

# *Bromeliads, backyards, and mosquitoes*

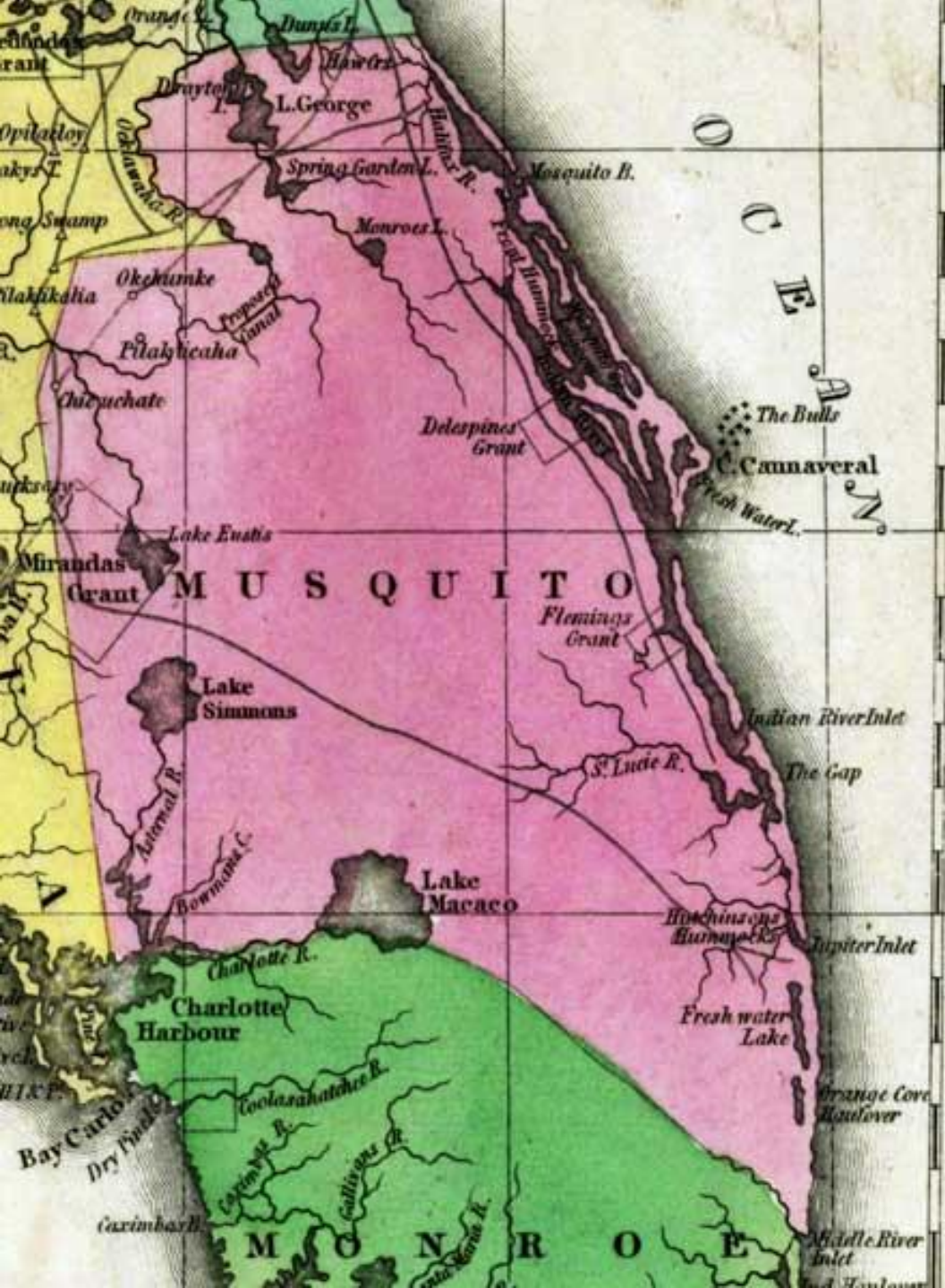
Roxanne Connelly, PhD

Professor

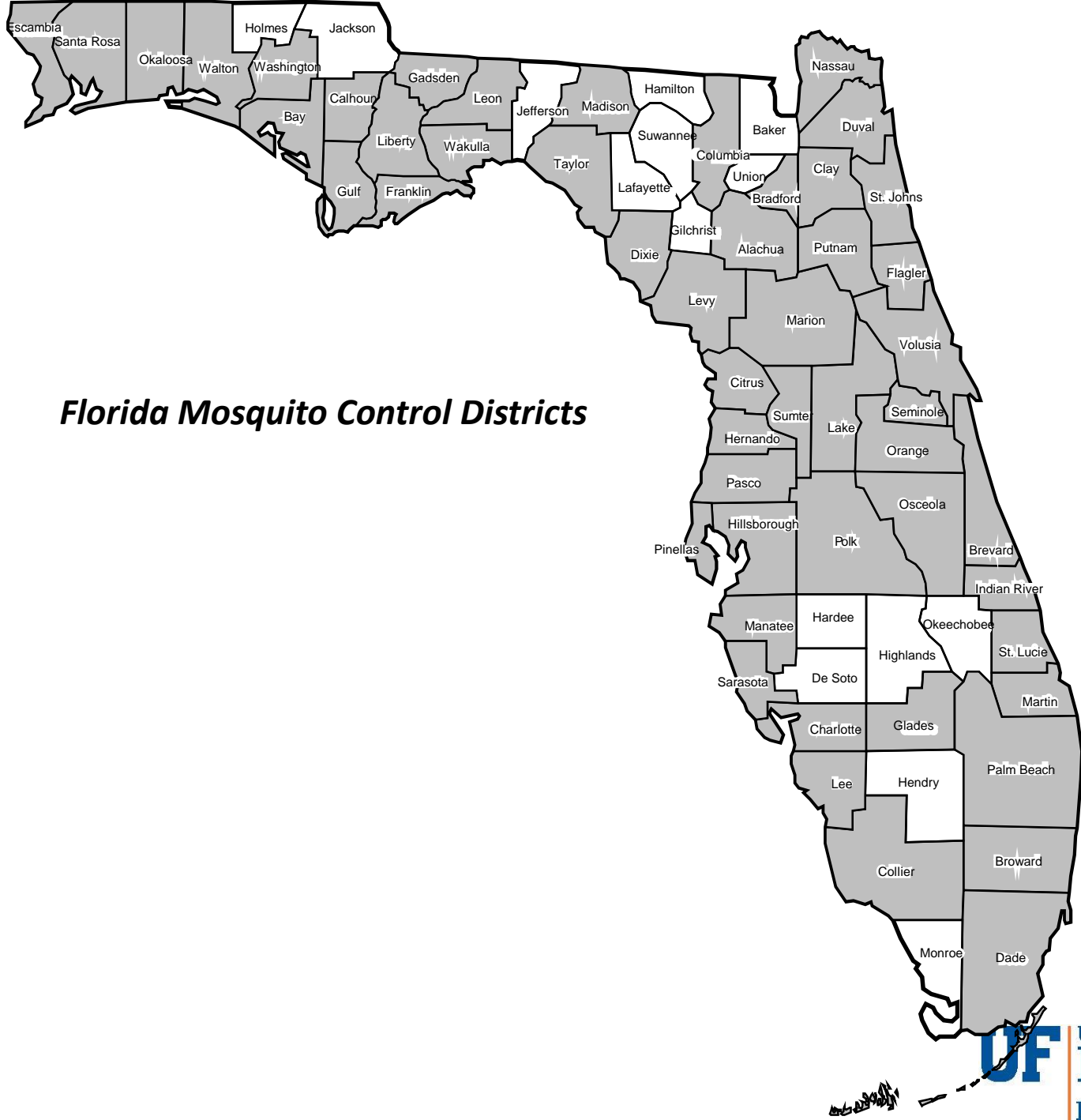
University of Florida, IFAS

Florida Medical Entomology Laboratory

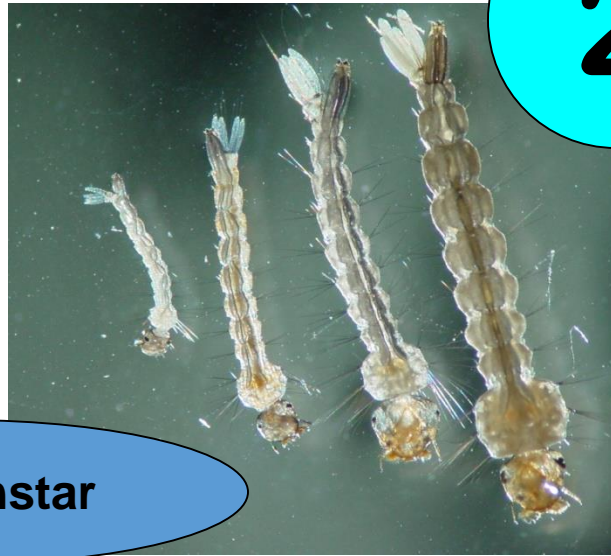
Vero Beach, FL



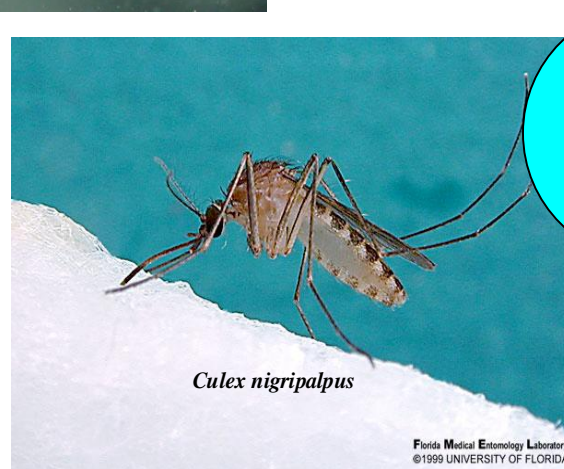
“land of swamps, of quagmires, of frogs, and alligators and mosquitoes.”



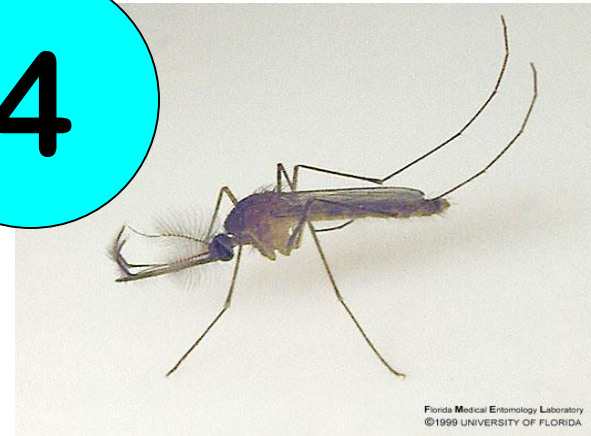
***Florida Mosquito Control Districts***



1<sup>st</sup> – 4<sup>th</sup> Instar



*Culex nigripalpus*







80 species  
of  
mosquitoes  
reported to  
occur in  
Florida



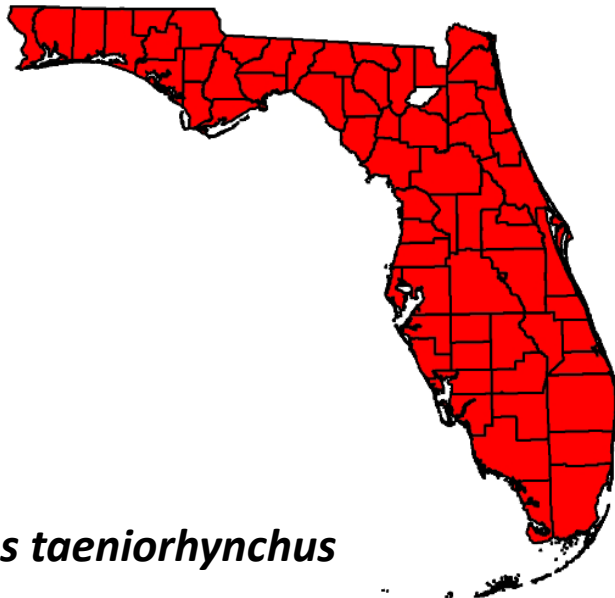
- Biology
- Egg laying/water
- Distribution
- Seasonality
- Blood hosts
- Generations
- Pest status
- Disease status



*Culex bahamensis*



*Orthopodomyia signifera*



*Aedes taeniorhynchus*



*Aedes albopictus*



# October 2015

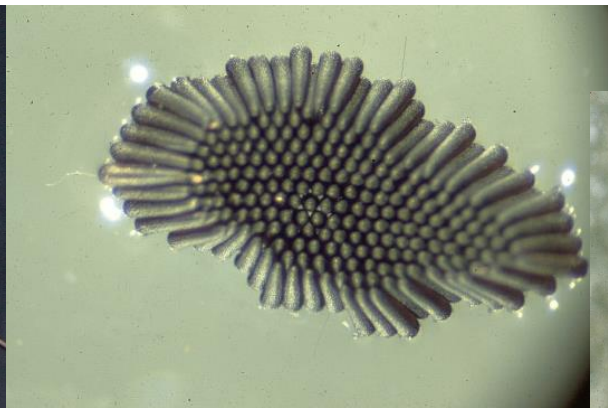
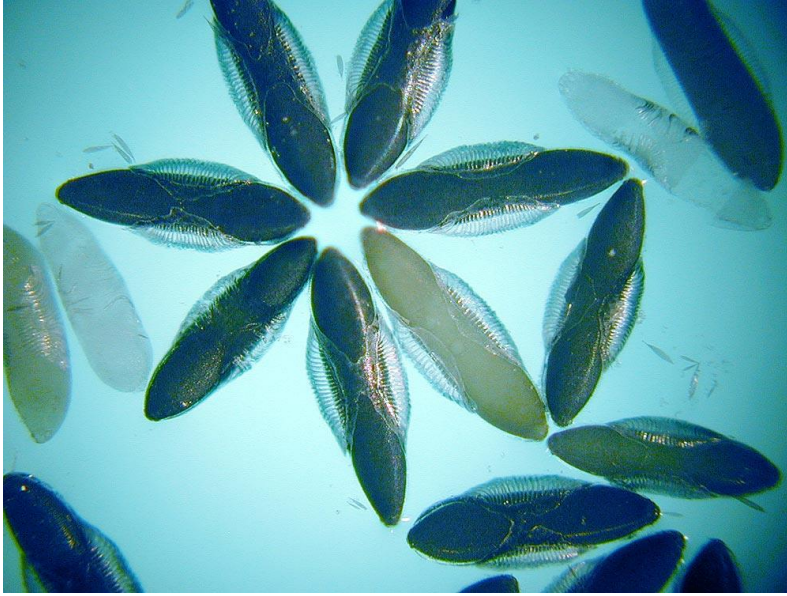


FLORIDA: Miami-Dade Co.  
Everglades National Park  
11 October 2015; *leg.* L.E. Reeves





# Permanent water eggs

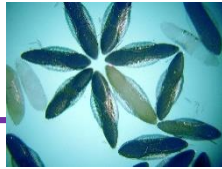




# Floodwater eggs



# Mosquito eggs and water sources



## Permanent Water

- Ponds
- Lakes (edges)
- Rivers (backwaters)
- Swamps
- Standing water
- Eggs cannot dry out
- Hatch within 24 – 48 hours

## Floodwater

- Low lying areas of pastures
- Salt marsh
- Containers
- Moist soils; eggs must dry out
- Sides of containers
- Areas that will be flooded one day









Florida Medical Entomology Laboratory  
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# Container mosquitoes











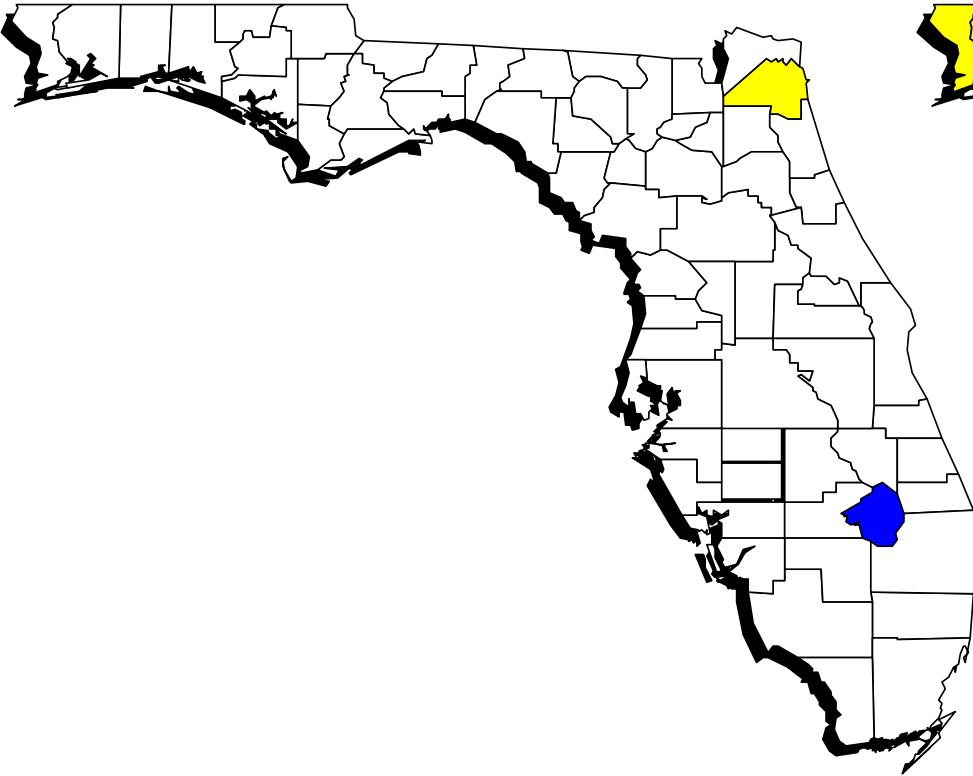




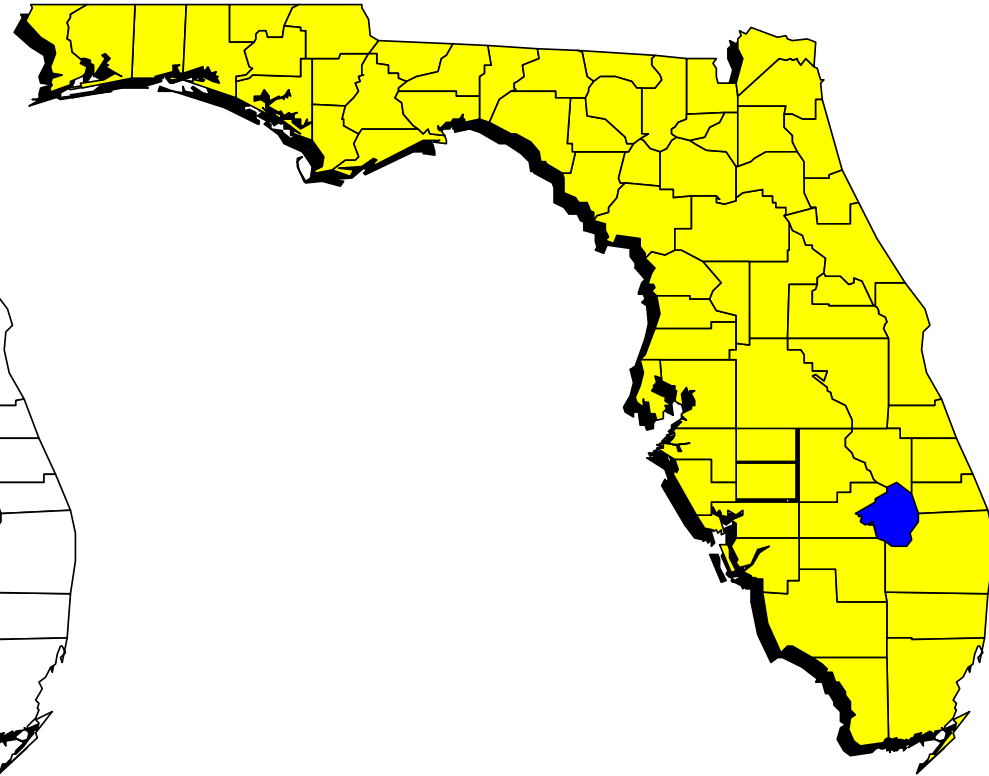


# Spread of *Aedes albopictus* in Florida

1986



1996



■ Counties with *Aedes albopictus*

# Larval habitats of container mosquitoes

- Bromeliad plants can house container mosquitoes in the water-holding tanks









<http://entnemdept.ufl.edu/frank/bromeliadbiodota/bromter.htm>



*Original Painting by: William H. Bond  
As Published in National Geographic  
1975 147(3):393  
Used with Permission of National  
Geographic*





photo by Tim Deschamps









# Container mosquitoes



- *Aedes albopictus*
- *Aedes aegypti*
- *Wyeomyia vanduzeei*
- *Wyeomyia mitchellae*
- *Some Culex*

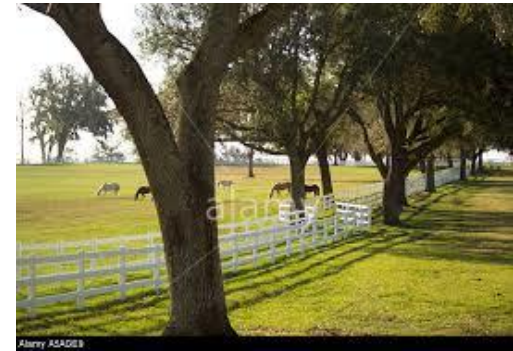


# Major Pests in Florida





# Vectors in Florida



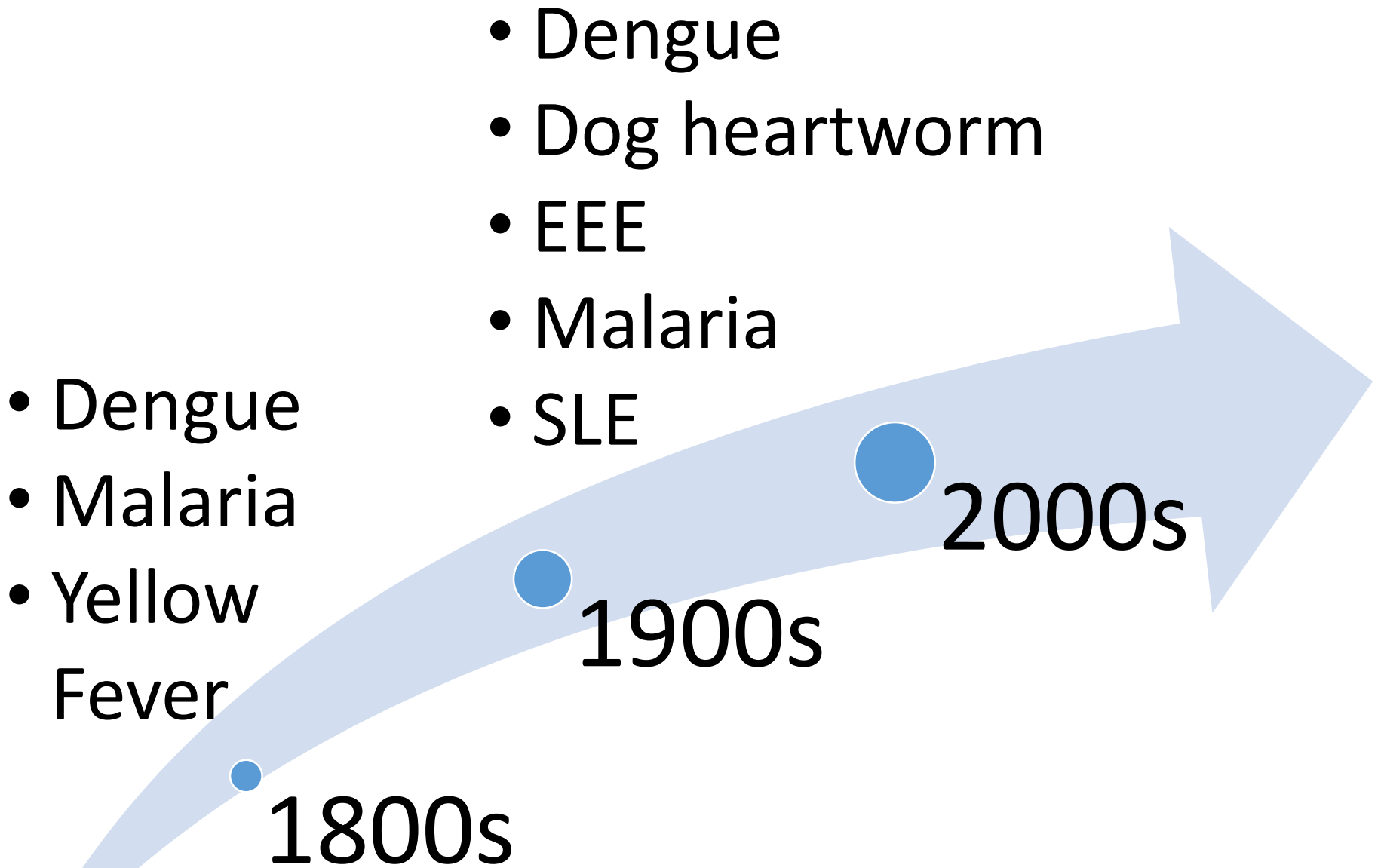


- Dengue
- Malaria
- Yellow  
Fever

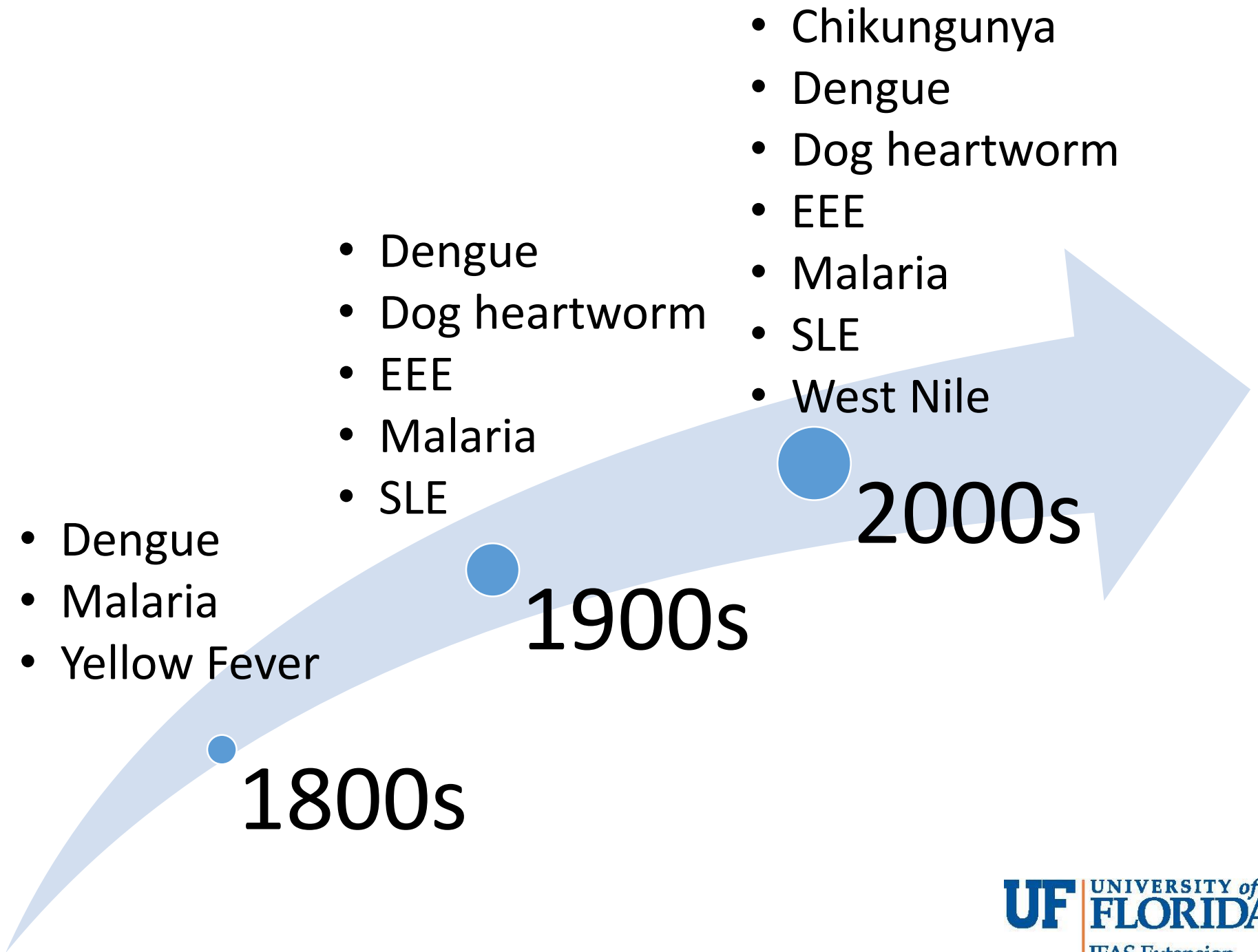
1800s

1900s

2000s







# IN A NUT SHELL

WE ALL KNOW THE DANGER OF

# YELLOW FEVER

but we become EARNEST ONLY  
after it claims our own blood.

## INFECTED BY MOSQUITOES

IS NO LONGER A THEORY  
BUT A PROVEN FACT

# GET RID OF THE MOSQUITO

BY BURNING

# SULPHUR FOR FUMIGATION

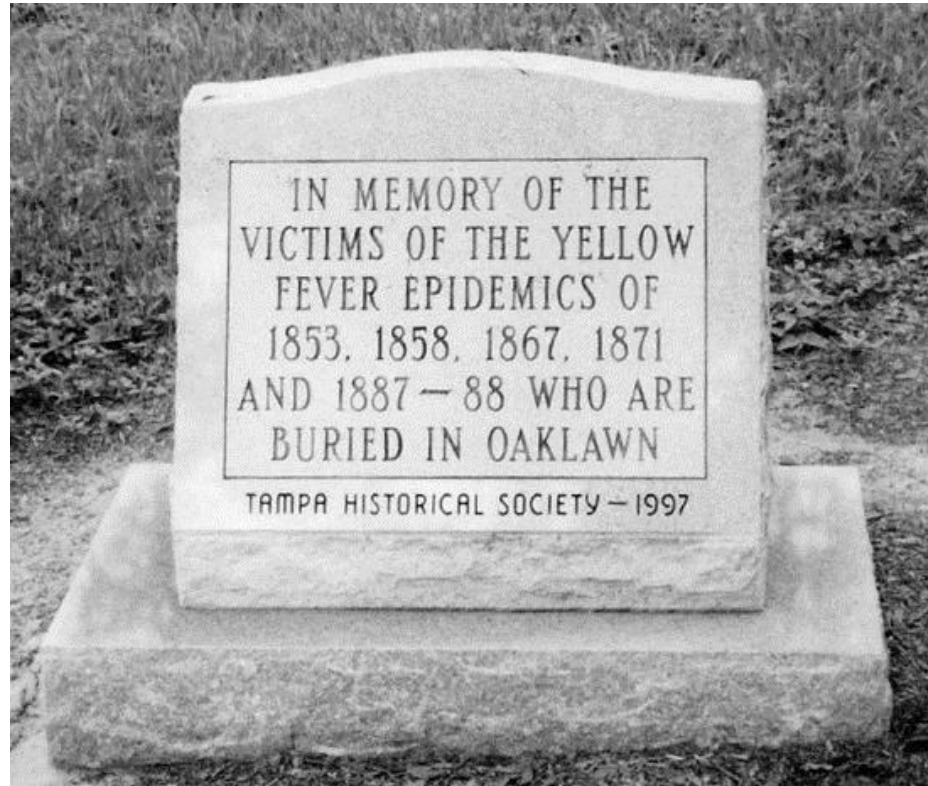
UNDER THE DIRECTION OF THE

# MARINE HOSPITAL SERVICE

START IN ON

# SUNDAY AT 10 A.M.

AND KEEP AT IT UNTIL NOON  
OR LATER





<http://diseasemaps.usgs.gov/>

<http://diseasemaps.usgs.gov/mapviewer/>

**West Nile Virus (WNV)**

**St. Louis Encephalitis (SLE)**

**Eastern Equine Encephalitis (EEE)**

**Western Equine Encephalitis (WEE)**

**La Crosse Encephalitis (LAC)**

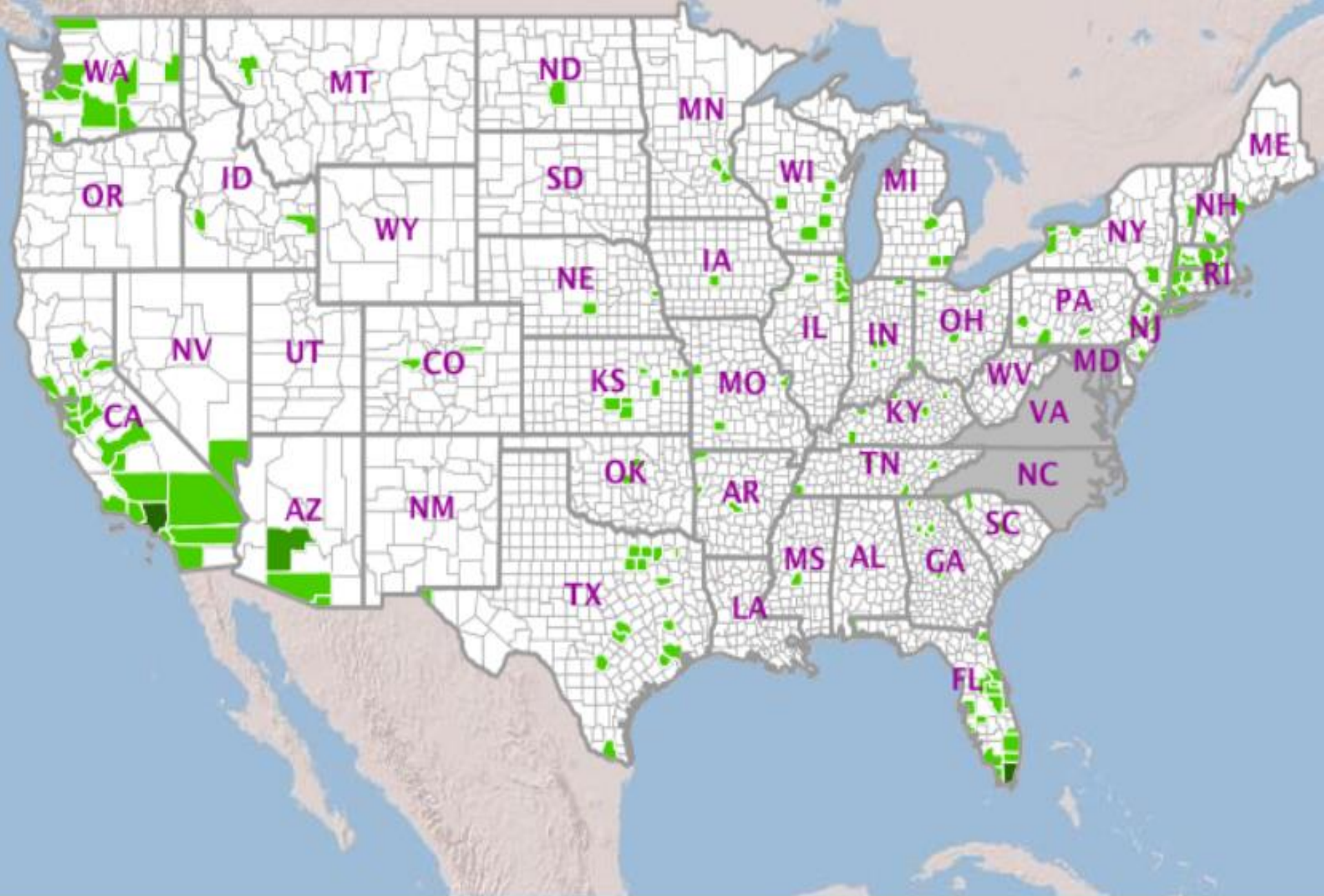
**Powassan Virus (POW)**

**Dengue Fever (locally acquired) (DEN-loc)**

**Dengue Fever (imported) (DEN-imp)**

**Chikungunya (locally acquired) (CHIK-loc)**

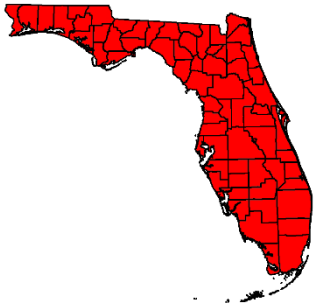
**Chikungunya (imported) (CHIK-imp)**



**USA** cumulative human disease cases reported to CDC ArboNET for 2015: **519** disease cas



# Chikungunya and Dengue Vector: *Aedes albopictus*, the Asian tiger mosquito



# Chikungunya, Dengue, and Yellow Fever Vector: *Aedes aegypti*, the yellow fever mosquito







# Dog Heartworm

- *Dirofilaria immitis*, a nematode worm, is the causative agent.
- Mainly dog to dog transmission but with other reservoir and amplification hosts.
- Many mosquito species serve as competent vectors.
- Effective prophylactic drugs are available.



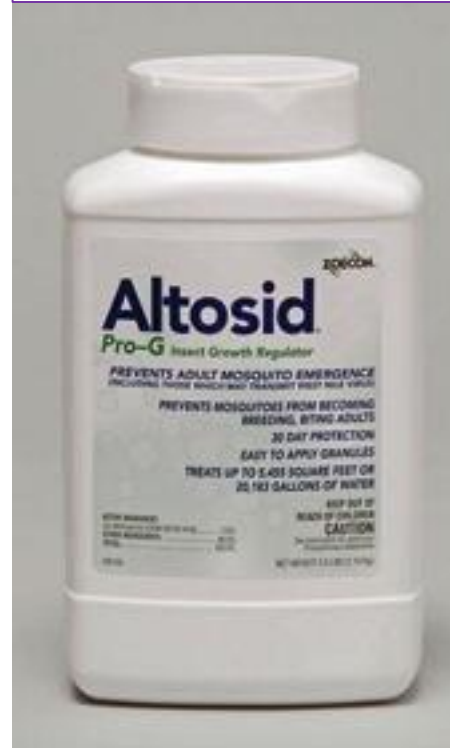


Bti – bacteria

-Mosquito bits or dunks

IGR – Insect Growth Regulators

-Pre-Strike  
-Altosid



# Mosquitoes in bromeliads and other containers

- Remove containers
- Modify containers
- Replace water in bird baths
- Clear leaves from roof gutters
- Tighten tarps

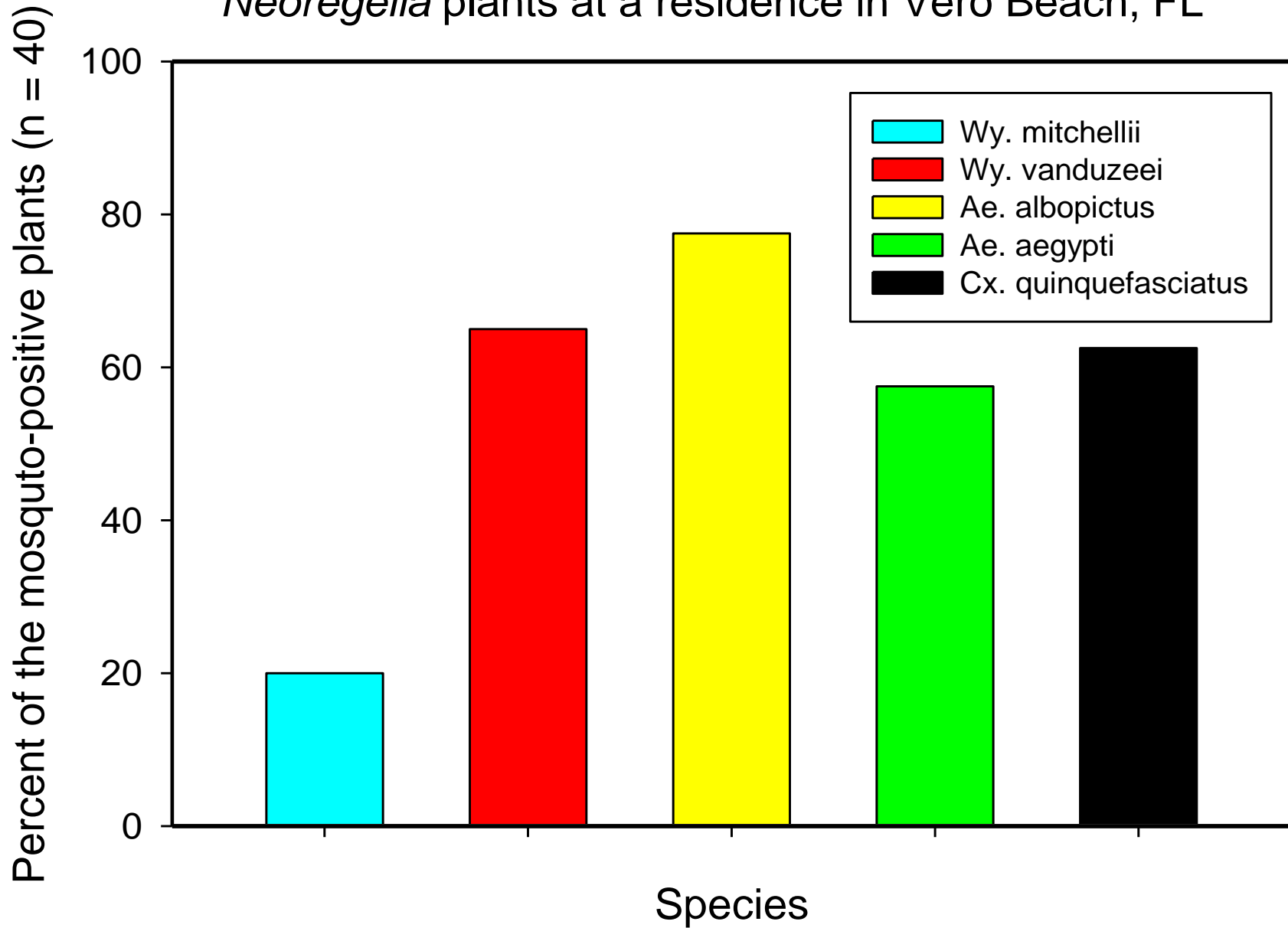








*Neoregelia* plants at a residence in Vero Beach, FL





# Bromeliad-inhabiting mosquitoes at a Vero Beach residence

	Pre-treatment	Post-treatment
No. of <i>Neoregelia</i> plants sampled	40	40
No. of plants positive for mosquitoes	40	1
Overall species composition – No. larvae and pupae		
<i>Wy. mitchellii</i>	62	
<i>Wy. vanduzeei</i>	518	
<i>Ae. albopictus</i>	267	4
<i>Ae. aegypti</i>	104	
<i>Cx. quinquefasciatus</i>	681	
Total number of mosquitoes collected	1,632	4

# Florida Mosquito Database



The Florida Mosquito Database provides information on the biology, medical importance, and known distribution of mosquitoes in Florida. The database is maintained by Roxanne Connelly, Associate Professor, Extension Specialist, University of Florida / IFAS, Florida Medical Entomology Laboratory. Please use the drop down list below to find information about Florida mosquitoes. [Printable Species List](#)

## Florida Mosquito Species

Aedes aegypti

### Eggs, Larvae, and Pupae

Eggs are deposited singly in artificial containers, either above the water level or on the surface of the water.

### Feeding Time

Daytime

### Biology

### Flight Range

Short range

### Common Host

Human



Photo Credit: James Newman

### Notes

## Medical Importance

Yellow Fever, Dengue

## Distribution

State-wide

## Distribution Map



Map Source: Keys to the Adult Females and Fourth Instar Larvae of the Mosquitoes of Florida (Diptera, Culicidae)

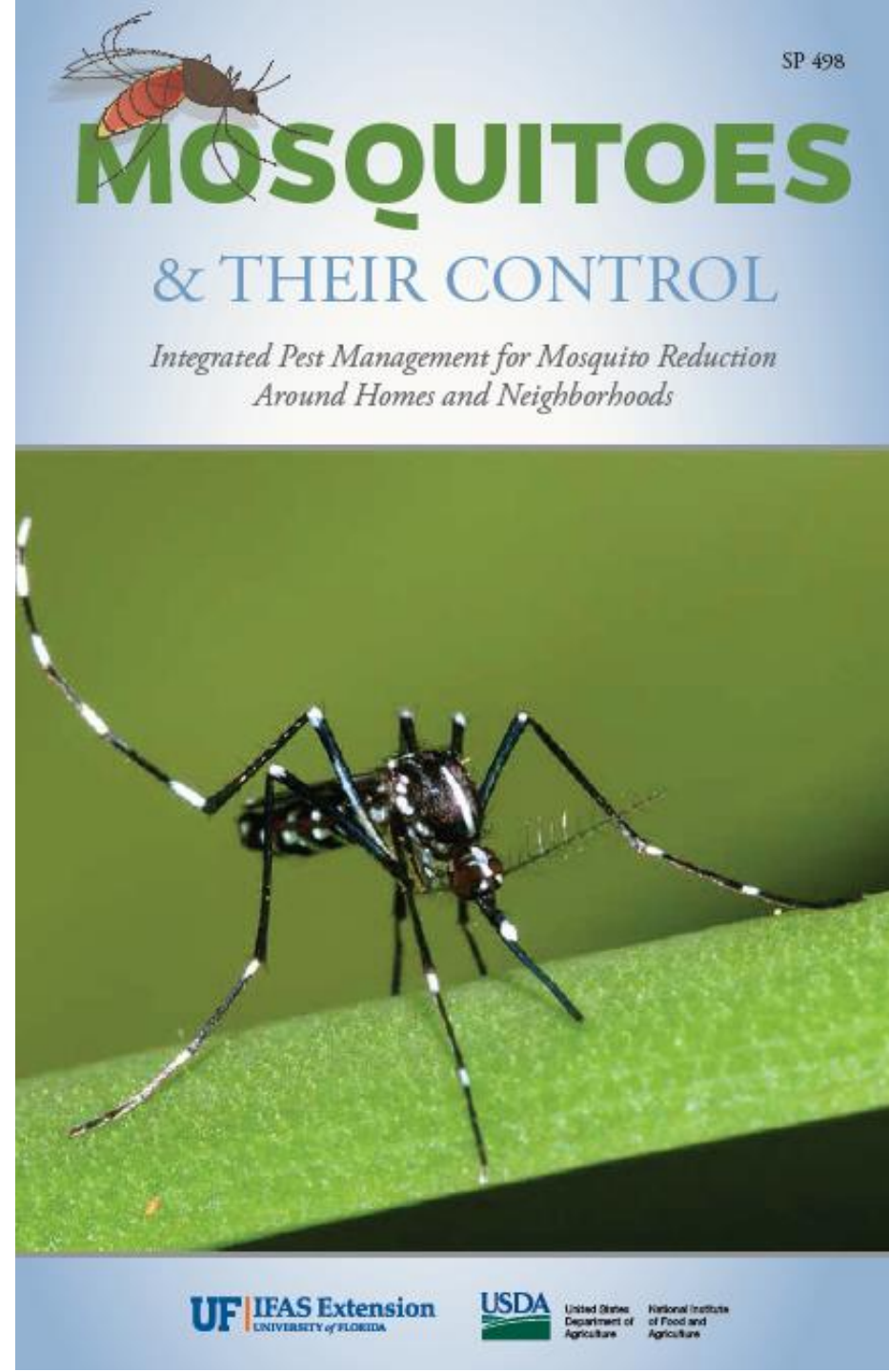
Application design by Gregory Ross, Florida Medical Entomology Laboratory.





# Mosquito information resources

- <http://mosquito.ifas.ufl.edu>
- <http://fmel.ifas.ufl.edu>
- <http://edis.ifas.ufl.edu>



Please help spread the  
word  
about what homeowners  
and communities can do to  
reduce disease transmitting  
mosquitoes!!