



FDACS-P-00124

January - March 2018

Volume 57, Number 1

TRI-OLOGY

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



NEMATOLOGY

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



Infant *Tamarixia radiata* emerging from a mummified citrus Asian nymph, *Diaphorina citri*. Photograph courtesy of Jeffrey W. Lotz, DPI

ABOUT TRI-LOGY

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-LOGY 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-LOGY

Section Editor. Year. Section Name. P.J. Anderson and G.S. Hodges (Editors). TRI-LOGY Volume (number): page. [Date you accessed site.]

For example: S.E. Halbert. 2015. Entomology Section. P.J. Anderson and G.S. Hodges (Editors). TRI-LOGY 54(4): 9. [Accessed 5 June 2016.]

Copies of TRI-LOGY are kept on the FDACS website for two years. To obtain older copies, contact the FDACS/DPI Library at (352) 395-4722.

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-LOGY. 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

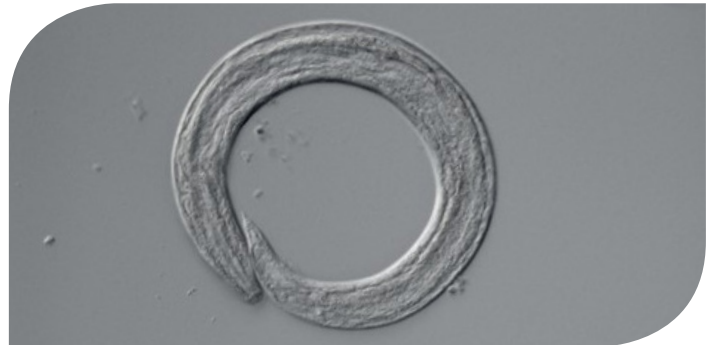
Tamarixia radiata preparing to parasitize an Asian citrus psyllid nymph, *Diaphorina citri*. Photograph courtesy of Jeffrey W. Lotz, DPI



HIGHLIGHTS



1 *Angiostrongylus cantonensis* Chen, 1935, the rat lungworm, a nematode parasite of vertebrates, utilizes two hosts for its development: rats, the definitive vertebrate host, and snails, an intermediary, invertebrate host. Recently, *Lissachatina fulica* Bowdich, 1822, the giant African land snail, was detected in Puerto Rico, where approximately 60 snails have been collected. In March 2018, the nematology section received ten *L. fulica* samples from USDA-APHIS representatives in San Juan to be analyzed for the presence of rat lungworm. All ten samples of *L. fulica* from Puerto Rico were negative for *A. cantonensis*.



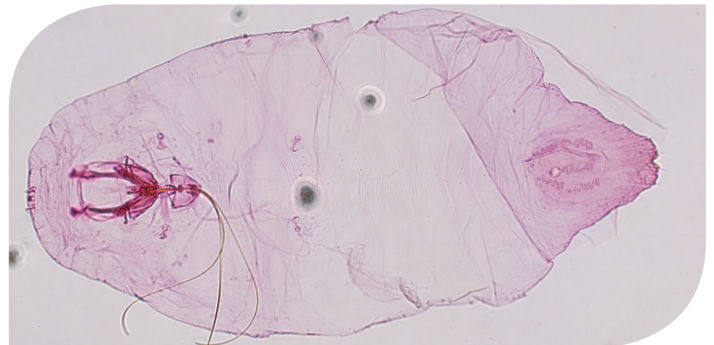
1 - *Angiostrongylus cantonensis* Chen, 1935, the rat lungworm.
Photograph courtesy of Silvia J. Vau, DPI

2 *Euonymus americanus* L. (hearts-a-bustin, strawberry bush), is a deciduous shrub or small tree that can reach about 2 m in height. Small, yellowish-green flowers are produced in the spring. Each flower has five petals and five stamens resting on a floral disc, giving the flower a round, flat appearance. The fruit of *E. americanus* is a warty, red, five-lobed capsule that splits to release seeds covered with a bright red aril.



2 - *Euonymus americanus* (hearts-a-bustin, strawberry bush) fruit.
Photograph courtesy of Kim Davis and Mike Strangeland, [Atlas of Florida Plants](#)

3 *Fiorinia phantasma* Cockerell & Robinson, phantasma scale, a new Continental USA record. The phantasma scale is a significant pest of nursery plants, particularly of ornamental palms. The scale insect has been transported to new localities globally in recent years. The first Continental USA record was discovered on *Phoenix canariensis*, Canary Island date palm.



3 - Slide-mounted view of body of adult female of phantasma scale.
Photograph by Zee Ahmed, FDACS-DPI.

4 *Ramularia uredinearum* (mycoparasite) was submitted on *Lygodium japonicum* (Japanese climbing fern) infected with the rust fungus *Puccinia lygodii* from a natural area in Duval County. This pathogen was growing on the rust fungus's fruiting structures.





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 13,000 plants and 1,400 vials of seeds.

QUARTERLY ACTIVITY REPORT

	JANUARY- MARCH	2018 - YEAR TO DATE
Samples submitted by other DPI sections	1,251	1,251
Samples submitted for botanical identification only	218	218
Total samples submitted	1,469	1,469
Specimens added to the Herbarium	58	58

Some of the samples received for identification are discussed below:

1 *Euonymus americanus* L. (hearts-a-bustin, strawberry bush), from a genus of about 120 species in the plant family Celastraceae, are native to temperate regions, especially those in Europe and Asia. This deciduous shrub or small tree with green stems on new growth can reach about 2 m in height. The leaves are opposite, simple, variable in shape, have margins with tiny, gland-tipped teeth and very short (2-3 mm) petioles or leaf stalks. Small, yellowish-green flowers are produced in spring on pedicels (flower stalks) about 2.5 cm long. Each flower has five petals and five stamens resting on a floral disc, giving the flower a round, flat appearance. The fruit of *E. americanus* is a warty, red, five-lobed capsule that splits to release seeds covered with a bright red aril. Other species in this genus usually have four petals and four-parted fruit. The common name strawberry bush refers to the immature, closed, warty, red fruit, while hearts-a-bustin suggests the open fruit, after bursting to reveal seeds. In Florida, this species is frequently found from northern counties to the central peninsula in moist to wet hammocks; it is native to the United States from New York to Texas. In addition to the sample submitted by our plant inspectors, visitors submitted this unusual plant by for identification several times this spring. (Leon County; B2018-197; Abby L. Bartlett and Nora V. Marquez; 22 March 2018.) (Godfrey 1988; Mabberley 2017; Wunderlin and Hansen 2011; <https://plants.ces.ncsu.edu/plants/all/euonymus-americanus/> [accessed 18 April 2018].)



1a - *Euonymus americanus* (hearts-a-bustin, strawberry bush) flowers. Photograph courtesy of Keith Bradley, [Atlas of Florida Plants](#)



1b - *Euonymus americanus* (hearts-a-bustin, strawberry bush) fruit. Photograph courtesy of Kim Davis and Mike Strangeland, [Atlas of Florida Plants](#)



2 *Linaria canadensis* Dum. Cours., (Canadian toadflax), from a genus of about 150 mainly Eurasian species in the plant family Plantaginaceae. The species is also known as *Nuttallanthus canadensis*, but that name has not been universally recognized. Its distribution is unusual in that it is native to eastern Canada, most of the eastern half of the United States and the Pacific coastal states, but not the states of the high plains and desert southwest. In Florida, it has been found in almost every county. *Linaria canadensis* is herbaceous and may be either an annual or a biennial (growing vegetatively one year then flowering and dying in its second year). This species grows to 15-70 cm tall with slender leaves that are opposite or whorled in a basal rosette and alternate along the stem. The inflorescence is in a narrow raceme of purple to off-white, 5-15 mm long, spurred flowers. The corolla is two-lipped, with two lobes on the upper lip and three lobes on the lower. This weedy native commonly grows along roadsides and in grassy fields and flowers from early spring to summer. (Volusia County; B2018-55; Melanie Cain; 5 February 2018; and Broward County; B2018-206; Justin K. Anto; 23 March 2018.) (Bryson and DeFelice 2009; Hammer 2018; <http://www.regionalconservation.org/beta/nfyn/plantdetail.asp?tx=Linacana> [accessed 10 May 2018].)



2 - *Linaria canadensis* (Canadian toadflax).
Photograph courtesy of Allan Boatman, [Atlas of Florida Plants](#)

3 *Phlox drummondii* Hook. (annual phlox), from a genus of about 70 mainly North American species in the plant family Polemoniaceae. Many Florida visitors and residents alike assume these showy roadside flowers are natives, but the eye-catching annual display is from a Texas species that arrived here via the horticultural trade. *Phlox drummondii* (named for Thomas Drummond (1793-1835), naturalist, born in Scotland) is herbaceous and 50 cm in height, with a glandular pubescent stem. This phlox can be distinguished from others found in Florida by its combination of opposite lower leaves and alternate upper leaves. The flowers can be in both axillary and terminal clusters, each with five fused sepals and five fused petals. The fused flower corollas are salverform (having a slender tube that abruptly flares into a flat, open trumpet shape) and may be red, purple, pink or blue with a pale “eye” in the center. These wildflowers have been planted and escaped from cultivation in most of Florida and can be found throughout the southeast along roadsides and in open, sandy areas. (Marion County; B2018-145; Tavia L. Gordon; 26 February 2018; Lake County; B2018-180; Nora V. Marquez; 19 March 2018; and Clay County; B2018-182; Melanie Cain; 19 March 2018.) (Wunderlin *et al.* 2018; https://www.wildflower.org/plants/result.php?id_plant=phdr [accessed 21 May 2018].)



3a - *Phlox drummondii* (annual phlox).
Photograph courtesy of Matthew Merritt, [Atlas of Florida Plants](#)



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- Bryson, C.T. and M.W. DeFelice. 2009.** Weeds of the South. University of Georgia Press, Athens, Georgia. 468 p.
- Godfrey, R.K. 1988.** Trees, shrubs and woody vines of northern Florida and adjacent Georgia and Alabama. University of Georgia Press, Athens. 735 p.
- Hammer, R. 2018.** Complete guide to Florida wildflowers. Falcon Press, Guilford, Connecticut. 380 p.
- Mabberley, D.J. 2017.** Mabberley's plant-book: a portable dictionary of plants, their classification and uses, 4th edition. Cambridge University Press, New York, New York. 1,102 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.
- Wunderlin, R.P., B.F. Hansen and A.R. Franck. 2018.** Flora of Florida, Volume V: Dicotyledons, Gisekiaceae through Boraginaceae. University Press of Florida, Gainesville, Florida. 303 p.



3b - *Phlox drummondii* (annual phlox) white form.
Photograph courtesy of Bob Bierman, [Atlas of Florida Plants](#)



🔍 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
🔍	Carolyn P. Hall		Flagler	B2018-42	Jan 29, 2018	<i>Andropogon</i>	<i>virginicus</i> L.
🔍	Carolyn P. Hall		Volusia	B2018-37	Jan 22, 2018	<i>Butia</i>	<i>capitata</i> Becc.
🔍	Kevin S. Loadholtz		Volusia	B2018-39	Jan 24, 2018	<i>Casuarina</i>	<i>glauca</i> Sieber ex Spreng.
🔍	Melanie Cain		Flagler	B2018-72	Feb 6, 2018	<i>Asparagus</i>	<i>aethiopicus</i> L.
🔍	Melanie Cain		Flagler	B2018-90	Feb 12, 2018	<i>Coccoloba</i>	<i>uvifera</i> (L.) L.
🔍	Melanie Cain		St. Johns	B2018-52	Jan 31, 2018	<i>Raphanus</i>	<i>raphanistrum</i> L.
🔍	Melanie Cain		Flagler	B2018-15	Jan 8, 2018	<i>Rivina</i>	<i>humilis</i> L.
🔍	Melanie Cain		Flagler	B2018-14	Jan 8, 2018	<i>Smilax</i>	<i>bona-nox</i> L.
🔍	Melanie Cain		Putnam	B2018-24	Jan 9, 2018	<i>Xanthosoma</i>	<i>sagittifolium</i> (L.) Schott
🔍	Melanie Cain		Putnam	B2018-147	Feb 26, 2018	<i>Zephyranthes</i>	<i>atamasca</i> (L.) Herb. var. <i>treatiae</i> (S. Watson) Meerow
🔍	Nora V. Marquez		Hernando	B2018-169	Mar 12, 2018	<i>Wisteria</i>	<i>floribunda</i> (Willd.) DC.





ENTOMOLOGY

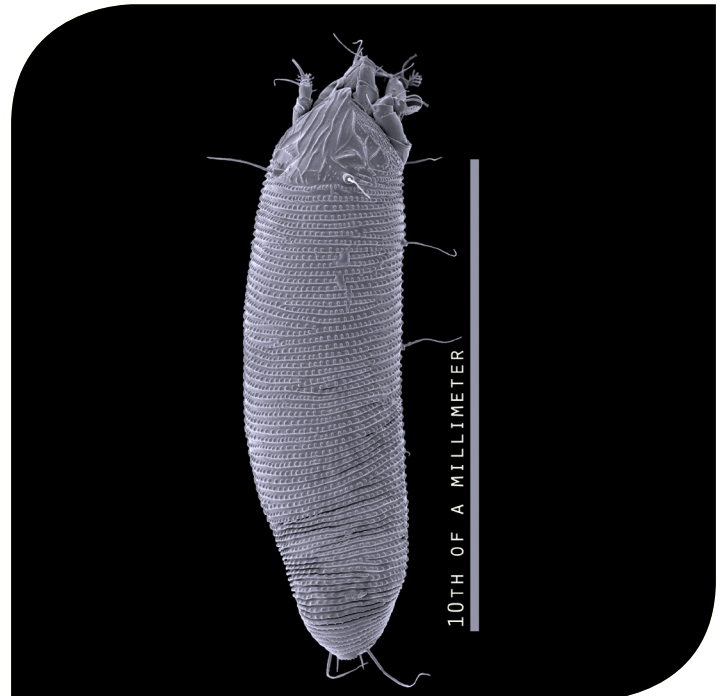
Compiled by Susan E. Halbert, Ph.D.

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 with over 10 million specimens) and investigates the biology, biological control and taxonomy of arthropods.

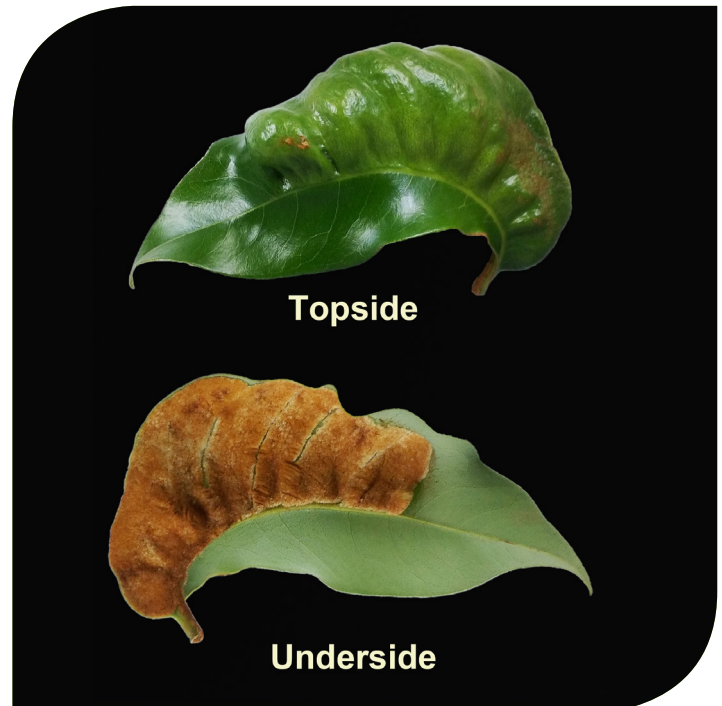
QUARTERLY ACTIVITY REPORT

	JANUARY- MARCH
Samples submitted	1,406
Lots identified	1,837
Specimens identified	8,232
	2018 - YEAR TO DATE
Samples submitted	1,406
Lots identified	1,837
Specimens identified	8,232

1 *Aceria litchii* (Keiffer), lychee erineose mite, a new Continental USA record. This species, which is a major pest on lychee, causes erineum galls (abnormal growths covered in fine hairs) to form on leaves. Early symptoms include small blister-like galls. However, as the infestation develops, large galls form that can cover over all or most of the surface of the leaf. The erineum galls can also spread to the fruits and flowers, causing a major loss of yield. This mite, which was originally described from Hawaii, has been detected at several locations in Lee County, including residential areas. The greatest concentration of infestations was found on Pine Island. There have also been several interceptions of this mite outside of Lee County. (Lee County; E2018-882; Richard L. Blaney; 5 March 2018; Lee County; E2018-208; Carmen M. Escalante, USDA/APHIS/PPQ; 18 January 2018; Lee County; E2018-676; Daniel Carrillo, University of Florida; 24 February 2018; Pinellas County; E2018-1055; Jason M. Spiller, Mark A. Spearman, Richard A. White, Samuel J. Bolton, Susan E. Halbert, Muhammad Z. 'Zee' Ahmed; 15 March 2018; Sarasota County; E2018-1060; James E. 'Eddie' Anderson, Jennifer K. Serviss, Samuel J. Bolton, Susan E. Halbert, Muhammad Z. 'Zee' Ahmed; 15 March 2018 and Manatee County; E2018-1228; Jennifer K. Serviss; 21 March 2018.) (Dr. Samuel J. Bolton.)



1a - *Aceria litchii* (Keiffer) whole body of mite.
Photograph courtesy of Gary Bauch and Ronald Ochoa, USDA



1b - *Aceria litchii* (Keiffer) large erineum galls.
Photograph courtesy of Samuel J. Bolton, DPI



2 *Fiorinia phantasma* Cockerell & Robinson, phantasma scale, a new Continental USA record. The phantasma scale is a significant pest of nursery plants, particularly of ornamental palms. Apparently, it has been transported to new localities globally by movement of live nursery stock. Its major global expansion has occurred primarily in the last decade. It is now known in 21 countries. The first Continental USA record was discovered on *Phoenix canariensis* Hort, Canary Island date palm. Confirming samples from the same host plant species in the same area were collected three weeks later. All samples were heavily infested with *F. phantasma*. Charles M. 'Mike' Twyford (USDA-APHIS-PPQ) and Olga Garcia (USDA-APHIS-PPQ) conducted additional surveys on 23 March 2018 and found that all 27 *P. canariensis* in the area were infested with *F. phantasma* (Fig. 2). Afterwards, Jake M. Farnum (DPI) also performed surveys in other Miami locations and collected 20 more samples. All samples were identified and confirmed as *F. phantasma* by Dr. Douglass R. Miller (retired USDA identifier and FSCA research associate) and Dr. M. Z. Ahmed (DPI). Heavy infestations of *F. phantasma* have been reported from palms in Hawaii and Grenada. In one report from Maldives, about 6,000 palms were infested with this species in a single resort. *Fiornia phantasma* causes chlorotic patches on leaves and premature leaf drop. Its preference for palms may be of concern in Florida, where palms are an important component of natural and ornamental environments. Male and female scales usually intermingle on the undersides of leaves, and if populations reach high densities, crawlers colonize the topsides of foliage (Fig. 2). *Fiorinia phantasma* has been found infesting a wide range of host plants in at least 24 plant families with marked preference for palms and flowering plants. (Miami-Dade County; E2018-789; Olga Garcia, USDA-APHIS-PPQ; 1 March 2018.) (Dr. Muhammad Z. 'Zee' Ahmed.)



2 - *Fiorinia phantasma* Cockerell & Robinson infestation on *Phoenix canariensis*, Canary Island date palm in Miami. Arrows show the damage and infestation (a), upper side (b) and underside (c) of the leaves, leaves with extremely high density of *F. phantasma* population (d), and the close-up showing males and females of *F. phantasma* on leaves (e). Photograph courtesy of Charles M. 'Mike' Twyford USDA-APHIS-PPQ, Olga Garcia, USDA-APHIS-PPQ, and Muhammad Z. 'Zee' Ahmed, DPI, adapted by Muhammad Z. 'Zee' Ahmed, DPI

3 *Falconia* sp., a plant bug, a new Continental USA record.

A specimen was collected on *Citrus* sp. in residential Miami. This species is closest to *F. incaica* Carvalho, a species known from Bolivia, Ecuador, Panama and Peru. The host is unknown, but citrus is unlikely. Known *Falconia* spp. produce a heavy chlorosis, similar to tingid feeding damage. (Miami-Dade County; E2018-1240; Olga Garcia, USDA-APHIS-PPQ; 19 March 2018.) (Dr. Thomas J. Henry, Systematic Entomology Laboratory, U.S. National Museum, USDA-ARS.)

4 *Maruca vitrata* (Fabricius), bean pod borer moth, a notable find.

This moth is a major pest of legumes. A moth was collected on March 13, 2018, at a light on Big Pine Key and submitted to FDACS-DPI Entomology for confirmation. Moths of this species were collected rarely at lights in the Florida Keys in the 1980s, but this is the first detection since 1992. The species is pantropical, including the Antilles. The caterpillars first bore into flowers and buds, later into bean pods, destroying the seeds. A survey for larvae has been initiated. (Monroe County; E2018-1309; David R. Fine, amateur lepidopterist; 13 March 2018.) (Dr. James E. Hayden.)



3 - *Falconia* sp., a plant bug.
Photograph courtesy of Charles A. Boring, DPI



4 - *Maruca vitrata*, bean pod borer moth. Scale in mm.
Photograph courtesy of James E. Hayden, DPI

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 SCIENTIFIC NAME	ARTHROPOD	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Aloysia gratissima</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD
<i>Bambusa</i> sp.	<i>Kuwanaspis vermiformis</i>	an armored scale	Abby L. Bartlett	NEW FLORIDA COUNTY RECORD
<i>Bursera simaruba</i>	<i>Tetyra antillarum</i>	a shield-backed bug	Jimmy Hernandez	NEW FLORIDA HOST RECORD
<i>Butia capitata</i>	<i>Homaledra</i> sp. 2	Western palm skeletonizer	Travis J. Streeter	NEW FLORIDA COUNTY RECORD, NEW FLORIDA HOST RECORD
<i>Camellia sinensis</i>	<i>Vinsonia stellifera</i>	stellate scale	Matthew A. Borden	REGULATORY SIGNIFICANT
<i>Casimiroa tetrameria</i>	<i>Corythucha gossypii</i>	cotton lace bug	Jake M. Farnum	NEW FLORIDA HOST RECORD
<i>Citrus aurantifolia</i>	<i>Frankliniella tritici</i>	eastern flower thrips	Jennifer K. Serviss	NEW FLORIDA COUNTY RECORD
<i>Citrus</i> sp.	<i>Falconia</i> sp.	a plant bug	Olga Garcia	NEW US CONTINENTAL RECORD
<i>Citrus</i> sp.	<i>Paraleyrodes minei</i>	a whitefly	Sheila O. Dunning	NEW FLORIDA COUNTY RECORD
<i>Coccoloba diversifolia</i>	<i>Largus pallidus</i>	a largid bug	Olga Garcia	NEW FLORIDA HOST RECORD
<i>Colocasia</i> sp.	<i>Tarophagus colocasiae</i>	a taro planthopper	Brian W. Bahder, Susan E. Halbert	NEW FLORIDA COUNTY RECORD
<i>Cordia globosa</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD
<i>Crossopetalum rhacoma</i>	<i>Dysmicoccus grassii</i>	a mealybug	Keith J. Harris	NEW FLORIDA HOST RECORD
<i>Cynara cardunculus</i>	<i>Autographa californica</i>	Alfalfa Looper	Eric M. Dougherty, Scott Curry	REGULATORY SIGNIFICANT
<i>Dracaena</i> sp.	<i>Deroceras</i> sp.	a slug	Mary C. Sellers	REGULATORY SIGNIFICANT
<i>Eriobotrya japonica</i>	<i>Odinia mejirei</i>	a fly	Cecilia Carrero-Turnbull	NEW FLORIDA COUNTY RECORD
<i>Ficus benjamina</i>	<i>Baeoentodon balios</i>	a parasitoid wasp	Mary E. Graham	NEW FLORIDA COUNTY RECORD
<i>Gossypium</i> sp.	<i>Largus pallidus</i>	a largid bug	Jake M. Farnum	NEW FLORIDA HOST RECORD
<i>Guapira discolor</i>	<i>Nealyda phytolaccae</i>	a blolly miner	Phellicia P. Perez	NEW FLORIDA HOST RECORD
<i>Gypsophila</i> sp.	<i>Helix aspersa</i>	brown garden snail	Michael L. Golub and K-9	REGULATORY SIGNIFICANT
<i>Hamelia patens</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD



PLANT SCIENTIFIC NAME	ARTHROPOD	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Hydrangea</i> sp.	<i>Deroceras reticulatum</i>	gray garden slug	Jesse M. Krok	REGULATORY SIGNIFICANT
<i>Hypericum tetrapetalum</i>	<i>Aleuroplatus semiplumosus</i>	a whitefly	Jake M. Farnum	NEW FLORIDA COUNTY RECORD, NEW FLORIDA HOST RECORD
<i>lochroma fuchsioides</i>	<i>Lema trabeata</i>	a leaf beetle	Edmund L. Thralls	NEW FLORIDA HOST RECORD
<i>Ixora</i> sp.	<i>Asiothrixus antidesmae</i>	ixora whitefly	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	NEW FLORIDA COUNTY RECORD
<i>Lactuca sativa</i>	<i>Ceratagallia californica</i>	a leafhopper	Catherine E. White, Dyrana N. Russell-Hughes	REGULATORY SIGNIFICANT
<i>Lactuca sativa</i>	<i>Ollarianus strictus</i>	a leafhopper	Catherine E. White, Dyrana N. Russell-Hughes	REGULATORY SIGNIFICANT
<i>Lagerstroemia indica</i>	<i>Lopholeucaspis japonica</i>	Japanese maple scale	Mary C. Sellers	NEW FLORIDA HOST RECORD
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Carmen M. Escalante	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Daniel Carrillo	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Richard L. Blaney	NEW US CONTINENTAL RECORD, QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Richard L. Blaney	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Jake M. Farnum, Matthew W. Brodie, Samuel J. Bolton	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Amy L. Roda, Richard L. Blaney, Susan E. Halbert	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Matthew W. Brodie, Richard L. Blaney, Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Jason M. Spiller, Mark A. Spearman, Richard A. White, Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Jason M. Spiller, Mark A. Spearman, Richard A. White, Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST, NEW FLORIDA COUNTY RECORD
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	James E. "Eddie" Anderson, Jennifer K. Serviss, Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST, NEW FLORIDA COUNTY RECORD
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Daniel Carrillo	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Daniel Carrillo	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Alexandra M. Revynthi, Daniel Carrillo, Rita E. Duncan	QUARANTINABLE PEST



PLANT SCIENTIFIC NAME	ARTHROPOD	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Samuel J. Bolton, Susan E. Halbert, M. Zee Ahmed	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Amy L. Roda, Susan E. Halbert	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Jennifer K. Serviss	QUARANTINABLE PEST, NEW FLORIDA COUNTY RECORD
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Jennifer K. Serviss	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Richard L. Blaney	QUARANTINABLE PEST
<i>Litchi chinensis</i>	<i>Aceria litchii</i>	Lychee erinose mite	Craig H. Welch	QUARANTINABLE PEST
<i>Livistona chinensis</i>	<i>Homaledra</i> sp. 2	Western palm leaf skeletonizer	Jacob T. Bryan, Ricardo D. Areingdale	NEW FLORIDA COUNTY RECORD, NEW FLORIDA HOST RECORD
<i>Livistona chinensis</i>	<i>Homaledra</i> sp. 2	Western palm skeletonizer	Laura Ureta	NEW FLORIDA COUNTY RECORD
<i>Lycium carolinianum</i>	<i>Bactericera dorsalis</i>	Lycium psyllid	Travis J. Streeter	NEW FLORIDA COUNTY RECORD
<i>Mimosa strigillosa</i>	<i>Crypticerya genistae</i>	a scale insect	Elizabeth A. Blackford	NEW FLORIDA COUNTY RECORD
<i>Murraya paniculata</i>	<i>Acrolophus walsinghami</i>	tribble moth	Cecilia Carrero-Turnbull	NEW FLORIDA COUNTY RECORD
<i>Murraya paniculata</i>	<i>Limonia domestica</i>	a crane fly	James A. Pernsteiner	NEW FLORIDA COUNTY RECORD
<i>Passiflora</i> sp.	<i>Acizzia</i> sp.	a psyllid	Jennifer L. Mestas, Michael L. Golub and K-9s	REGULATORY SIGNIFICANT
<i>Pentas lanceolata</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD
<i>Pentas lanceolata</i>	<i>Syngamia florella</i>	orange-spotted flower moth	Heather A. Rohrer, James E. Hayden, Keith W. Curry-Pochy	NEW FLORIDA HOST RECORD
<i>Phoenix canariensis</i>	<i>Fiorinia phantasma</i>	Phantasma scale	Olga Garcia	NEW US CONTINENTAL RECORD, NEW FLORIDA HOST RECORD
<i>Pinus elliottii</i>	<i>Matsucoccus gallicolus</i>	pine twig gall scale	Brian D. Saunders	NEW FLORIDA COUNTY RECORD
<i>Pinus</i> sp.	<i>Matsucoccus alabamiae</i>	a pine scale	Douglass R. Miller, Susan E. Halbert, M. Zee Ahmed	NEW FLORIDA COUNTY RECORD
<i>Pinus</i> sp.	<i>Matsucoccus alabamiae</i>	a pine scale	Douglass R. Miller, Susan E. Halbert, M. Zee Ahmed	NEW FLORIDA COUNTY RECORD
<i>Pinus</i> sp.	<i>Matsucoccus alabamiae</i>	a pine scale	Douglass R. Miller, Susan E. Halbert, M. Zee Ahmed	NEW FLORIDA COUNTY RECORD
<i>Polyscias guilfoylei</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD
<i>Quercus</i> sp.	<i>Lidopus heidemanni</i>	a jumping ground bug	Roberto Delcid	NEW FLORIDA COUNTY RECORD



PLANT SCIENTIFIC NAME	ARTHROPOD	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
<i>Quercus</i> sp.	<i>Penestola bufalis</i>	a swamp moth	Roberto Duenas	NEW FLORIDA COUNTY RECORD
<i>Sabal palmetto</i>	<i>Homaledra</i> sp. 2	Western palm skeletonizer	Bradley A. Danner, James E. Hayden	NEW FLORIDA COUNTY RECORD
<i>Sabal palmetto</i>	<i>Homaledra</i> sp. 2	Western palm leaf skeletonizer	Abby L. Bartlett, Nora V. Marquez	NEW FLORIDA COUNTY RECORD
<i>Sabal palmetto</i>	<i>Homaledra</i> sp. 2	Western palm skeletonizer	Kevin S. Loadholtz	NEW FLORIDA COUNTY RECORD
<i>Saccharum</i> sp.	<i>Aclerda takahashii</i>	a flat grass scale	Bradley A. Danner, Cheryl A. Jones, Mary Jane Echols, Robert M. Leahy	QUARANTINABLE PEST
<i>Salvia lyrata</i>	<i>Protalebrella conica</i>	ghost Brazilian leafhopper	Travis J. Streeter	NEW FLORIDA COUNTY RECORD, NEW FLORIDA HOST RECORD
<i>Schaueria flavicoma</i>	<i>Planococcus minor</i>	a mealybug	Doug L. Caldwell	NEW FLORIDA HOST RECORD
<i>Serenoa repens</i>	<i>Homaledra</i> sp. 2	Western palm skeletonizer	Mary Ellen Flowers, Tedd S. Greenwald	NEW FLORIDA COUNTY RECORD
<i>Sida ciliaris</i>	<i>Niesthrea sidae</i>	a scentless plant bug	Scott D. Krueger	NEW FLORIDA HOST RECORD
<i>Smilax auriculata</i>	<i>Paraleyrodes minei</i>	a whitefly	Lisa M. Hassell	NEW FLORIDA COUNTY RECORD
<i>Stachytarpheta jamaicensis</i>	<i>Petrusa epilepsis</i>	a flatid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA HOST RECORD
<i>Stevia rebaudiana</i>	<i>Aphis spiraecola</i>	spirea aphid	Scott D. Krueger	NEW FLORIDA HOST RECORD
<i>Swietenia mahagoni</i>	<i>Bemisia tabaci</i> "Q"	sweetpotato whitefly	Olga Garcia	QUARANTINABLE PEST, NEW FLORIDA HOST RECORD
<i>Terminalia</i> sp.	<i>Brachycara slossonae</i>	a soldier fly	Eduardo Solis	NEW FLORIDA COUNTY RECORD
<i>Trema cannabina</i>	<i>Scirtothrips citri</i>	California citrus thrips	Justin K. Anto	NEW FLORIDA COUNTY RECORD
<i>Tripsacum dactyloides</i>	<i>Delphacodes</i> sp.	a delphacid planthopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA COUNTY RECORD
<i>Tripsacum dactyloides</i>	<i>Reventazonia lawsoni</i>	a leafhopper	Brian W. Bahder, Agueda Christina Urbina, Kevin M. Williams, Susan E. Halbert	NEW FLORIDA COUNTY RECORD
	<i>Elaphria agrotina</i>	noctuid moth	Brian D. Saunders	NEW FLORIDA COUNTY RECORD
	<i>Orthonevra pictipennis</i>	a flower fly	Victor M. Zeno	NEW FLORIDA COUNTY RECORD
	<i>Alydus pilosulus</i>	a broadheaded bug	Renee Griswell	NEW FLORIDA COUNTY RECORD
	<i>Calliprora</i> sp.	lead tree leafminer	Douglas A. Restom-Gaskill	NEW FLORIDA COUNTY RECORD
	<i>Chinaola quercicola</i>	a microphysid bug	Monica Triana	NEW FLORIDA COUNTY RECORD
	<i>Helix aspersa</i>	brown garden snail	Eric M. Dougherty	REGULATORY SIGNIFICANT
	<i>Maruca vitrata</i>	bean pod borer	David R. Fine, James T. Troubridge	QUARANTINABLE PEST
	<i>Matsucoccus alabamae</i>	a pine scale	Milton Lara	NEW FLORIDA COUNTY RECORD



PLANT SCIENTIFIC NAME	ARTHROPOD	ARTHROPOD COMMON NAME	COLLECTOR	RECORD
	<i>Matsucoccus gallicolus</i>	pine twig gall scale	Patricia Barker	NEW FLORIDA COUNTY RECORD
	<i>Monomorium pharaonis</i>	Pharaoh ant	Karen A. Holton and K-9	REGULATORY SIGNIFICANT
	<i>Passandrophloeus</i> sp.	a flat bark beetle	Bradley A. Danner, Robert M. Leahy	NEW FLORIDA COUNTY RECORD
	<i>Passandrophloeus</i> sp.	a flat bark beetle	Douglas A. Restom-Gaskill	NEW FLORIDA COUNTY RECORD
	<i>Sephina gundlachi</i>	coreid bug	Abby L. Bartlett	NEW FLORIDA COUNTY RECORD
	<i>Siskiwitia</i> sp.	cosmopterigid moth	Douglas A. Restom-Gaskill	NEW FLORIDA COUNTY RECORD
	<i>Thione championi</i>	a beetle	Bradley A. Danner, Robert M. Leahy	NEW FLORIDA COUNTY RECORD





NEMATOTOLOGY

Compiled by Jason D. Stanley, M.S.; Renato N. Inserra, Ph.D.; Janete A. Brito, Ph.D.; and Silvia Vau, Ph.D.

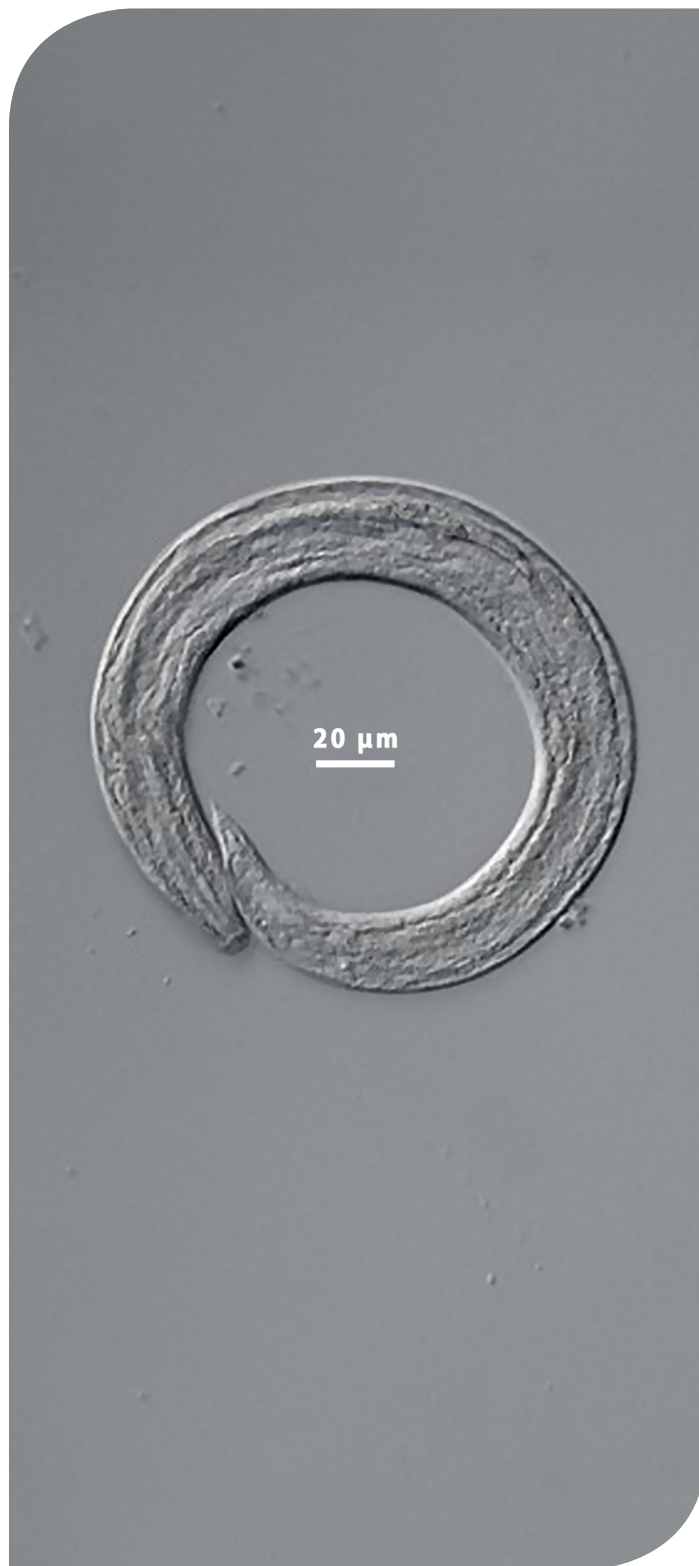
This section analyzes soil and plant samples for nematodes, conducts pest detection surveys and provides diagnoses of plant problems, in addition to completing identification of plant parasitic nematodes involved in regulatory and certification programs. State of Florida statutes and rules mandate the 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- MARCH	2018 - YEAR TO DATE
Morphological identifications	3,454	3,454
Molecular identifications	226	226
Total identifications	4,772	13,686

Nematodes of Special Interest

1 *Angiostrongylus cantonensis* Chen, 1935, the rat lungworm, is a nematode parasite of vertebrates that utilizes two hosts for its development: rats, the definitive vertebrate host, and snails, an intermediary, invertebrate host. Other invertebrates, such as oysters, slugs and land crabs can also harbor the nematode. In these intermediary hosts, the nematode reaches the third juvenile stage (J3). Intermediary hosts are ingested by rats and other vertebrates, including humans. After penetrating the intestines of their new host, these stage three juveniles migrate into the circulatory system and reach the meningeal nerves where they develop into fourth-stage juveniles (J4) and then adults. In rats, adult female lungworms move from the meningeal nerves to the lungs where eggs are deposited. The newly hatched first-stage juveniles (J1) move from the lungs to the trachea and are swallowed and voided with feces into the environment. In humans, this nematode causes eosinophilic meningoencephalitis or angiostrongyliasis, a disease of the central nervous system. Among the snails, the species *Lissachatina fulica* Bowdich, 1822, the giant African land snail, is one of the most common intermediary hosts of this nematode. An outbreak of this snail occurred in South Florida in 2011. From 2011 through 2013, a survey for *A. cantonensis* was conducted during the eradication program of the giant African land snail. DPI scientists from the Bureau of Methods Development and the Bureau of Entomology, Nematology and Plant Pathology, nematology section, developed protocols for the identification of *A. cantonensis* from *L. fulica* using molecular (quantitative real-time polymerase chain reaction, Q-PCR) and morphological analyses.



1a - *Angiostrongylus cantonensis* (rat lungworm) collected from the Florida population of *Lissachatina fulica* (giant African land snail) in 2012. Photograph courtesy of Silvia J. Vau, DPI



The morphological analysis conducted by the nematology section consisted of a modified blending and sieving method established for the extraction of plant parasitic nematodes from plant tissues. The rat lung worm was identified morphologically in Florida snails for the first time in the state's history in 2012 (nematology sample N12-01104). The specimens were extracted from specimens of giant African land snails collected in Miami-Dade County.

Recently, the giant African land snail has been detected in Puerto Rico and is under a federal delimitation. Approximately 60 snails have been collected. To date, the largest snail found in Puerto Rico is only about 60 mm in length, with most between 15 - 45 mm, compared to an average of approximately 90 mm in Florida.

In March 2018, the nematology section received ten *L. fulica* samples from USDA-APHIS representatives in San Juan to be analyzed for the presence of rat lungworm. Staff used the mechanical maceration method to process all the snails. Afterwards, the macerated tissues were washed through a series of sieves (850, 250 and 45 μ m). The final concentrated material was observed under a light microscope to detect the presence of rat lungworm. All ten samples of *L. fulica* from Puerto Rico were negative for *A. cantonensis*.

REFERENCES

- Smith, T.R., A.C. Howe, K. Dickens, J.D. Stanley, J.A. Brito, and R.N. Inerra. 2015.** Morphological validation of molecular detections of the rat lungworm, *Angiostrongylus cantonensis* Chen, 1935 (Nematoda: Strongylida: Metastrongylida), in association with the giant African land snail, *Lissachatina fulica* Bowdich (Gastropoda: Pulmonata: Achatinidae) in Florida, with notes on its distribution in the surveyed areas of the state. *Nematropica* 45: 20-33.
- Fallis, A.M. 1943.** Use of the Waring blender to separate small parasites from tissue. *Canadian Journal of Public Health* 34: 44.
- Hussey, R.S. and K.R. Barker. 1973.** A comparison of methods for collecting inocula of *Meloidogyne* spp. including a new technique. *Plant Disease Reporter* 57: 1025-1028.



1b - *Lissachatina fulica* (giant African land snail) macerated tissues being washed through a series of sieves.
Photography courtesy of Jason D. Stanley, DPI



1c - *Lissachatina fulica* (giant African land snail) macerated tissues ready for observation by light microscopy.
Photograph courtesy of Jason D. Stanley, DPI

COLLECTORS

Collectors submitting five or more samples that were processed for nematological analysis from January through March 2018

COLLECTOR NAME	SAMPLES PROCESSED
Alford, Brian M.	11
Bentley, Michael A.	21
Berryman, Scott D.	47
Bloom, Richard T.	39
Boyar, Jillian	182
Burgos, Frank A.	268
Carbon, Peter	7
Echols, M. Jane	27
Landress, Craig J.	9
Nolen, Ashley M.	9
Ochoa, Ana L.	183
Paolillo, Ajia M.	6
Smith, Larry W.	7
Spriggs, Charles L.	113
St. John, David	68
Terrell, Mark R.	5
Williams, Kevin M.	89
Wolfe, C. David	32
Yates, Johnny J.	12

CERTIFICATION AND REGULATORY SAMPLES

	JANUARY-MARCH	2018 - YEAR TO DATE
Multistate certification for national and international export	1,774	1,774
California certification	342	342
Pre-movement (citrus nursery certification)	94	94
Site or pit approval (citrus nursery and other certifications)	4	4

OTHER SAMPLES

	JANUARY-MARCH	2018 - YEAR TO DATE
Identifications (other organisms)	1	1
Nematology Investigation	90	90
Plant Problems	47	47
Intrastate Survey, Random	160	160

SAMPLES FOR MOLECULAR ANALYSIS

	JANUARY-MARCH	2018 - YEAR TO DATE
Regulatory	0	0
Other Purposes	0	0
Surveys	226	226
Total	226	226

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



PLANT PATHOLOGY

Compiled by Jodi Hansen, M.S.; Taylor Smith, B.S.; Kishore Dey, Ph.D.; and Debra Jones, M.S.

This 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 diseases and disorders active outside Florida in order to be prepared for potential introductions of new pathogens to our area.

Ramularia uredinearum (mycoparasite) was submitted on *Lygodium japonicum* (Japanese climbing fern) infected with the rust fungus *Puccinia lygodii* from a natural area in Duval County. This pathogen was growing on the rust fungus's fruiting structures called uredinia. *Ramularia uredinearum* produces colorless colonies on *P. lygodii*, and its conidia measure 9-24 x 3-5 µm. (Duval County; P2018-95748; Bradley A. Danner, DPI/CAPS, and Robert M. Leahy, USDA/CAPS; 9 February 2018.)

Although most often known as leaf pathogens, three species of *Ramularia* have been found growing in rust uredinia. A mycoparasite is a parasitic fungus whose host is another fungus. Mycoparasites are common among fungi, and they can be classified as necrotrophs or biotrophs. Biotrophs only obtain nutrients from their hosts, whereas necrotrophs kill the fungal tissues they colonize. It is possible mycoparasitic fungi that colonize rust fungi may be used as biological control agents, offering an alternative to chemical control.

REFERENCES

- Sun, J.Z., J.K. Liu, E.H.C. McKenzie, X.Z. Liu, and K.D. Hyde. 2017. *Ramularia coleosporii* (Mycosphaerella) on *Plumeria* rust in Thailand. *Studies in Fungi* 2:38–46. http://www.studiesinfungi.org/pdf/SIF_2_1_5.pdf [accessed 7 May 2018].
- Moore, D., G.D. Robson, and A.P.J. Trinci. 2016. Mycoparasitic and fungiculous fungi. http://www.davidmoore.org.uk/21st_Century_Guidebook_to_Fungi_PLATINUM/Ch16_13.htm [accessed 7 May 2018].



QUARTERLY ACTIVITY REPORT

	JANUARY- MARCH	2018 - YEAR TO DATE
Budwood Samples	0	0
Citrus Black Spot	21	21
Citrus Canker	57	57
Citrus Greening / HLB	99	99
Honeybees	0	0
Interdictions	3	3
Laurel Wilt	1	1
Pathology, General	428	428
Soil	51	51
Sudden Oak Death	1	1
Sweet Orange Scab-like Disease	2	2
Texas Phoenix Palm Decline	45	45
Water	2	2
Miscellaneous	8	8
Total	718	718



🔍 PLANT PATHOLOGY IDENTIFICATION TABLE

The 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	PLANT COMMON NAME	CASUAL AGENT	DISEASE NAME	COLLECTOR	COMMENTS
<i>Adenium obesum</i>	desert rose	<i>Cucumber mosaic virus</i> (<i>Cucumovirus</i>)	none	Ciro Milian, USDA	<i>Cucumber mosaic virus</i> (CMV) belongs to the genus <i>Cucumovirus</i> of the family Bromoviridae. This virus has a worldwide distribution and a very wide host range. In fact, it is believed to have the widest host range of any known plant virus. The symptoms may vary widely depending on the host plant and include distortion of foliage, mosaic, mottling, stunting and necrosis. This virus is spread by several aphid vectors. CMV can also be spread mechanically from infected plants to healthy plants.
<i>Lygodium japonicum</i>	Japanese climbing fern	<i>Ramularia uredinearum</i>	mycoparasite	Bradley A. Danner, Robert M. Leahy USDA/ CAPS	<i>Ramularia uredinearum</i> is a mycoparasite found on the uredinia of the rust fungus <i>Puccinia lygodii</i> . Although most often known as leaf pathogens, three species of <i>Ramularia</i> have been reported to be found growing in rust uredinia.
<i>Lygodium japonicum</i>	Japanese climbing fern	<i>Puccinia lygodii</i>	rust fungus	Bradley A. Danner, Robert M. Leahy USDA/ CAPS	<i>Puccinia lygodii</i> is a rust fungus that infects the invasive ferns <i>Lygodium japonicum</i> (Japanese climbing fern) and <i>Lygodium microphyllum</i> (Old World climbing fern). Infection with the rust fungus has limited effect on either one of these ferns.
<i>Olea europaea</i>	olive	<i>Cucumber mosaic virus</i> (<i>Cucumovirus</i>)	none	Lisa M. Hassell	<i>Cucumber mosaic virus</i> (CMV) belongs to the genus <i>Cucumovirus</i> of the family Bromoviridae. This virus has a worldwide distribution and a very wide host range. In fact, it is believed to have the widest host range of any known plant virus. The symptoms may vary widely depending on the host plant and include distortion of foliage, mosaic, mottling, stunting and necrosis. This virus is spread by several aphid vectors. CMV can also be spread mechanically from infected plants to healthy plants.
<i>Petroselinum crispum</i>	parsley	<i>Sclerotinia sclerotiorum</i>	watery soft rot	Bradley A. Danner, CAPS; Robert M. Leahy USDA	<i>Sclerotinia sclerotiorum</i> is a plant pathogenic fungus that usually infects stem tissue near the soil line. Black resting structures called sclerotia and white fuzzy growths of mycelium on the stem are key characteristics of this pathogen.



PLANT NAME	PLANT COMMON NAME	CASUAL AGENT	DISEASE NAME	COLLECTOR	COMMENTS
<i>Phoenix canariensis</i>	Canary Island date palm	<i>Serenomyces</i> sp.	rachis blight	Abby L. Bartlett	The fungus <i>Serenomyces</i> is found only in association with palms and is one of the fungi that cause the disease called rachis blight. Rachis blight usually infects the oldest (lowest) living leaves and will move upward through the canopy to younger leaves. The disease may kill a number of the lowest leaves, but usually does not kill the palm.
<i>Phoenix canariensis</i>	Canary Island date palm	<i>Graphiola phoenicis</i>	false smut	Nora V. Marquez, Abby L. Bartlett	<i>Graphiola phoenicis</i> causes a fungal leaf disease called "false smut." The primary hosts for this disease in Florida are Phoenix palms; however, <i>Graphiola phoenicis</i> has been observed on many other palms. When a palm is infected with false smut, very small (1/16 inch) cup-shaped fungal bodies called sori are found on the leaf blades of the palm's oldest leaves.
<i>Plectranthus</i> sp.	plectranthus	<i>Potyvirus</i> sp.	none	Susan E. Halbert	Potyriviruses are members of the genus <i>Potyvirus</i> , family Potyviridae. These viruses can infect a wide range of plant taxa. Many of the viruses produce severe disease symptoms on economically important crops, making this genus one of the most well-studied by plant virologists. Potyriviruses are typically transmitted in a non-persistent manner by several aphid species, as well as through mechanical inoculation. Vertical transmission through seed has also been reported.
<i>Rumex</i> sp.	sorrel	<i>Tetraploa aristata</i>	leaf necrosis	Bradley A. Danner, Robert M. Leahy USDA/CAPS, Cheryl A. Jones, Janie M. Echols	<i>Tetraploa aristata</i> is a hyphomycete fungus that is not plant pathogenic. It has a widespread distribution. It is usually found growing on the leaves and stems of grasses and palms.
<i>Rumex</i> sp.	sorrel	<i>Pseudorobillarda</i> sp.	leaf necrosis	Bradley A. Danner, Robert M. Leahy USDA, Cheryl A. Jones, M. Janie Echols	<i>Pseudorobillarda</i> sp. is a coelomycete fungus known to grow on the dead stems of a number of plants. It is not plant pathogenic.





FROM THE EDITOR

By Patti J. Anderson and Technical Assistance staff

Perhaps you noticed the intriguing photograph on the cover of this issue of TRI-LOGY. The image reflects one of many collaborative efforts among our bureau (ENPP), the Bureau of Methods Development and Biological Control, and our Office of Technical Assistance. Research by our entomologists on the Asian citrus psyllid, *Diaphorina citri*, vector of the devastating citrus greening disease, and investigations of possible biological control by our sister bureau, have led to new hope for eliminating one element in the pathway that has been so destructive to the citrus industry. A tiny wasp, *Tamarixia radiata*, deposits eggs inside the psyllid nymph. Ten days later, the wasp's offspring emerges as seen in the cover photograph.

How was this image captured? To provide more information about the control agent, our Technical Assistance team produced a video for the public. The photograph on our cover was taken during their filming, when a wasp emerged from the citrus psyllid it was parasitizing.

If you would like to learn more about rearing this biological control agent, see *Rearing and Releasing an Enemy of the Asian Citrus Psyllid* <https://www.youtube.com/watch?v=aPJ-PAB-81k>. In addition, *Tamarixia* wasps are available to the public and may be requested by completing the **Tamarixia Release Application for Florida Dooryard Citrus and Orange Jasmine Plantings** at www.FreshFromFlorida.com/tra.

You never know what amazing story of DPI teamwork will be revealed in TRI-LOGY. Be sure to watch for the next issue!





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