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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 weeds



ENTOMOLOGY

Identifying arthropods, taxonomic
research and curating collections



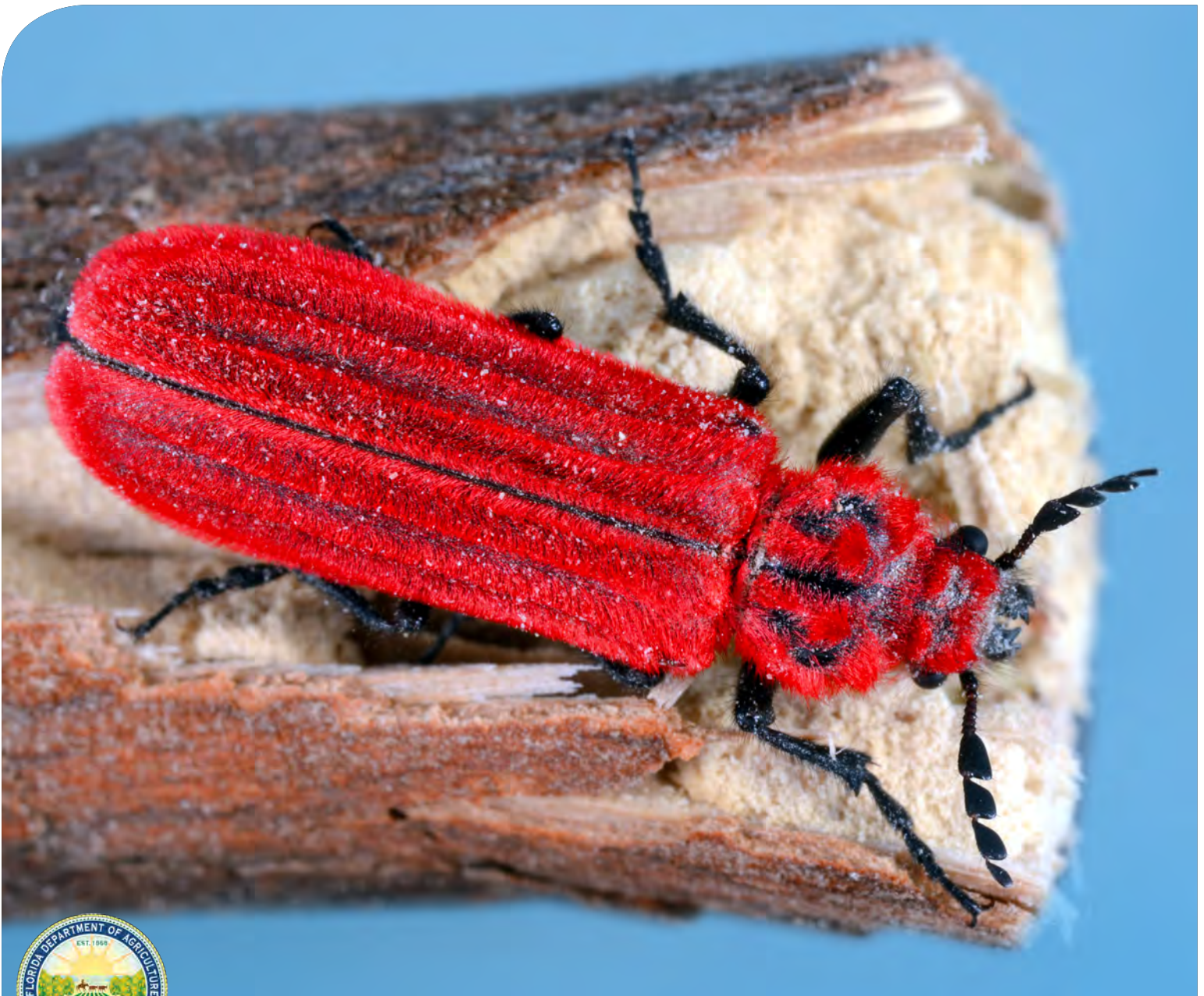
NEMATOLOGY

Providing certification programs and
diagnoses of plant problems



PLANT PATHOLOGY

Offering plant disease diagnoses and
management recommendations



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



Can you find the thrips?
Echinacea purpurea, Purple Coneflower
 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] website address.

For example: S.E. Halbert. 2015. Entomology Section. P.J. Anderson and G.S Hodges (Editors). TRI-LOGY 54(4): 9. [accessed June 5, 2016] <http://FreshFromFlorida.s3.amazonaws.com/Media%2FFiles%2FPlant-Industry-Files%2FTri-ology%2FTri-ology%2C+Volume+54%2C+Number+4%2C+May+-+June+2015.pdf>

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. 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 *Coccographis nigrorubra* Lesne, a false powder post beetle. Adults and larvae of this beetle were found in imported sticks from China that were sold as pet chews for various rodents. The species is rarely collected in nature and its life history was unknown. The find opened our eyes scientifically and helped show us an unrecognized pathway for other exotic wood boring insects.



1 - *Coccographis nigrorubra* Lesne from pet chew sticks.
Photograph courtesy of Lyle Buss, University of Florida

2 *Mecardonia procumbens* (Mill.) Small (baby jumpup; yellow-flowered waterhyssop) is a quite variable herbaceous plant found in Escambia County and scattered Atlantic and peninsular counties as well as the Florida Keys. The species has not previously been documented in Manatee County.



2 - *Mecardonia procumbens* (baby jumpup)
Photograph courtesy of Bob Upcavage, [Atlas of Florida Vascular Plants](#)

3 *Meloidogyne enterolobii* Yang and Eisenback, 1983. Recently, a root sample showing symptoms of root-knot nematode infection was collected from a mulberry tree, *Morus* sp., growing in 15-gallon pot in an ornamental nursery in Orange County, Florida.



3 - *Meloidogyne enterolobii* infecting roots of *Morus* sp. (mulberry). Note the bead-shaped galls, a typical symptom induced by this nematode species.
Photography courtesy of Janete A. Brito and Jeffrey W. Lotz, DPI

4 *Phakopsora phyllanthi* Dietel, a rust of *Phyllanthus* species, was collected from *Phyllanthus acidus* (L.) Skeels (Tahitian gooseberry) at three locations in South Florida. This is a new Continental USA record.



4 - Chlorotic and necrotic spots on leaf surfaces of *Phyllanthus acidus* caused by *Phakopsora phyllanthi*.
Photograph courtesy of Jeffrey W. Lotz, 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.

Some of the samples received for identification are discussed below:

QUARTERLY ACTIVITY REPORT

	JANUARY - MARCH	YEAR TO DATE
Samples submitted by other DPI sections	1,139	1,139
Samples submitted for botanical identification only	128	128
Total samples submitted	1,267	1,267
Specimens added to the Herbarium	295	295

1 *Mecardonia procumbens* (Mill.) Small (**baby jump-up yellow-flowered waterhyssop**), from a genus of about 10 species native to warm areas of the Americas. Plantaginaceae. This is a quite variable herbaceous plant, 10-40 cm tall, weakly erect to prostrate, with a winged stem, often branched from the base. The opposite, sessile to short petiolate leaves are 1-3 cm long, elliptic to ovate-elliptic with serrate margins toward the apex and entire margins at the base of the blade. The solitary flowers are axillary. The three outer, ovate sepals overlap two narrower, inner ones. The two-lipped corolla is bright yellow with purple lines. The two pairs of stamens are of different lengths (didynamous stamens). The fruit is an ellipsoid capsule, 4-5 mm long, with numerous reticulate seeds. This weedy plant grows on the edges of or within ditches, ponds, streams and cypress domes in Florida and Alabama and from Louisiana to Arizona in the United States. In Florida, it has been documented in Escambia County and scattered Atlantic and peninsular counties as well as the Florida Keys. The species has not previously been documented in Manatee County. (Manatee County; B2016-78; Jason B. Sharp; 2 Mar 2016.) (Mabberley 2008; Godfrey and Wooten. 1981; Wunderlin and Hansen 2011; http://keys.trin.org.au/key-server/data/0e0f0504-0103-430d-8004-060d07080d04/media/Html/taxon/Mecardonia_procumbens.htm [accessed 2016 20 March].



1 -*Mecardonia procumbens* (baby jump-up)

Photograph courtesy of [Bob Upcavage, Atlas of Florida Vascular Plants](#).





2 - *Helianthemum corymbosum* (pinebarren frostweed)
 Photograph courtesy of Shirley Denton, [Atlas of Florida Vascular Plants](#).

2 *Helianthemum corymbosum* Michx. (pinebarren frost weed; pinebarren sunrose; rockrose), also known as *Crocanthemum corymbosum* (Michx.) Britton by some authors. Separately, *Helianthemum* consists of 80 Old World species, while *Crocanthemum* is a genus of 24 New World species. Cistaceae. Wunderlin and Hansen (2011) recognize *Helianthemum*, but the online *Atlas of Florida Plants* identifies this species as *Crocanthemum corymbosum*. In the revised system, the New World species in *Crocanthemum* have alternate leaves while Old World species are characterized by opposite leaves. In addition, most species in this genus produce two types of flowers: chasmogamous flowers (opening for possible cross-pollination) and cleistogamous flowers (remaining closed for self-pollination). This species is distinctive in having a corymbose inflorescence with striking yellow, five-petaled, chasmogamous flowers just above the closed cleistogamous flowers with no petals. Both types of flowers are produced simultaneously. The stems are stellate pubescent, and the alternate leaves are obovate-elliptic to elliptic-lanceolate. This species is found in sandy pinelands and maritime forests from North Carolina to Mississippi. In Florida, it grows in most counties, but this is a new voucher for Hendry County. (Hendry County; Roberto Delcid; B2016-101; 18 March 2016.) Wunderlin and Hansen 2011; http://efloras.org/florataxon.aspx?flora_id=1&taxon_id=250101247 [accessed 2016 April 20].

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- Godfrey, R.K. and J.W. Wooten. 1981.** Aquatic and wetland plants of southeastern United States: dicotyledons. University of Georgia Press, Athens, Georgia. 933 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 an [Excel](#) spreadsheet.

NEW RECORD	COLLECTOR 1	COLLECTOR 2	COUNTY	SAMPLE NUMBER	COLLECTION DATE	GENUS	SPECIES
🔍	Anthony Gubler	Glen R. Bupp	Indian River	2016-71	24-Feb-16	<i>Ardisia</i>	<i>elliptica</i> Thunb.
🔍	Jason B. Sharp		Manatee	2016-78	2-Mar-16	<i>Mecardonia</i>	<i>procumbens</i> (Mill.) Small
🔍	Kelly K. Douglas		Lafayette	2016-34	19-Jan-16	<i>Imperata</i>	<i>cylindrica</i> (L.) P. Beauv.
🔍	Kelly K. Douglas		Suwannee	2016-103	21-Mar-16	<i>Imperata</i>	<i>cylindrica</i> (L.) P. Beauv.
🔍	Kelly K. Douglas		Levy	2016-32	14-Jan-16	<i>Solanum</i>	<i>viarum</i> Dunal
🔍	Michael Bentley		Jefferson	2016-57	10-Feb-16	<i>Serenoa</i>	<i>repens</i> (Bartr.) Small
🔍	Roberto Delcid		Hendry	2016-58	10-Feb-16	<i>Dianella</i>	<i>ensifolia</i> (L.) DC.
🔍	Roberto Delcid		Hendry	2016-101	18-Mar-16	<i>Helianthemum</i>	<i>corymbosum</i> Michx.



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

JANUARY-MARCH

Samples submitted	1,273
Specimens Identified	1,709

YEAR TO DATE

Samples submitted	1,273
Specimens identified	1,709



1a - Stick bundle from China, sold as a pet chew toy
Photograph courtesy of Kyle E. Schnepf, DPI

1 Inspector Lisa Hassell found wood borer pupae in Chinese stick bundles being sold as pet rodent chew toys in a chain pet store (1a). These were identified as *Glaphyra* sp. (1b) and *Plagionotus* sp., long horned beetles. Neither genus occurs in Florida. *Glaphyra* does not occur in the Western Hemisphere. Further investigation by other inspectors around the state produced additional beetles, including *Amamicyltus* sp. (1c) and *Coccographis nigrorubra* Lesne, false powder post beetle (1d), neither of which occur in the Western Hemisphere.

Imported wooden products of any kind, especially those that are still covered with bark, may harbor invasive wood boring beetles. In the past, some products that have been found infested include pine cones in potpourri, bamboo stakes, shoe heels, wooden tools, artificial Christmas trees, small household decorations, sculptures, pallets, and shipping containers, products that now have regulations to prevent future invasions. From a regulatory perspective, the diversity of beetles in the pet store products illustrated a previously unrecognized avenue of introduction for wood boring insects. This is being investigated and measures are being taken to prevent future occurrences.

Scientifically, the collection of *Coccographis nigrorubra* was a significant find. This rare beetle had no known host or larval stage. The sticks were labeled as tea (*Camellia sinensis* (L.) Kuntze), but confirmation of this identification has yet to be made. The adult and larval specimens of the beetle have been preserved for future morphological description and molecular research. Samples have already been sent to international workers performing such research. Finding this beetle in its natural habitat is rare. Finding it in Florida and in a quantity to provide fresh specimens to colleagues for their studies is completely unexpected. (Dr. Paul E. Skelley.)



1b - *Glaphyra* sp. from pet chew sticks
Photograph courtesy of Paul E. Skelley, DPI



1c - *Amamicyltus* sp. from pet chew sticks
Photograph courtesy of Paul E. Skelley, DPI



1d - *Coccographis nigrorubra* from pet chew sticks
Photograph courtesy of Lyle J. Buss, University of Florida



***Glaphyra* sp. and *Plagionotus* sp.**

Duval County, E2016-40, Lisa M. Hassell, 6 January 2016

***Amamiclytus* sp.**

Pinellas County, E2016-361, Gabriela Bernard, 3 February 2016

Coccographis nigrorubra

Nassau County, E2016-264, Lisa M. Hassell, 27 January 2016

Manatee County, E2016-306, James E. 'Eddie' Anderson, 1 February 2016

Miami-Dade County, E2016-322, Haydee I. Escobar, 2 February 2016

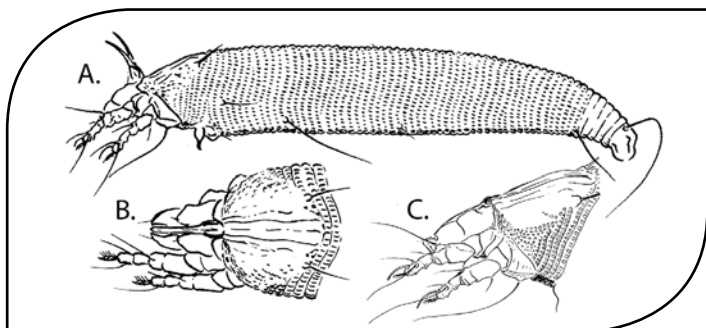
Polk County, E2016-335, Laura Ureta-Cooper & Susan C. Distelberg, 3 February 2016

2 *Asiothrix antidesmae* (formerly in genus *Aleurothrix*), a whitefly, a new Continental USA record. This species is known from Brazil, Puerto Rico, and Guadeloupe in the Western Hemisphere. It also is known from Southeast Asia and some Pacific islands. It is highly polyphagous. Its eventual pest status in Florida is not known, but it currently is a pest on *Ixora* where it occurs. Please see the FDACS/DPI Pest Alert for further details: http://www.FreshFromFlorida.com/content/download/65854/1570956/PEST_ALERT_Asiothrix_antidesmae_Whitefly_.pdf (Pinellas County; E2016-253; Zachary J. Lahey, Former UF Entomology student; 22 January 2016.) (Dr. Ian C. Stocks.)



2 - *Asiothrix antidesmae*, a whitefly
Photograph courtesy of Ian C. Stocks, DPI

3 *Aceria mori*, an eriophyid mite, a new State record. This mite lives on *Morus* spp. in the petiole bases and buds where feeding by heavy infestations can cause discoloration and premature leaf drop. It is widespread in Europe and has been reported from Egypt, India and Iran. In the United States, this species has been reported from California, Kansas, South Dakota and West Virginia but is probably widespread. (Miami-Dade County; E2015-6668; Olga Garcia; 10 December 2015.) (Dr. W. C. 'Cal' Welbourn.)



3 - *Aceria mori* (Keifer 1939). A. habitus; B. Prodorsum; C. Lateral anterior
Modified from Keifer, 1939

4 *Aleuropleurocelus granulata*, a whitefly, a new Florida State record. This species was collected first in Palm Beach County in 2008, and a second specimen collected recently in Pinellas County. Both populations were living on lantana (*Lantana camara* L.). This species was described from Mexico, but it is recorded in Texas, also on lantana. The status of the 2008 sample was emended to new Florida State Record after comparing the specimens and verifying the identification. (Palm Beach County; E2008-4251; Lane M. Smith; 26 June 2008.) (Dr. Ian C. Stocks.)

5 *Microcentrus caryae*, a treehopper, a new Florida State record. This is the first verifiable specimen of this species in Florida. It was collected at a mercury vapor light and later deposited at the FSCA. This species occurs in most of the Eastern United States, including Georgia and Alabama, so it is not an unexpected addition to the Florida membracid fauna. Although its hosts are *Carya* species (hickory), including *Carya illinoensis* (pecan), it has not been considered a pest anywhere it has been found. The only other species in this genus that occurs in Florida is *Microcentrus perditus* (Amyot & Serville 1843). It has been found in at least 12 counties throughout the state. It feeds on various *Quercus* species (oaks). (Jackson County; E2016-1107; Vince Golia, FSCA Research Associate; 7 September 2015.) (Mark J. Rothschild.)



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 in the body of this web page and another version with more complete data is downloadable as a [PDF](#) or an [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 auriculiformis</i>	earpod acacia; earleaf acacia	<i>Acizzia</i> sp.	earpod acacia psyllid	HOST
<i>Acacia baileyana</i>	cootamundra wattle	<i>Acizzia acaciaebaileyanae</i>	an acacia psyllid	REGULATORY INCIDENT
<i>Acacia baileyana</i>	cootamundra wattle	<i>Acizzia jucunda</i>	an acacia psyllid	REGULATORY INCIDENT
<i>Acacia baileyana</i>	cootamundra wattle	<i>Acizzia jucunda</i>	an acacia psyllid	REGULATORY INCIDENT
<i>Acacia farnesiana</i>	sweet acacia; aramo	<i>Heteropsylla flexuosa</i>	an acacia psyllid	COUNTY
<i>Albizia julibrissin</i>	mimosa	<i>Icerya purchasi</i>	cottony cushion scale	HOST
<i>Anubias barteri</i>	anubias	<i>Copidothrips octarticulatus</i>	a thrips	REGULATORY INCIDENT
<i>Apium graveolens</i>	celery	<i>Curculionidae</i>	a weevil	TRUCK INTERDICTION
<i>Bolbitis heteroclita</i>	Asian water fern, el niño fern	<i>Coccus moestus</i>	a soft scale	REGULATORY INCIDENT
<i>Brugmansia</i> sp.	angel's trumpet	<i>Hyalochloria unicolor</i>	a mirid bug	COUNTY
<i>Camellia sinensis</i>	tea	<i>Amamicyltus</i> sp.	a longhorn beetle	REGULATORY INCIDENT
<i>Camellia sinensis</i>	tea	<i>Coccographis nigrorubra</i>	a false powder post beetle	REGULATORY INCIDENT
<i>Camellia sinensis</i>	tea	<i>Coccographis nigrorubra</i>	a false powder post beetle	REGULATORY INCIDENT
<i>Camellia sinensis</i>	tea	<i>Coccographis nigrorubra</i>	a false powder post beetle	REGULATORY INCIDENT
<i>Ceiba</i> sp.		<i>Aleurodicus dugesii</i>	giant whitefly	HOST
<i>Citrus limon</i>	lemon	<i>Xystrologa grenadella</i>	a tineid moth	COUNTY
<i>Citrus sinensis</i>	sweet orange, navel orange	<i>Penniverpa festina</i>	a stiletto fly	COUNTY
<i>Coccoloba uvifera</i>	seagrape	<i>Brachycara</i> sp.	a soldier fly	COUNTY
<i>Colocasia esculenta</i>	dasheen; wild taro; taro	<i>Tarophagus colocasiae</i>	a taro planthopper	COUNTY
<i>Crataegus michauxii</i>	Michaux's hawthorn	<i>Aphis spiraeicola</i>	spirea aphid	HOST
<i>Crataegus michauxii</i>	Michaux's hawthorn	<i>Toxoptera aurantii</i>	black citrus aphid	HOST
<i>Crataegus</i> sp.	hawthorn, haw	<i>Ceroplastes ceriferus</i>	Indian wax scale	HOST
<i>Enterolobium contortisiliquum</i>	ear-pod tree, pacara	<i>Coccus longulus</i>	long brown scale	HOST
<i>Eriobotrya japonica</i>	loquat, Japanese plum	<i>Xystrologa grenadella</i>	a tineid moth	COUNTY
<i>Fraxinus pennsylvanica</i>	green ash; red ash	<i>Sirthena stria</i>	an assassin bug	COUNTY
<i>Ixora</i> sp.		<i>Asiothrix antidesmae</i>	a whitefly	US CONTINENTAL
<i>Lantana camara</i>	lantana; shrub verbena	<i>Aleuropleurocelus granulata</i>	a whitefly	STATE



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
<i>Lantana camara</i>	lantana; shrub verbena	<i>Aleuropleurocelus granulata</i>	a whitefly	COUNTY
<i>Lavandula</i> sp.		<i>Anstenoptilia marmarodactyla</i>	sage plume moth	REGULATORY INCIDENT
<i>Magnolia grandiflora</i>	southern magnolia	<i>Thalassa montezumae</i>	a ladybird beetle	COUNTY
<i>Melia azedarach</i>	chinaberry; pride-of-India	<i>Heteromeringia nitida</i>	a clusiid fly	COUNTY
<i>Morus alba</i>	white mulberry	<i>Aceria mori</i>	an eriophyid mite	STATE
<i>Olea europaea</i>	olive	<i>Palpita persimilis</i>	olive shootworm	COUNTY
<i>Persea americana</i>	avocado; alligator pear	<i>Abgrallaspis aguacatae</i>	an armored scale	TRUCK INTERDICTION
<i>Persea americana</i>	avocado; alligator pear	<i>Abgrallaspis aguacatae</i>	an armored scale	TRUCK INTERDICTION
<i>Persea americana</i>	avocado; alligator pear	<i>Acutaspis albopicta</i>	an armored scale	TRUCK INTERDICTION
<i>Persea americana</i>	avocado; alligator pear	<i>Clavaspis persea</i>	an armored scale	TRUCK INTERDICTION
<i>Persea palustris</i>	swamp bay	<i>Xyleborus glabratus</i>	redbay ambrosia beetle	COUNTY
<i>Phoenix dactylifera</i>	date palm	<i>Phoenicococcus marlatti</i>	red date scale	TRUCK INTERDICTION
<i>Protea cynaroides</i>	king protea	<i>Delottococcus confusus</i>	a mealybug	REGULATORY INCIDENT
<i>Protea cynaroides</i>	king protea	<i>Delottococcus confusus</i>	a mealybug	REGULATORY INCIDENT
<i>Protea</i> sp.		<i>Parlatoria oleae</i>	olive scale	REGULATORY INCIDENT
<i>Quercus</i> sp.	oak	<i>Choropleca terpsichorella</i>	dancing moth	COUNTY
<i>Quercus</i> sp.	oak	<i>Elaphria deltoides</i>	a midget moth	COUNTY
<i>Thunbergia alata</i>	blackeyed Susan vine	<i>Halticus brachtatus</i>	garden fleahopper	HOST
<i>Ulmus alata</i>	winged elm	<i>Aonidiella aurantii</i>	California red scale	HOST
<i>Ulmus alata</i>	winged elm	<i>Tinocallis ulmifolii</i>	elm leaf aphid	COUNTY
<i>Ulmus parvifolia</i>	Chinese elm	<i>Tinocallis ulmiparvifoliae</i>	Chinese elm aphid	COUNTY
		<i>Anatrachyntis simplex</i>	false pink bollworm	COUNTY
		<i>Dilasia fuscus</i>	a minute pirate bug	COUNTY
		<i>Euwallacea interjectus</i>	a scolytid beetle	COUNTY
		<i>Forcipomyia navaiae</i>	a biting midge	COUNTY
		<i>Glaphyra</i> sp.	a longhorn beetle	REGULATORY INCIDENT
		<i>Helix aspersa</i>	brown garden snail	REGULATORY INCIDENT
		<i>Helix aspersa</i>	brown garden snail	REGULATORY INCIDENT
		<i>Helix aspersa</i>	brown garden snail	REGULATORY INCIDENT
		<i>Lyctus opaculus</i>	a powder post beetle	REGULATORY INCIDENT
		<i>Mastigimas ernstii</i>	cedrela psyllid	INTERESTING FIND



PLANT NAME	PLANT COMMON NAME	ARTHROPOD	ARTHROPOD COMMON NAME	RECORD
		<i>Microcentrus caryae</i>	a treehopper	STATE
		<i>Plagionotus</i> sp.	a longhorn beetle	REGULATORY INCIDENT
		<i>Pseudococcidae</i>	a mealybug	REGULATORY INCIDENT
		<i>Rhizoecus</i> sp.	a root mealybug	REGULATORY INCIDENT
		<i>Stilobezzia sybleae</i>	predaceous midge	COUNTY
		<i>Toxomerus floralis</i>	a flower fly	COUNTY
		<i>Xyleborinus artestriatus</i>	a scolytid beetle	COUNTY
		<i>Xyleborus glabratus</i>	redbay ambrosia beetle	COUNTY
		<i>Xystrologa grenadella</i>	a tineid moth	COUNTY



NEMATOTOLOGY

Compiled by Janete A. Brito, Ph.D. and Taylor Smith, B.S.



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	YEAR TO DATE
Morphological identifications	2,664	2,664
Molecular identifications	1,515	1,515
Total samples submitted	4,179	4,179

1 *Meloidogyne enterolobii* Yang and Eisenback, 1983, was detected in roots of a mulberry, *Morus* sp. (Orange County, N15-00296, George Warden, 1 March 2016).

Meloidogyne enterolobii Yang and Eisenback, 1983(=*Meloidogyne mayaguensis*) was originally described from roots of pacara earpod (*Enterolobium contortisiliquum*) collected in Hainan Island, China. In the United States, it has been reported only in Florida and South Carolina. In Florida, this nematode species was first found in 2002 infecting unidentified ornamental plants, and since then, it has been found infecting several ornamentals grown in nurseries and greenhouses, vegetable crops and weeds, as well as guava, a fruit tree which is one of the major plant hosts of this nematode species. In South America, the Caribbean Islands, Cuba, and Africa, this nematode has been reported as a pathogen of many crops including coffee, papaya and guava. In 2016, it was reported in China infecting another fruit, banana. Recently, a root sample showing symptoms of root-knot nematode infection was collected from a mulberry tree, *Morus* sp., growing in a 15-gallon pot in an ornamental nursery in Orange County, Florida, and sent to the nematology laboratory at the Division of Plant Industry. The root system was severely galled, with secondary and tertiary roots showing bead-shaped galls. Species identification was performed using DNA extracted from single individual female, and PCR was performed on a region in the mitochondrial DNA (mtDNA) gene between COII and 16S using primers C₂F₃ (5'-GGTCAATGTTTCAGAAATTTGTGG-3') and 1108 (5'-TACCTTTGACCAATCAGCT-3'). The PCR product, an amplicon of approximately 700 bp, was identical to that previously reported for *Meloidogyne enterolobii*, which is known as a highly virulent soilborne pathogen that should be avoided and certainly not introduced into nurseries or new orchards.



1 - *Meloidogyne enterolobii* infecting roots of *Morus* sp. (mulberry). Note the bead-shaped galls, a typical symptom induced by this nematode species. Photography courtesy of Janete A. Brito and Jeffrey W. Lotz, DPI



COLLECTORS

Collectors submitting five or more samples that were processed for nematological analysis from January through March 2016.

	COLLECTOR NAME	SAMPLES PROCESSED
	Bentley, Michael A.	9
	Blaney, Richard L.	17
	Bupp, Glen R.	12
	Burgos, Frank A.	245
	Clanton, Keith B.	173
	Douglas, Kelly K.	20
	Echols, M. Janie	10
	Flores, Mary A.	10
	Hassell, Lisa M.	7
	LeBoutillier, Karen W.	174
	Ochoa, Ana L.	99
	Smith, Larry W.	11
	Spriggs, Charles L.	135
	Strange, Lisa S.	103
	Terrell, Mark R.	9
	Violett, Larry L.	186

CERTIFICATION AND REGULATORY SAMPLES

	JANUARY - MARCH	YEAR TO DATE
Multistate certification for national and international export	1,879	1,879
California certification	314	314
Pre-movement (citrus nursery certification)	64	64
Site or pit approval (citrus nursery and other certifications)	35	35

OTHER SAMPLES

	JANUARY - MARCH	YEAR TO DATE
Identifications (Invertebrate)	1	1
Plant Problems	46	46
Random Intrastate Surveys	325	325

REFERENCES

Brito, J.A., T.O. Powers, P.G. Mullin, R.N. Inserra, and D.W. Dickson. 2004. Morphological and molecular characterization of *Meloidogyne mayaguensis* isolates from Florida. *Journal of Nematology* 36:232-240.

Brito, J.A., J.D. Stanley, R. Cetintas, T.O. Powers, R.N. Inserra, E.J. McAvoy, M.L. Mendes, W.T. Crow, and D.W. Dickson. 2004. Identification and host preference of *Meloidogyne mayaguensis*, and other root-knot nematodes from Florida, and their susceptibility to *Pasteuria penetrans*. *Journal of Nematology* 36:308-309.

Blok, V.C., J. Wishart, M. Fargette, K. Berthier, and M.S. Phillips. 2002. Mitochondrial DNA differences distinguishing *Meloidogyne mayaguensis* from the major species of tropical root-knot nematodes. *Nematology* 4:773-781.

Siqueira, K.M.S., V.M. Freitas, M.R.A. Almeida, M.F.A. Santos, J.A. Cares, M.S. Tigano, and R.M.D.G. Carneiro. 2009. Detecção de *Meloidogyne mayaguensis* em goiabeira e mamoeiro no estado de Goiás, usando marcadores moleculares. *Tropical Plant Pathology* 34:256-260.

Yang, B. and J.D. Eisenback. 1983. *Meloidogyne enterolobii* n. sp. (Meloidogynidae), a root-knot nematode parasitising pacara earpod tree in China. *Journal of Nematology* 15:381-391.

Zhou, X., X. Cheng, S. Xiao, G.K. Liu, and S S. Zhang. 2016. First report of *Meloidogyne enterolobii* on banana in China. *Plant Disease* 100:863.

IDENTIFICATIONS

	JANUARY - MARCH	YEAR TO DATE
Morphological identifications	4,236	4,236
Molecular identifications*	1,515	1,515

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





PLANT PATHOLOGY

Compiled by Jodi Hansen, M.S., Regina Cahoe, 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	30	30
Citrus canker	51	51
Citrus greening / HLB	58	58
Honeybees	4	4
Interdictions	12	12
Laurel wilt	17	17
Pathology, general	443	443
Soil	0	0
Sudden oak death	0	0
Sweet orange scab-like disease	7	7
Texas phoenix palm decline	1	1
Water	0	0
Miscellaneous	6	6
Total	629	629

1 *Phakopsora phyllanthi*, a rust fungus that infected *Phyllanthus acidus* (Tahitian gooseberry), was found for the first time in the continental U.S during February of this year. Symptoms of gooseberry rust consist of necrotic yellow leaf spots on upper and lower leaf surfaces (1a). Within the leaf lesions are erumpent, powdery, white to brownish colored pustules (1b). Leaf drop occurs following heavy infection resulting in barren branches and thinning of the tree canopy. More information is available from the recent *Phyllanthus* rust Pest Alert. http://www.freshfromflorida.com/content/download/66960/1605398/Pest_Alert_-_Phyllanthus_Rust.pdf



1a - Chlorotic and necrotic spots on leaf surface of *Phyllanthus acidus* caused by *Phakopsora phyllanthi*.
Photograph courtesy of Jeffrey W. Lotz, DPI



1b - Erumpent, powdery, white to brownish colored pustules on leaf.
Photograph courtesy of Jeffrey W. Lotz, DPI



🔍 PLANT PATHOLOGY IDENTIFICATION TABLE

Following are table provides information about samples identified in the current volume's time. 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>Phoenix sylvestris</i>	Wild date palm	<i>Phytoplasma</i>	Texas Phoenix palm decline	Nursery	87224	Lake	Holly A. Alred		Texas Phoenix palm decline is a disease of palms that is caused by a phytoplasma. The earliest symptom is a discoloration of the lower leaves of the palms. Discoloration begins at the tips of the leaflets. Reproductive parts of the plant die, followed by dropping of fruits and flowers. The disease is thought to be transmitted by an insect vector, probably a planthopper.
<i>Celtis orientalis</i>	Celtis	<i>Septoria</i> sp.	Leaf spot	Interdiction station	87323	Nassau	Ritchilda V. Traya		<i>Septoria</i> sp. manifests as small water spots. As the spots mature, they have brown edges and lighter tan centers that develop small black fruiting bodies. Many fungi cause leaf spots on leaves of <i>Celtis</i> spp. during rainy seasons.
<i>Carya illinoensis</i>	Pecan	<i>Cylindrocladiella</i> sp.	Nut rot	Nursery	87344	Alachua	Homeowner	Host	<i>Cylindrocladiella</i> spp. are soil-borne fungi and are pathogens of various plant hosts in temperate, sub-tropical and tropical regions worldwide. They are associated with a variety of disease symptoms that include leaf spots and root rots.
<i>Daucus carota</i>	Carrot	<i>Alternaria dauci</i>	Leaf spot	Farm	87347	Hamilton	Eric G. Leveen DPI/CAPS, Robert M. Leahy USDA/CAPS		<i>Alternaria dauci</i> overwinters in crop refuse and may be seedborne. <i>A. dauci</i> also can affect parsley. Older leaves are more susceptible than younger leaves. Seedlings can develop a damping-off symptom from early infections. Lesions generally appear along leaf margins and are dark brown to black with a yellow border.



PLANT SPECIES	COMMON NAME	CASUAL AGENT	DISEASE NAME	LOCATION TYPE	SPECIMEN NUMBER	COUNTY	COLLECTOR	NEW RECORDS	NOTES
<i>Phyllanthus acidus</i>	Tahitian gooseberry	<i>Phakopsora phyllanthi</i>	Rust	Residence	87424	Pinellas	Homeowner	Continental	On August 18, 2015, Tahitian gooseberry seedlings from Haleiwa, Oahu, were intercepted at the USDA-APHIS-PPQ Plant Inspection Station (PIS) in Honolulu. The rust was identified by the USDA-APHIS-PPQ National Identification Services (NIS) as <i>Phakopsora phyllanthi</i> . This was the first record for this species in the United States. The first Continental USA record was found in Florida six months later.
<i>Buxus</i> sp.	Boxwood	<i>Cylindrocladium pseudonaviculatum</i>	Boxwood blight	Residence	87442	Leon	Homeowner		This sample was from an interception of boxwood topiaries to be used in a Leon County landscape. The disease has been eradicated.
<i>Buxus</i> sp.	Boxwood	<i>Cylindrocladium pseudonaviculatum</i>	Boxwood blight	Nursery	87508	Leon	Michael A. Bentley		This sample was from an interception of boxwood intended for sale at a retail garden center in Leon County. The disease has been eradicated.
<i>Persea palustris</i>	Swamp bay	<i>Raffaelea lauricola</i>	Laurel wilt	Ranch	87599	Gulf	Larry W. Smith	County	<i>Raffaelea lauricola</i> is a deadly disease of redbay and other tree species in the Laurel family. It is introduced into host trees by a nonnative insect, the redbay ambrosia beetle (<i>Xyleborus glabratus</i>).





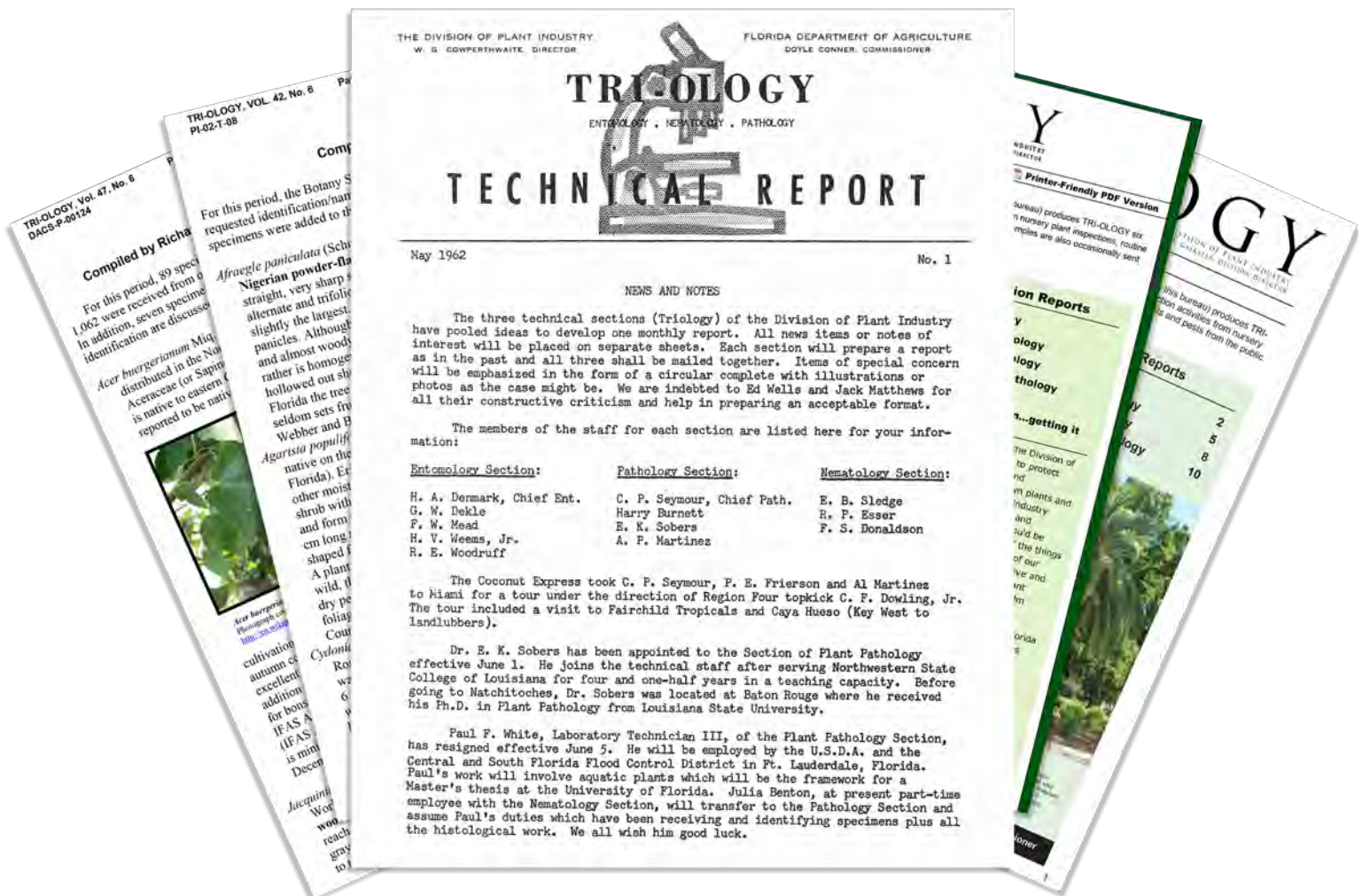
FROM THE EDITOR

By Patti J. Anderson, Ph.D.

TRI-LOGY: changing with the times ... again

Since 1962, TRI-LOGY has been the technical report of what is now the Bureau of Entomology, Nematology and Plant Pathology (ENPP). Although it is currently an on-line publication, the report began as a typed document, produced every two months, primarily for use within the Division. Eventually, TRI-LOGY had a mailing list of over 800 and reached well-beyond Florida's borders. TRI-LOGY reports are now prepared four times a year, covering three months of activity. Each section within ENPP provides information about new hosts and first finds within a county, the state, the country and larger areas, including the hemisphere.

Through over 50 years of pest detection, TRI-LOGY has reported detection activities from plant nursery inspections and requests for identification of plants and pests from the public. Issues of TRI-LOGY since 2003 are available on the DPI website. <http://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Plant-Industry-Publications/Tri-ology-FDACS-DPI>





TRI-LOGY

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Florida Department of Agriculture and Consumer Services
Division of Plant Industry
1911 SW 34th St.
Gainesville, FL 32608-1201