinsonia aculeata* has become a weed in Australia, and the mirid bug has been used as a biological control agent there (Donnelly 2000). *Rhinacloa callicrates* is unlikely to become a pest in Florida. (Hillsborough County; E2017-1766; Travis J. Streeter; 7 May 2017.) (Dr. Susan E. Halbert.)



4 - *Rhinacloa callicrates* (Parkinsonia bug).  
Photograph courtesy of Susan E. Halbert, DPI

**5 *Bactrocera dorsalis* (Hendel), Oriental fruit fly, regulatory incident.** A single male specimen was trapped in a Jackson trap baited with methyl eugenol in a mango tree in Clearwater. Increased trap densities in a 66-square mile area around the detection site will be maintained and traps monitored closely for an estimated two life cycles (until approximately 6 August 2017) if no further flies are found. (Pinellas County; E2017-2251; Richard White; 6 June 2017.) (Dr. Gary J. Steck.)

**6 *Tinea translucens* Meyrick, a tropical casemaking clothes moth, Notable Find.** This pest is closely related to the common casemaking clothes moth, *T. pellionella*, 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.)



5 - *Bactrocera dorsalis* (Oriental fruit fly).  
Photograph courtesy of Gary J. Steck, DPI

## REFERENCES

**Donnelly, G. P. 2000.** Biology and host specificity of *Rhinacloa callicrates* Herring (Hemiptera: Miridae) and its introduction and establishment as a biological control agent of *Parkinsonia aculeata* L. (Caesalpinaceae) in Australia. *Australian Journal of Entomology* 30: 89-94.





## 🔍 ENTOMOLOGY IDENTIFICATION TABLE

Below 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>Acacia cornigera</i>	bullhorn acacia	<i>Heteropsylla huasachae</i>	a psyllid	HOST
<i>Aloysia virgata</i>	sweet almond bush	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Ambrosia artemisiifolia</i>	common ragweed	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Anethum graveolens</i>	dill	<i>Cavariella aegopodii</i>	carrot aphid	REGULATORY SIGNIFICANT
<i>Annona</i> sp.		<i>Ormenoides venusta</i>	a flatid planthopper	HOST
<i>Asclepias physocarpa</i>	balloonplant	<i>Oncopeltus fasciatus</i>	large milkweed bug	HOST
<i>Avicennia germinans</i>	black mangrove	<i>Leuronota maritima</i>	a mangrove psyllid	COUNTY
<i>Avicennia germinans</i>	black mangrove	<i>Telmapsylla minuta</i>	a mangrove psyllid	COUNTY
<i>Befaria racemosa</i>	tar-flower, fly-catcher	<i>Scaphytopius verecundus</i>	a leafhopper	COUNTY
<i>Blutaparon vermiculare</i>	samphire, silverhead	<i>Oliarus viequensis</i>	a waxhopper	COUNTY
<i>Borrchia frutescens</i>	sea oxeye, bushy seaside tansy	<i>Pissonotus quadripustulatus</i>	a delphacid planthopper	COUNTY
<i>Bougainvillea</i> sp.		<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Brassica rapa</i>	pak-choi, bok-choi, pak-choy, bok-choy, Chinese mustard, celery mustard	<i>Lygus elisus</i>	pale legume bug	REGULATORY SIGNIFICANT
<i>Caesalpinia bonduc</i>	gray nicker	<i>Crociosema</i> sp.	a tortricid moth	US CONTINENTAL
<i>Caesalpinia pulcherrima</i>	pride-of-Barbados	<i>Aphis craccivora</i>	cowpea aphid	HOST
<i>Canna</i> sp.		<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Celtis laevigata</i>	hackberry, sugarberry	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Celtis laevigata</i>	hackberry, sugarberry	<i>Thionia simplex</i>	a planthopper	HOST
<i>Cephalanthus occidentalis</i>	common buttonbush	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Chrysobalanus icaco</i>	cocoplum, icaco	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Cicuta maculata</i>	spotted cowbane, water hemlock	<i>Hyadaphis coriandri</i>	coriander aphid	HOST
<i>Cirsium nuttallii</i>	Nuttall's thistle	<i>Paracantha culta</i>	a fruit fly	COUNTY
<i>Citrus reticulata</i>	tangerine, mandarin	<i>Oncerotrachelus acuminatus</i>	an assassin bug	COUNTY
<i>Citrus sinensis</i>	sweet orange, navel orange	<i>Aneurus minuta</i>	a flat bug	COUNTY
<i>Colocasia esculenta</i>	dasheen, wild taro, taro	<i>Tarophagus colocasiae</i>	a taro planthopper	COUNTY & QUARANTINABLE PEST
<i>Colocasia</i> sp.		<i>Tarophagus colocasiae</i>	a taro planthopper	COUNTY
<i>Copernicia alba</i>	caranday palm	<i>Ormenaria rufifascia</i>	palm flatid	HOST
<i>Crataegus michauxii</i>	Michaux's hawthorn	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Diospyros virginiana</i>	common persimmon	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Echinochloa crus-galli</i>	barnyardgrass	<i>Tagosodes approximatus</i>	a delphacid planthopper	COUNTY & HOST
<i>Enterolobium contortisiliquum</i>	ear-pod tree, pacara	<i>Rhinacloa cardini</i>	a plant bug	COUNTY
<i>Enterolobium contortisiliquum</i>	ear-pod tree, pacara	<i>Rhinacloa cardini</i>	a plant bug	HOST
<i>Erigeron quercifolius</i>	oakleaf fleabane	<i>Taylorilygus apicalis</i>	a mirid plant bug	HOST
<i>Eriobotrya japonica</i>	loquat, Japanese plum	<i>Acrolophus walsinghami</i>	a grass tubeworm moth	COUNTY
<i>Eriobotrya japonica</i>	loquat, Japanese plum	<i>Plagiognathus guttulosis</i>	a plant bug	COUNTY
<i>Eriobotrya japonica</i>	loquat, Japanese plum	<i>Trigonometopus vittatus</i>	lauxaniid fly	COUNTY
<i>Foeniculum vulgare</i>	fennel	<i>Acyrtosiphon lactucae</i>	lettuce aphid	REGULATORY SIGNIFICANT
<i>Fraxinus caroliniana</i>	pop ash, Carolina ash	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Gaillardia pulchella</i>	fire-wheel, blanket flower	<i>Protalebrella brasiliensis</i>	Brazilian leafhopper	HOST
<i>Gleditsia aquatica</i>	water locust	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Hamelia patens</i>	firebush, scarletbush, hummingbird bush	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Ilex vomitoria</i>	yaupon	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Illicium</i> sp.		<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Acyrtosiphon malvae</i>	an aphid	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Closterotomus norwegicus</i>	potato bug	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Deltocephalus fuscineruosus</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Deltocephalus fuscineruosus</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Deltocephalus fuscineruosus</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Deltocephalus fuscineruosus</i>	a leafhopper	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Lygus elisus</i>	pale legume bug	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Lygus hesperus</i>	a western lygus bug	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Nasonovia ribisnigri</i>	currant-lettuce aphid	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	lettuce, romaine lettuce, leaf lettuce	<i>Nothodelphax consimilis</i>	a delphacid planthopper	REGULATORY SIGNIFICANT
<i>Leucaena leucocephala</i>	leadtree	<i>Calliprora</i> sp.	lead tree leaf-tier	COUNTY



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Ligustrum sinense</i>	Chinese privet, hedge privet	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Livistona decora</i>	ribbon fan palm, weeping cabbage palm	<i>Ormenaria rufifascia</i>	palm flatid	HOST
<i>Mandevilla</i> sp.		<i>Neopronematus neglectus</i>	a mite	HEMISPHERE
<i>Mangifera indica</i>	mango	<i>Bactrocera dorsalis</i>	oriental fruit fly	QUARANTINABLE PEST
<i>Morus rubra</i>	red mulberry	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Parkinsonia aculeata</i>	Jerusalem thorn, Mexican palo verde	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Parkinsonia aculeata</i>	Jerusalem thorn, Mexican palo verde	<i>Rhinacloa callicrates</i>	Parkinsonia bug	STATE
<i>Parthenocissus quinquefolia</i>	Virginia creeper	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Persea americana</i>	avocado, alligator pear, aguacate	<i>Spartocera batatas</i>	giant sweet potato bug	COUNTY
<i>Persea borbonia</i>	redbay	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Pinus</i> sp.	pine	<i>Ambrosiodmus minor</i>	a scolytid beetle	COUNTY
<i>Pistia stratiotes</i>	water lettuce	<i>Draeculacephala inscripta</i>	a leafhopper	COUNTY
<i>Pluchea odorata</i>	sweetscent	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Protea cynaroides</i>	king protea	<i>Delottococcus confusus</i>	Protea mealybug	REGULATORY SIGNIFICANT
<i>Prunus caroliniana</i>	Carolina laurelcherry, cherry laurel	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Prunus serotina</i>	black cherry	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Prunus umbellata</i>	hog plum, flatwoods plum	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Pyrus calleryana</i>	Callery pear	<i>Aphis eugeniae</i>	an aphid	COUNTY
<i>Raphanus sativus</i>	garden radish	<i>Chlorochroa sayi</i>	Say stink bug	REGULATORY SIGNIFICANT
<i>Rhapidophyllum hystrix</i>	needle palm, blue-palmetto, vegetable-porcupine	<i>Ormenaria rufifascia</i>	palm flatid	HOST
<i>Rosa</i> sp.		<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Saccharum</i> sp.		<i>Cedusa inflata</i>	a flatid planthopper	HOST
<i>Salix caroliniana</i>	coastal plain willow, Carolina willow	<i>Bactericera</i> sp.	a psyllid	COUNTY
<i>Selenicereus</i> sp.	climbing cactus	<i>Aphis craccivora</i>	cowpea aphid	HOST
<i>Sideroxylon tenax</i>	tough bully, bumelia	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Solanum diphyllum</i>	twoleaf nightshade	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Solanum wrightii</i>	potato tree, Brazilian potato tree	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Sophora tomentosa</i>	yellow necklace pod, silverbush	<i>Alydus pilosulus</i>	an alydid bug	HOST
<i>Tecoma capensis</i>	cape honeysuckle	<i>Ormenoides venusta</i>	a flatid planthopper	HOST
<i>Tripsacum dactyloides</i>	eastern gamagrass, Fakahatchee grass	<i>Delphacodes</i> sp.	a delphacid planthopper	COUNTY



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Uniola paniculata</i>	sea-oats	<i>Prokelisia salina</i>	a delphacid planthopper	COUNTY & HOST
undetermined species		<i>Haldorus australis</i>	a leafhopper	COUNTY
undetermined species		<i>Metacanthus tenellus</i>	stilt bug	COUNTY
undetermined species		<i>Prokelisia marginata</i>	a delphacid planthopper	COUNTY
undetermined species		<i>Troezon lutosus</i>	a weevil	COUNTY
<i>Vaccinium darrowii</i>	Darrow's blueberry	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Vaccinium</i> sp.		<i>Paria fragariae</i>	strawberry rootworm	REGULATORY SIGNIFICANT
<i>Viburnum obovatum</i>	Walter's viburnum, small-leaf viburnum	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Vitis rotundifolia</i>	muscadine	<i>Ormenoides venusta</i>	a flatid planthopper	HOST
<i>Ximenia americana</i>	tallowwood, hog plum	<i>Rhinacloa clavicornis</i>	a plant bug	COUNTY & HOST
<i>Zanthoxylum fagara</i>	wild-lime, lime prickly-ash	<i>Metcalfa pruinosa</i>	a flatid planthopper	HOST
<i>Zinnia</i> sp.	zinnia	<i>Myzus ornatus</i>	violet aphid	REGULATORY SIGNIFICANT
		<i>Agrilus subcinctus</i>	a buprestid beetle	COUNTY
		<i>Ambrosiodmus minor</i>	a scolytid beetle	COUNTY
		<i>Ambrosiophilus atratus</i>	a scolytid beetle	COUNTY
		<i>Anisodactylus rusticus</i>	a ground beetle	COUNTY
		<i>Astylus bourgeoisi</i>	a melyrid beetle	SIGNIFICANT FIND
		<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Ceratagallia californica</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Ceratagallia longula</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Ceratagallia longula</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Craspedolepta furcata</i>	a psyllid	COUNTY
		<i>Delia radicum</i>	cabbage root fly	REGULATORY SIGNIFICANT
		<i>Deltocephalus fuscinervosus</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Deltocephalus fuscinervosus</i>	a leafhopper	REGULATORY SIGNIFICANT
		<i>Deroceras reticulatum</i>	gray garden slug	REGULATORY SIGNIFICANT
		<i>Euwallacea fornicatus</i>	tea shot hole borer	COUNTY
		<i>Euwallacea interjectus</i>	a scolytid beetle	COUNTY
		<i>Hylurgopinus rufipes</i>	native elm bark beetle	STATE



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
		<i>Limothrips cerealium</i>	thunder fly	REGULATORY SIGNIFICANT
		<i>Macrosiagon flavipenne</i>	a rhipiphorid beetle	COUNTY
		<i>Macrosiagon flavipenne</i>	a rhipiphorid beetle	COUNTY
		<i>Metopolophium dirhodum</i>	rose grass aphid	REGULATORY SIGNIFICANT
		<i>Microlychnia pusilla</i>	a louse fly	COUNTY
		<i>Obrium rufulum</i>	a longhorn beetle	COUNTY
		<i>Oebalus ypsilon</i>	a rice stink bug	COUNTY
		<i>Paratelenomus saccharalis</i>	parasitoid wasp	COUNTY
		<i>Scolopostethus tropicus</i>	a seed bug	REGULATORY SIGNIFICANT
		<i>Stizocera floridana</i>	a longhorn beetle	COUNTY
		<i>Tangia breviceps</i>	a tropiduchid planthopper	COUNTY
		<i>Xyleborinus octiesdentatus</i>	a scolytid beetle	COUNTY





# NEMATOTOLOGY

Compiled by Jason D. Stanley M.S., Janete A. Brito, Ph.D., and Renato N. Inserra, Ph.D. and Johan Desaegeer, Ph.D., UF/IFAS Gulf Coast Research and Education Center

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

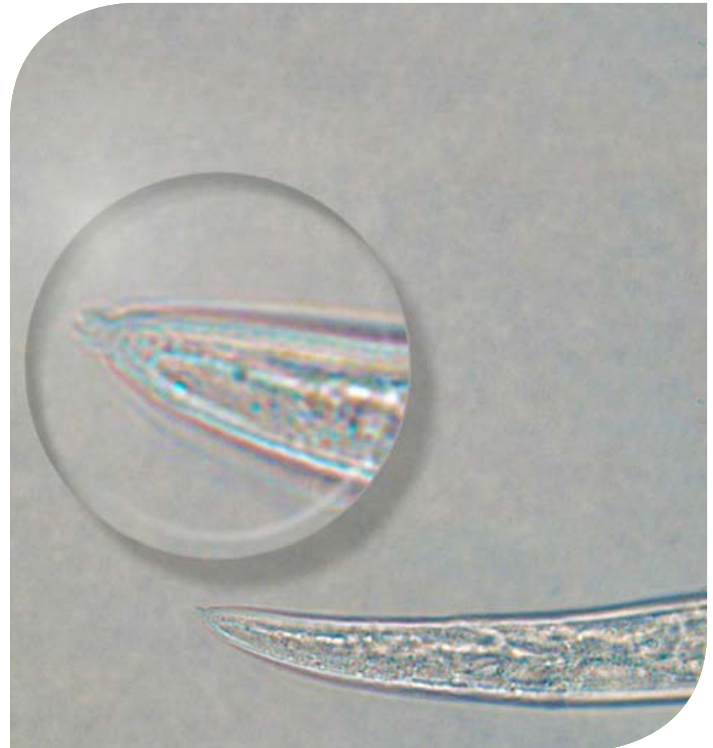
	APRIL - JUNE	2017 - YEAR TO DATE
Morphological identifications	3,546	7,296
Molecular identifications	897	1,618
Total identifications	4,443	8,914

### Nematodes of Special Interest

**1** *Aphelenchoides besseyi* Christie, 1942, the rice white-tip nematode or summer crimp nematode of strawberries, was detected in the buds of *Fragaria x ananassa* (strawberry). (Hillsborough County; N17-00343; Johan Desaegeer, UF/IFAS Gulf Coast Research and Education Center; 29 March 2017.)

*Aphelenchoides besseyi* is a damaging parasite of rice in many rice-producing areas of the United States. This foliar nematode is frequently detected on ornamentals grown in Florida, such as African violet, echinacea, rubber plant and verbena. Before the use of fumigant nematicides, *A. besseyi* was a common parasite of the buds of strawberries grown in Florida, where the nematode had arrived with infested propagative runners imported from out-of-state strawberry nurseries. This foliar nematode damages leaf primordia in the buds. The affected leaflets are distorted, deformed, small and reddish in color, resulting in severe stunting of the plants that then produce neither flowers nor fruit.

The use of fumigant nematicides during the past 50 years effectively controlled the nematode and allowed the nurseries to provide propagative strawberry runners free of foliar nematodes with consequent disappearance of *A. besseyi* from strawberry producing areas in Florida. The recent ban from the market of many chemical nematicides, including fumigants such as methyl bromide, has favored the re-emergence of plant-damaging nematodes in nurseries producing propagative strawberry runners. During the last two years, nematode infested runners have been supplied to Florida growers with consequent foliar nematode infestations in some strawberry operations near Plant City, Florida. Studies to characterize these emergent, foliar nematode populations using morphological and molecular analyses are in progress.



1a - *Aphelenchoides besseyi* female. Note tail mucro with small spikes in magnifying glass. Photograph courtesy of Jason D. Stanley, DPI



1b - *Fragaria x ananassa* (garden strawberry) showing damage caused by *Aphelenchoides besseyi*. Photograph courtesy of Jason D. Stanley, DPI



## COLLECTORS

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

COLLECTOR NAME	SAMPLES PROCESSED
Anderson, James E.	10
Bentley, Michael A.	86
Burgos, Frank A.	254
Clanton, Keith B.	82
Echols, M. Janie	20
Frechette, Jeanie P.	14
Gonzalez, Kathy A.	58
Gourlay, Anna J.	39
Gubler, Anthony P.	11
Krok, Jesse M.	6
LeBoutillier, Karen W.	155
Nolen, Ashley M.	6
Ochoa, Ana L.	188
Simmons, Sallie H.	40
Smith, Lane M.	49
Spriggs, Charles L.	51
Terrell, Mark R.	21
Violett, Larry L.	14
Warden, George A.	10
West, LeAnn J.	18

## CERTIFICATION AND REGULATORY SAMPLES

	APRIL - JUNE	2017 - YEAR TO DATE
Multistate certification for national and international export	1,975	3,881
California certification	312	726
Pre-movement (citrus nursery certification)	44	140
Site or pit approval (citrus nursery and other certifications)	76	89

## OTHER SAMPLES

	APRIL - JUNE	2017 - YEAR TO DATE
Identifications (invertebrate)	11	14
Plant problems	11	30
Random intrastate surveys	98	267

## SAMPLES FOR MOLECULAR ANALYSIS

	APRIL - JUNE	2017 - YEAR TO DATE
Regulatory	0	0
Other Purposes		
Surveys	897	1618
Total	897	1618

\* 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 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.

**1** *Periconiella lygodii* A. Singh, K. Bhalla & S.K. Singh ex Braun was submitted presenting as a leaf spot on *Lygodium japonicum* (Japanese climbing fern) from a natural area next to an industrial business in Duval County. The pathogen was identified at the Florida Department of Agriculture and Consumer Services, Division of Plant Industry (FDACS-DPI) Plant Pathology laboratory in Gainesville using morphological characteristics and was confirmed by the U.S. Department of Agriculture (USDA) Mycology and Nematology Genetic Diversity and Biology Laboratory in Beltsville, Maryland. The first record of this fungus occurring on *L. japonicum* was reported in the Philippines in 2008. This collection of *P. lygodii* infecting *L. japonicum* represents a new state record. (Duval County; P2017-92784; Robert M. Leahy, USDA/CAPS and Bradley A. Danner, DPI/CAPS; 2 June 2017.)

*Lygodium japonicum* is a climbing vine that is listed as a noxious weed by the state of Florida. It forms tangled masses that can smother, shade and eventually kill shrubs and groundcovers. It also increases fire risk by providing a ladder for flames to spread into the forest canopy. Symptoms of infection of *L. japonicum* with *P. lygodii* include leaf spots found on leaf tops and bottoms, 1 cm or less in length, subcircular to angular-irregular, ovoid or diffuse, starting out yellowish to medium dark brown, later grayish brown or gray, margins undefined, often vein-limited. The obclavate cylindrical, multi septate, smooth conidia of *P. lygodii* distinguish it from the four other species of *Periconiella* found on ferns. A more in-depth description of *P. lygodii*'s morphology can be found in the Australian Plant Disease Note found at: <https://link.springer.com/content/pdf/10.1071%2FDN09007.pdf> [accessed 5 July 2017].



1a - *Periconiella lygodii* leaf spot symptoms on *Lygodium japonicum* (Japanese climbing fern).

Photograph courtesy of Robert M. Leahy USDA/CAPS and Bradley A. Danner DPI/CAPS





**QUARTERLY ACTIVITY REPORT**

	<b>APRIL - JUNE</b>	<b>2017 - YEAR TO DATE</b>
Citrus black spot	3	<b>25</b>
Citrus canker	121	<b>180</b>
Citrus greening / HLB	393	<b>768</b>
Honey bees	8	<b>18</b>
Interdictions	7	<b>23</b>
Laurel wilt	5	<b>15</b>
Pathology, General	661	<b>1,465</b>
Soil	39	<b>64</b>
Sudden oak death	0	<b>3</b>
Sweet orange scab-like disease	0	<b>0</b>
Texas Phoenix palm decline	65	<b>70</b>
Water	0	<b>0</b>
Miscellaneous	0	<b>0</b>
Budwood Samples	1,427	1,427
<b>Total</b>	<b>2,729</b>	<b>4,059</b>



**1b - Periconiella lygodii leaf spot symptoms on Lygodium japonicum (Japanese climbing fern).**  
 Photograph courtesy of Robert M. Leahy USDA/CAPS and Bradley A. Danner DPI/CAPS



**1c - Periconiella lygodii leaf spot symptoms on Lygodium japonicum (Japanese climbing fern).**  
 Photograph courtesy of Robert M. Leahy USDA/CAPS and Bradley A. Danner DPI/CAPS



## 🔍 PLANT PATHOLOGY IDENTIFICATION TABLE

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

PLANT SPECIES	COMMON NAME	CASUAL AGENT	DISEASE NAME	SPECIMEN NUMBER	COUNTY	COLLECTOR	NEW RECORD	COMMENT
<i>Codiaeum variegatum</i>	croton	<i>Myrothecium roridum</i>	leaf spot	92091	Orange	Anna J. Gourlay	host	<i>Myrothecium roridum</i> is a pathogen that causes crown and stem rot on floriculture crops. Leaf spots have concentric rings or target shaped spots. Raised black sporodochia will develop on leaf tissue under wet or humid conditions.
<i>Lygodium japonicum</i>	Japanese climbing fern	<i>Percioniella lygodii</i>	leaf spot	92784	Duval	Robert M. Leahy USDA/CAPS, Bradley A. Danner DPI/CAPS	host	<i>Percioniella lygodii</i> was identified on <i>Lygodium japonicum</i> (Japanese climbing fern) from a natural area located next to an industrial business in Duval County. The first record of this fungus occurring on <i>L. japonicum</i> was reported in the Philippines in 2008.
<i>Persea palustris</i>	swamp bay	<i>Raffaelea lauricola</i>	wilt	92237	Santa Rosa	Ashlee E. White	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>Phoenix</i> sp.	Phoenix palm	<i>Phytoplasma</i> sp.	phytoplasma	93220	Sumter	David A. Davison, Jodi L. Hansen, Debra D. Jones, Stephen R. Jenner	county	The phytoplasma is in the taxonomic group of organisms that produce lethal yellows or palm decline in palms. The earliest symptom is a discoloration of the lower (oldest) leaves of the palms. Discoloration begins at the tips of the leaflets. The disease is thought to be transmitted by an insect vector, probably a planthopper or leafhopper.



PLANT SPECIES	COMMON NAME	CASUAL AGENT	DISEASE NAME	SPECIMEN NUMBER	COUNTY	COLLECTOR	NEW RECORD	COMMENT
<i>Ruellia blechum</i>	Brown's blechum	<i>Tobravirus Tobacco rattle virus</i>	virus	92517	Collier	Susan E. Halbert	host	First report of <i>Tobacco rattle virus</i> infecting <i>Ruellia blechum</i> . This virus is found across the globe. It is known to infect over 400 species of plants from 50 families. Symptoms of <i>Tobacco rattle virus</i> vary based on the plant host, which differs widely in this disease. The common symptoms include mottling, chlorotic or necrotic local lesion, ringspots or line patterns, and systemic necrosis. In the United States, it has been reported in Florida, Michigan, Wisconsin, Minnesota, Colorado, Idaho, Oregon, Washington and California.
<i>Schinus terebinthifolia</i>	Brazilian pepper	<i>Cephaleuros virescens</i>	algal leaf spot	93358	Miami-Dade	Robert M. Leahy USDA/CAPS, Bradley A. Danner DPI/CAPS, Katrina L. Dickens, Yelitza Crespo Avila, Suhalya E.Carrasquilla, Robert G. Shim, Armando Ching San	host	Algal leaf spots or green scurf is caused by <i>Cephaleuros virescens</i> and appear as grayish-white and darker "crusts" on the leaf tissue. These are lichens of the genus <i>Strigula</i> resulting from fungal colonization of the alga.
<i>Schinus terebinthifolia</i>	Brazilian pepper	<i>Mycosphaerella</i> sp.	leaf spot	93358	Miami-Dade	Robert M. Leahy USDA/CAPS, Bradley A. Danner DPI/CAPS, Katrina L. Dickens, Yelitza Crespo Avila, Suhalya E.Carrasquilla, Robert G. Shim, Armando Ching San	host	<i>Mycosphaerella</i> sp. leaf spots turn brown and later gray, the leaf tissue surrounding the spots will turn yellow and form a border. As the spots age, water soaked haloes may form and the leaf spots may darken.





# FROM THE EDITOR

By Patti J. Anderson, Ph.D.

## As the paper crumbles, so go the herbarium specimens

You've probably seen old books turning brown and crumbling as time and humidity change cellulose fibers into acid factories. The same processes are at work on any paper that is not "archival" – treated to prevent that dreaded acid buildup and made of long, strong fibers that break down much more slowly than ordinary papers.

Sadly, in the early days of DPI's herbarium, archival paper was not used for mounting specimens. Not only that, but some collectors donated specimens that had been mounted on poor quality papers when there was little time or money for restoring them. This is a problem because acids produced as the paper fibers break down turn the paper brown and react with the plant epidermis, slowly destroying the cellulose in the plant samples, as well as in the paper.

This year, DPI botanists began a rescue mission for the worst of the samples mounted on poor quality paper and attached to acidic paper with scotch tape, masking tape or other improvised devices. We hope to continue upgrading the DPI herbarium as we continue to enlarge the collection and begin to store images of the specimens online.

This year between March and July, we brought 328 specimens back from the brink of destruction. The images below show one specimen after the repair and the imprint of damage left behind on the original, acidic paper.



Imprint of specimen 880 collected in 1952 left on acid paper. Photograph courtesy of Jeffery W. Lotz, DPI



Specimen 880 mounted with archival materials. Photograph courtesy of Jeffery W. Lotz, DPI





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