CISMA
Everglades Cooperative Invasive Species Management Area

Giant African Land Snail Eradication Program in Miami-Dade County




EVERGLADES CISMA

CISMA
Everglades Cooperative Invasive Species Management Area

Giant African Land Snail

EVERGLADES CISMA

Giant African Land Snail

History




EVERGLADES CISMA

Around the World

- 1800's Started the migration from East Africa
- Mid 1930's Hawaii
- Late 1940's first detections in United States
- 1958 Arizona
- 1966 North Miami
- 2004 U.S. pets stores and schools
- 2011 Miami

In Florida

- 3 GALS specimens were discovered in 1966 in a residential neighborhood in NW Miami
- They were released by the grandmother of a young child who brought them from Hawaii as pets

In Florida

- After 7 years of control actions (included use of arsenic-based metaldehyde products, now banned by the EPA), more than 18,000 GALS were collected
- The eradication effort spanned the length of 10 years at a cost of $1 million dollars (1960's)

Giant African Land Snail

Biology




EVERGLADES CISMA

Biology

***Achatina fulica* Bowdich**

Biology

- GALS is major plant pest that consumes more than 500 variety of plants.
- GALS can harbor the rat lungworm nematode, which can cause a rare form of meningitis in humans and animals.

Biology

- GALS can grow up to 8 inches in length.
- Adult GALS typically lay up to 1,200 eggs annually
- There is no known natural predator in Florida for GALS

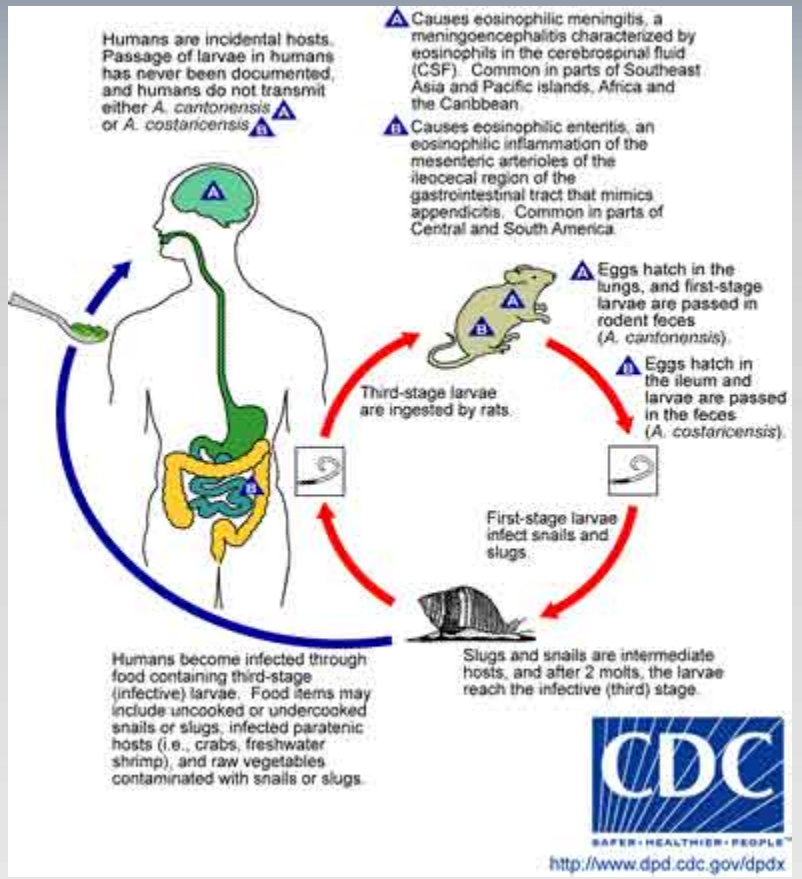
Biology

- In lab tests, self-fertilization of GALS eggs was possible when optimal mating conditions were not present .
- In lab tests, specimens (neonates) can survive up to 97 days without food.

Biology

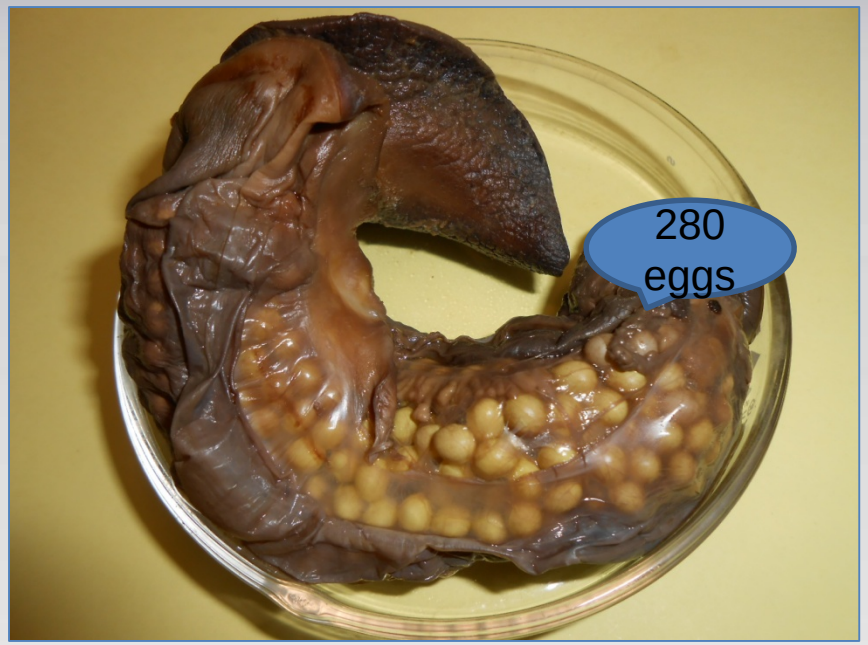
- GALS are known carriers of Angiostrongylus Cantonensis (Rat Lung Worm), which can produce a rare form of eosinophilic meningitis, for which there is no known cure.

- Rat Lung Worm has been detected in almost all the core areas infested with GALS.



Biology

Substantial Reproductive Abilities



Biology

Metaldehyde Treatment effects on GALS

- After consuming the bait, snails cease feeding, become less mobile and begin to die within three to six days.

- Dehydration

- No slime trails visible since snails crawl away and hide to die

Giant African Land Snail

Program Overview

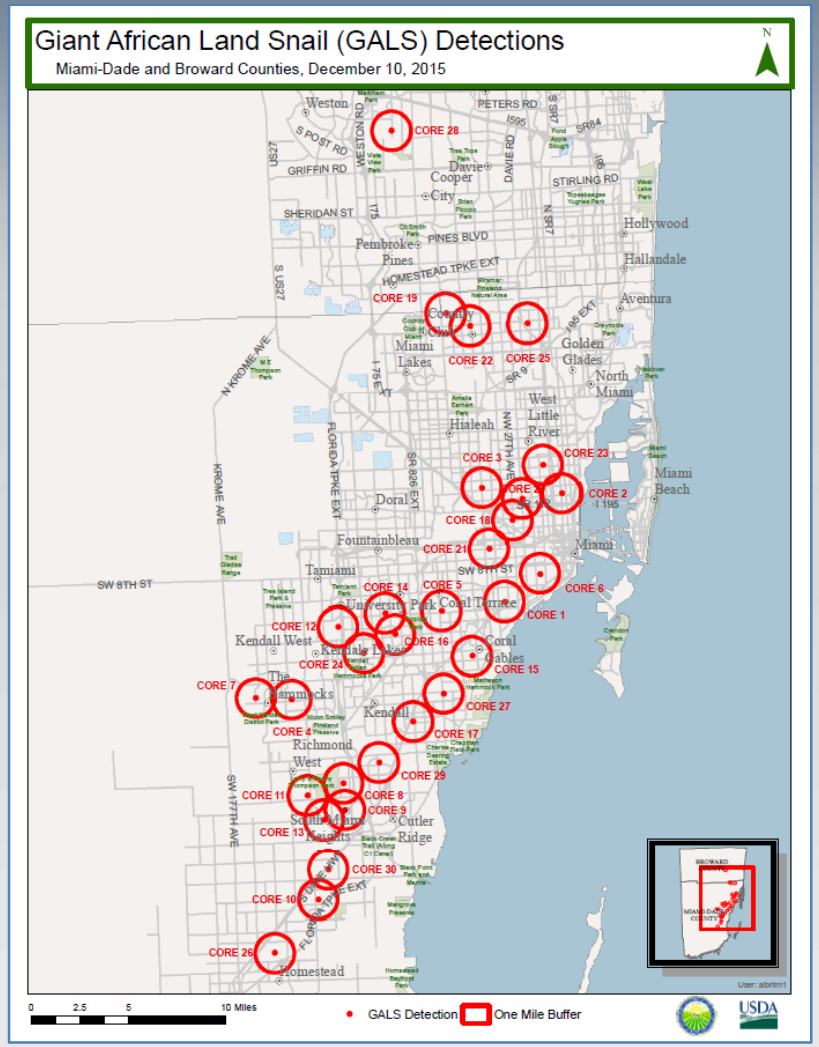



EVERGLADES CISMA

Program Overview

- 29 Cores in Miami-Dade County
- 1 Core in Broward County
- First find on September 9, 2011
- Since the inception of the Program we've conducted:
  - 163, 178 inspections
  - 85,061 treatments
  - collected 161,960 GALS specimens.

Program Overview



EVERGLADES CISMA

Program Overview

- There are currently 13 two-man crews assigned to survey and control the Core areas.

- A contractor provides debris removal service on properties with large amounts of plant material.

Giant African Land Snail

Outreach




EVERGLADES CISMA

Outreach

Talking Points

Human Health

- Rat Lung Worm
- Meningitis

Agriculture

- 500 Crops
- Economic damage
- Reproduction rate

Outreach

How did they get here?

- Hitchhiking
- Smuggling
- Religious connection
- Pets

Outreach

What We Are Doing

- Using Metaldehyde-based products
- Mechanical Collection
- Inspecting Landfills and Transfer Stations
- Regulating Landscapers, Lawn Maintenance and Botanicas
- Public Outreach

How You Can Help

- Follow recommendation from the local Agriculture Extension Office
- Don’t move potted plant material
- Call if you suspect you have GALS
- Spread the word

Giant African Land Snail

Detection & Methodology




EVERGLADES CISMA

Detection Methodology

- Crews are assigned grid areas within a Core, where they conduct visual surveys and control action on positive and negative properties.

- Crews conduct surveys of all properties within 200 yards of a positive find.

EVERGLADES CISMA

Detection & Methodology

- Survey crews may use a number of garden tools to agitate the soil as well as remove debris that may harbor GALS.
- Debris collected at a property is double-bagged and disposed of in an approved landfill site.

Detection & Methodology

- Specially trained detector dogs are being used to assist in finding GALS where human limitations exist, providing an additional tool in the eradication effort.

- The program has hired 2 permanent dog handlers, which will soon begin assisting crews in their survey efforts.

Giant African Land Snail

Control




EVERGLADES CISMA

Control

- Crews employ a number of approved control methods:
  - Mechanical (hand collection)
  - Pesticides
    - Granular
    - Liquid
- All field crews wear appropriate Personal Protective Equipment (PPE) throughout the control process.

Control

- All GALS collected are double-bagged in clear plastic specimen bags for lab identification.
- Crews operate under strict custody guidelines to ensure all collected specimens are accounted for.

Control

GALS specimens collected in the field are euthanized and cataloged in the GALS lab

Control

- In addition to mechanical collection, the program employs metaldehyde-based pesticide products in varying concentrations, available in granular and liquid form. These are applied to positive and negative properties within a Core area.

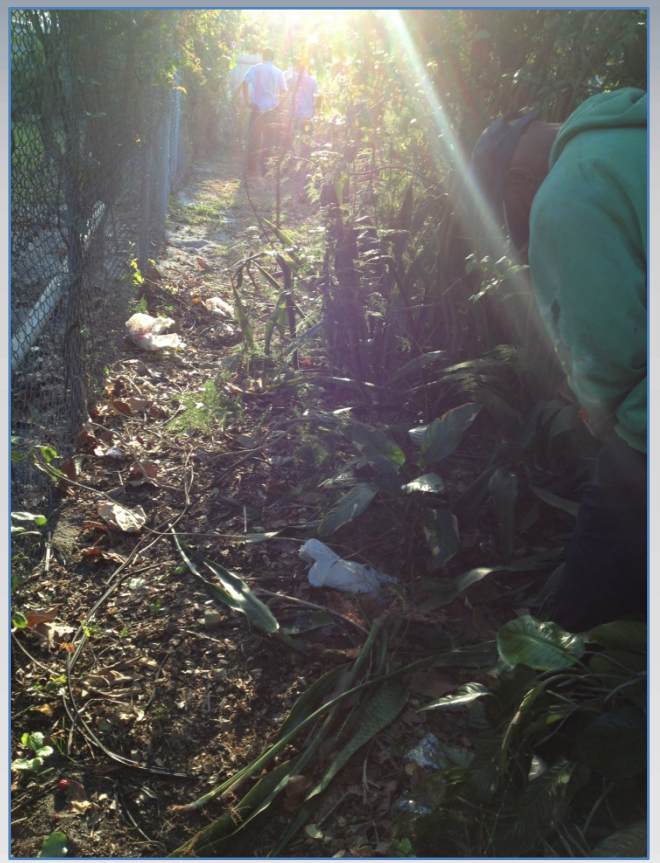
Control

Liquid metaldehyde application

Granular metaldehyde application

Control

- Debris Removal Team removes any debris (plant material or otherwise) that may interfere with the bait reaching the soil.
- Work is contracted to a lawn & landscape company under the supervision of a GALS crew leader.



Control

BEFORE

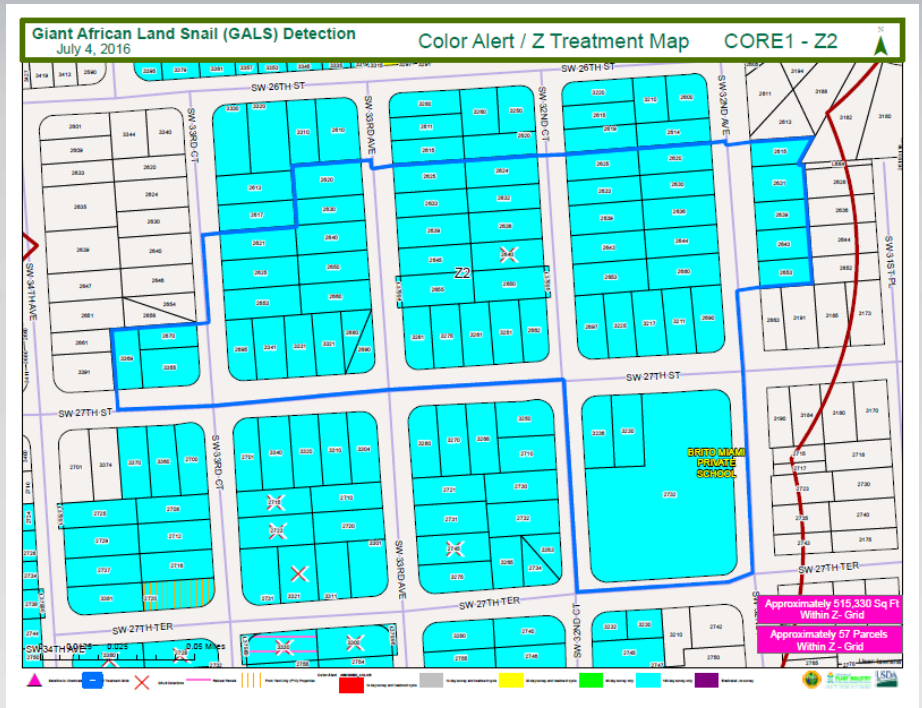
AFTER

Control

- All relevant data collected on controlled properties are entered into an Oracle-based database, that provides statistical records and maintains track of the declining snail populations in each Core area.

Decommission

- 2-years no live snail
- 1 year no treatment
- 26 treatments
- 31 Surveys



EVERGLADES CISMA

CISMA
Everglades Cooperative Invasive Species Management Area

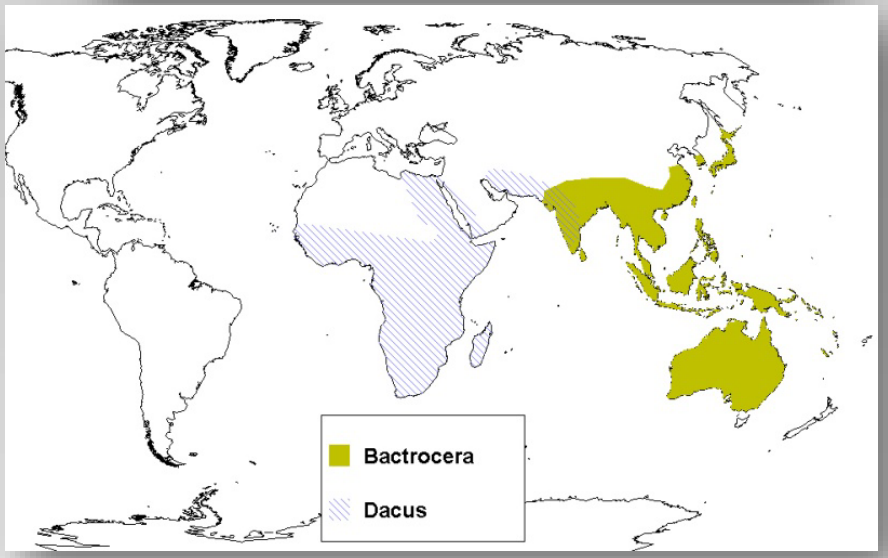
Oriental Fruit Fly Eradication Program in Miami-Dade County




EVERGLADES CISMA

Oriental Fruit Fly

- Native to southeast Asia
- Introduced into Hawaii 1945
- First found in California in 1960 - detected in California every year since 1966
- First found in Florida in 1964 - appearances in 13 different years



OFF Previous Florida Detections

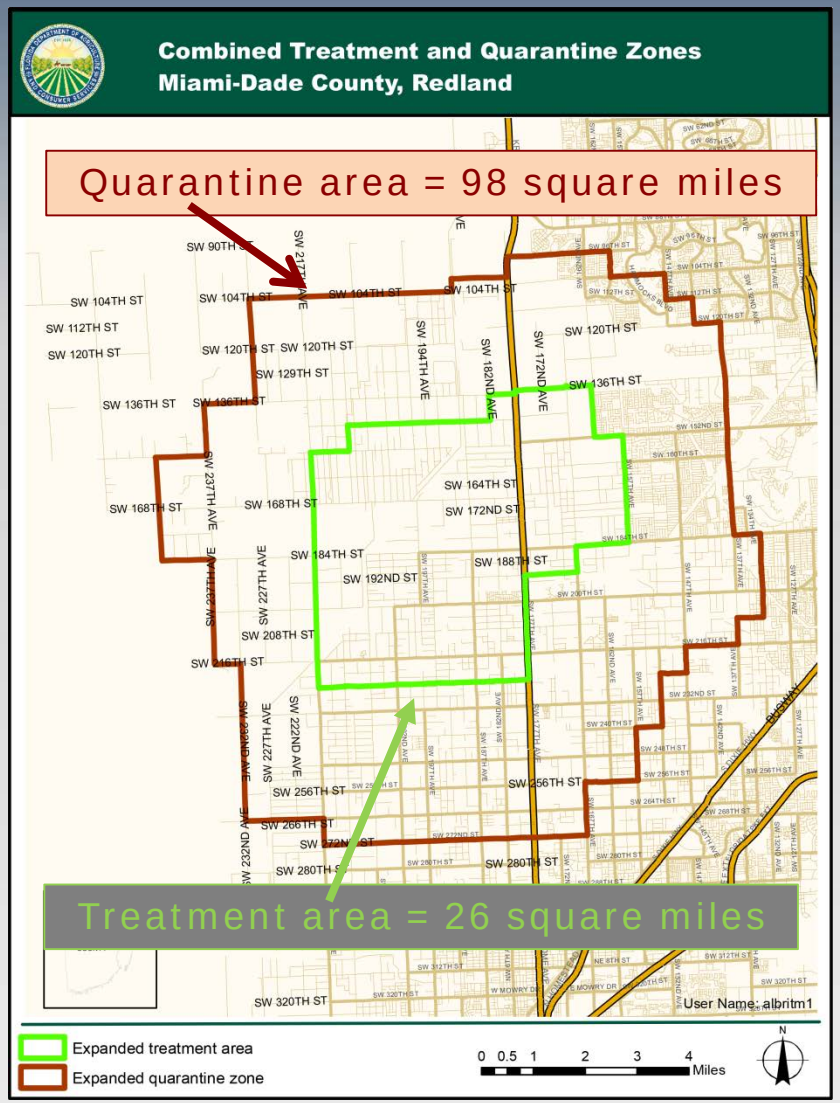
- 1964: Pinellas – **1 fly**
  2-month trapping
  1969: Miami – **1 fly** – $25K
  2-month trapping
- 1994: Broward – **1 fly** -$100k
  3-month trapping
- 1995: Pinellas – **3 flies** - $530k
  3-month **eradication program**
- 1999: Hillsborough – 16 flies - $100k
  3-month **eradication program**
- 1999: Volusia – **1 fly**
  3-month trapping
- 1999: Brevard – **2 flies**
  3-month trapping
- 2000: Manatee – **1 fly**
  3-month trapping
- 2001: Orange – **1 fly**
  3-month trapping
- 2001: Sarasota – **2 flies** - $100K
  3-month **eradication program**
- 2002: Orange – **2 flies**
  3-month trapping
- 2002: Broward – **1 fly**
  3-month trapping
- 2007: Hillsborough – **1 fly**
  3-month trapping
- 2007: Orange – **1 fly**
  3-month trapping
- 2007: Orange – **1 fly**
  3-month trapping
- 2008: Orange – **2 flies**
  3-month trapping
- 2010: Pinellas – **2 flies**
  3-month trapping
- 2014: Broward – **1 fly**
  3-month trapping
- **2015: Miami – 165 flies - $$$**
  Eradication program – 5 months

2015 2nd Find: Redland Program Area

- August 26, 2015, a male Oriental fruit fly was detected in a trap in the Redland area of Miami, Dade County
- On August 27th, after placing additional traps in the immediate area, **45 males were found in a trap** – an unprecedented amount of flies in one trap
- **Eradication program immediately mobilized**

Redland Eradication Program

- Number of flies found, triggered eradication program (165 as of 11/10/15)
- Broad host range with 430 confirmed hosts
- Area of impact is **predominantly agricultural lands**
- Crops impacted include:
  - Avocado, beans, mango, mamey, banana, guava, papaya, green beans, nursery plants
- Estimated **2,000 businesses impacted**
  - Growers, nurseries/stock dealers, fruit stands, lawn maintenance, packing houses, harvesters



EVERGLADES CISMA

Trapping

- **Methyl Eugenal traps**
  - **604 traps** checked daily until 0 flies are found seven days in a row. Then traps will be checked weekly.
- **McPhail traps**
  - **245 traps** checked every 3 days

Methyl eugenol trap
Attracts male flies

McPhail trap
Attracts female flies

Oriental Fruit Fly Life Cycle

Eggs: 1-3 days

Adult pre-reproductive period:8+ days

Life span: many months

Larvae: 9-16 days

Pupae: 10-12 days

Control

Male Annihilation Technique (MAT)

- Adult fly control with male lure bait
- Applied every two weeks to utility poles, tree trunks and other structures out of reach of people and pets
- Product applied is Dibrom (naled), an organophosphate insecticide used to control a number of insect pests including fruit flies and mosquitoes
- **44,500 bait stations have**

EVERGLADES CISMA

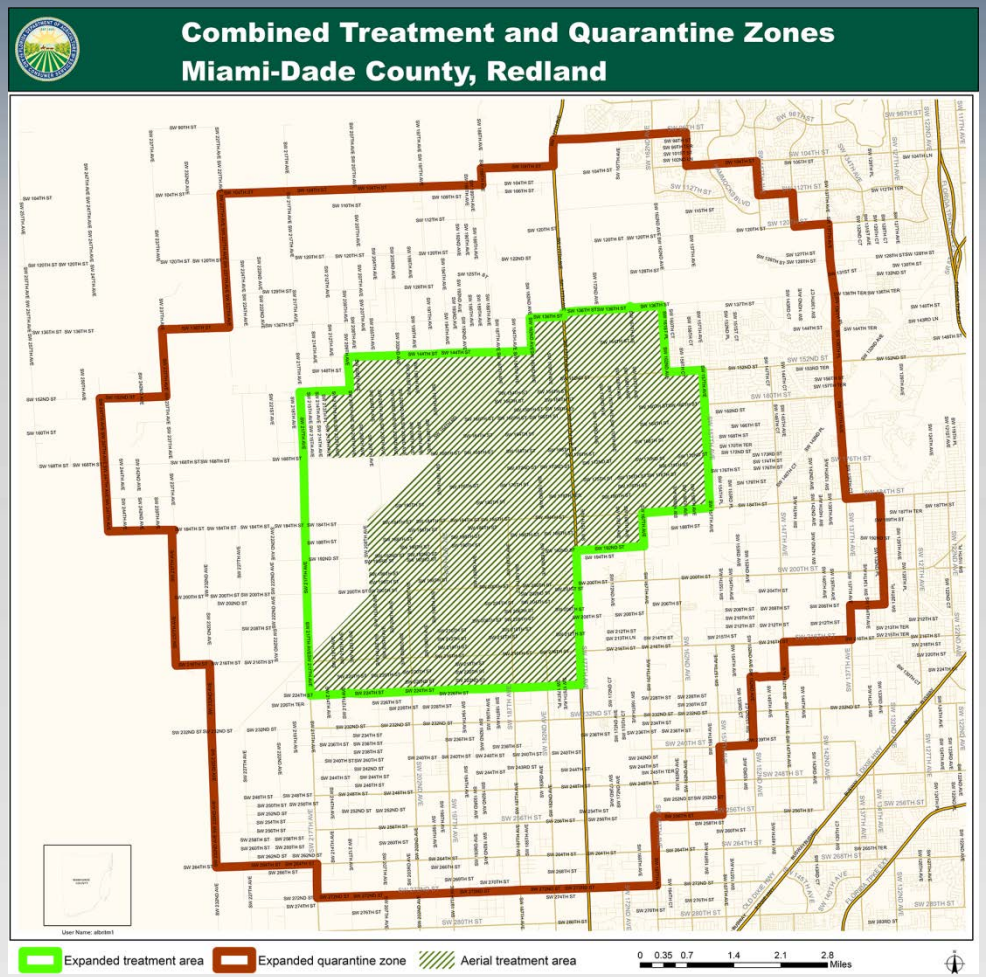
Control

- **Foliar Spot Treatment**
  - Trees/plants around positive finds are spot treated with Spinosad, an insecticide derived from a naturally-occurring soil organism, commonly used by organic growers

- **Larval Finds**
  - Fruit Stripping - fruit from host trees within a 200-meter area around larval find properties is removed so flies have no host material to lay eggs (215,070 pounds of fruit removed as of 10/31/15)
  - Soil Drenching – soil under host trees known or suspected to be infested with *Bactrocera* larvae, pupae or a mated female is treated

Control

- **Aerial Treatment**
  - Conducted the nights of October 2nd and 3rd
  - Covered approximately 16 square miles
  - Extensive outreach conducted (community used to aerial spraying for mosquitoes and agricultural practices)
  - Helpline operational through weekend
  - Population of area predominately agricultural
  - Growers strongly requested aerial spraying
  - Product used was Spinosad, or GF-120 – approved for use on organic crops posing no hazard to people, pets, livestock, fish or pets



OFF Outreach

Commissioner Putnam with Miami-Dade County Mayor Carlos Gimenez attend a joint press conference on OFF eradication efforts

OFF Outreach

Meetings and Tours with Industry and Elected Officials

EVERGLADES CISMA

OFF Outreach

Road Signs indicating Fruit fly impact zones

Fruit Fly Impact Area

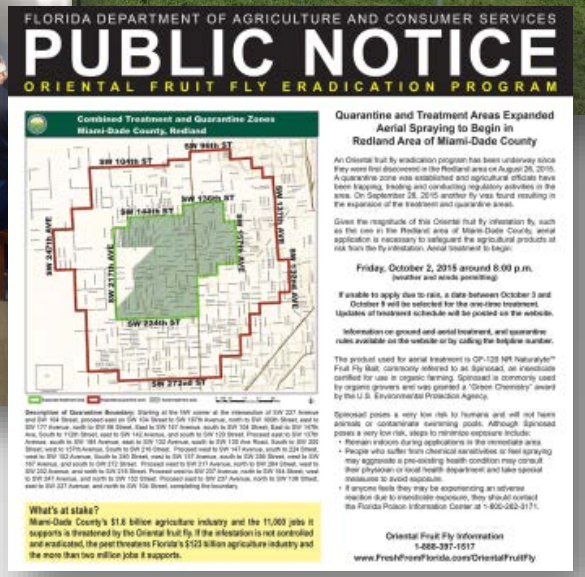
Do Not Move Fruit

No Mueva Frutas

12 signs positioned in key locations

OFF Outreach

- Helpline
- Newspaper Advertisements
- Grower Meetings
- Information Booth
- Industry Updates
- Website
- Multi-lingual materials


FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES

PUBLIC NOTICE

ORIENTAL FRUIT FLY ERADICATION PROGRAM

Combined Treatment and Quarantine Zones
Miami-Dade County, Redland

Quarantine and Treatment Areas Expanded
Aerial Spraying to Begin in
Redland Area of Miami-Dade County

Friday, October 2, 2015 around 8:00 p.m.
(weather and winds permitting)

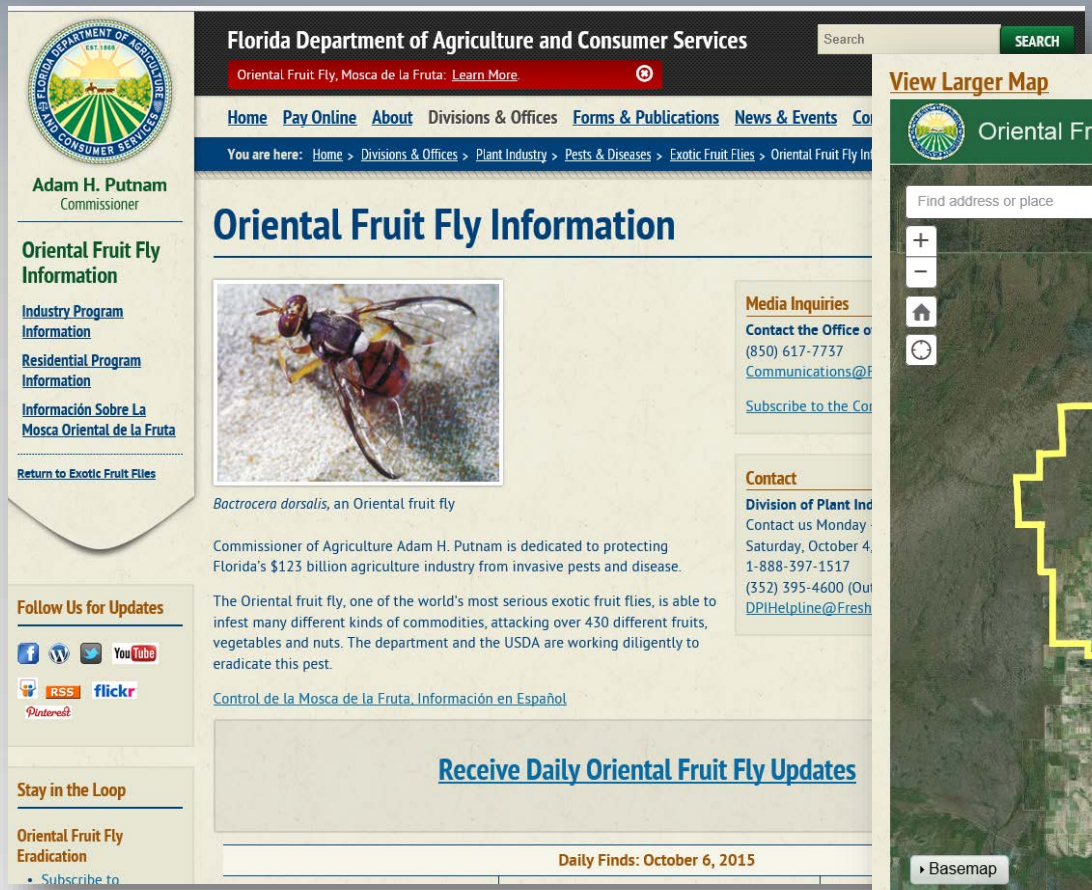
What's at stake?
Miami-Dade County's $1.6 billion agriculture industry and the 11,000 jobs it supports is threatened by the Oriental fruit fly. If the infestation is not controlled and eradicated, the pest threatens Florida's $103 billion agriculture industry and the more than two million jobs it supports.

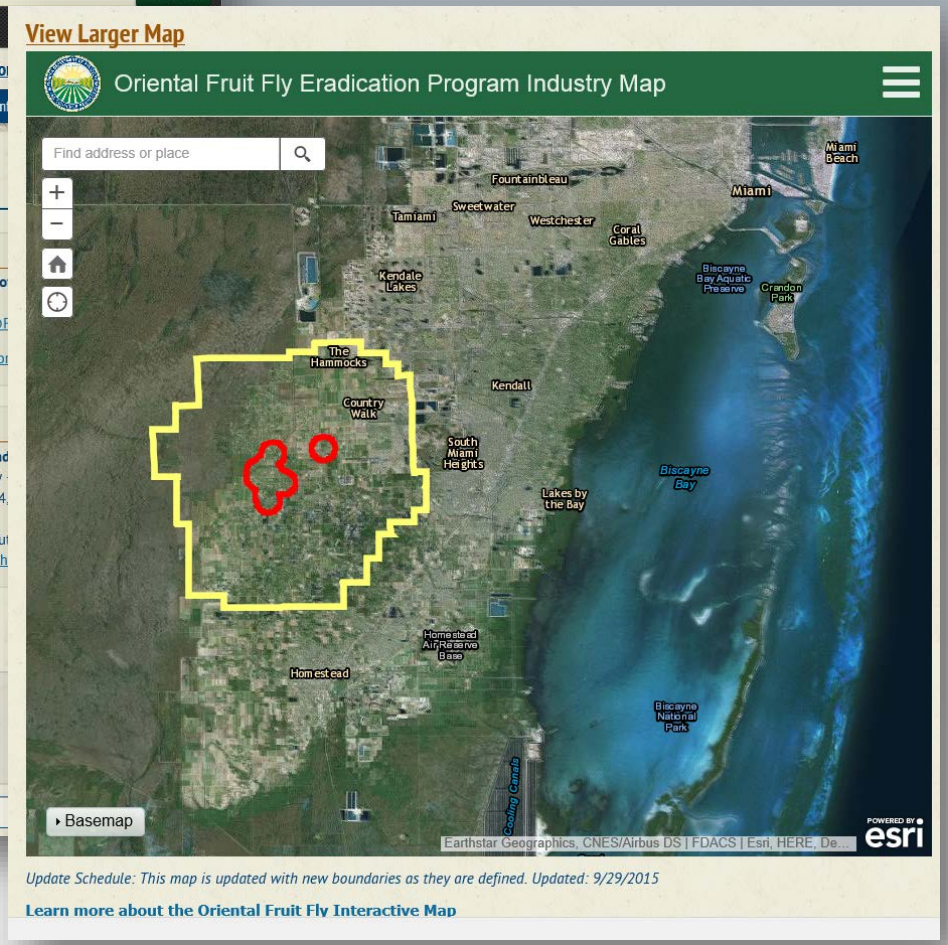
Oriental Fruit Fly Information
1-888-397-1517
www.FreshFromFlorida.com/OrientalFruitFly

EVERGLADES CISMA

OFF Outreach

Website/Interactive Map





Am I inside the quarantine area?

EVERGLADES CISMA

Oriental Fruit Fly

For More Information Contact:

Denise Feiber, Public Information Director
Division Of Plant Industry
Gainesville, Fl 32608
Ph: (352) 395-4700

or

Mark Fagan, Public Information Specialist
Miami, Florida
954-410-4119