

# Community Forum: ZIKA

Presented by  
Town of Palm Beach  
Palm Beach Civic Association  
Citizens' Association of Palm Beach



Just when you thought it was safe  
to go outside...



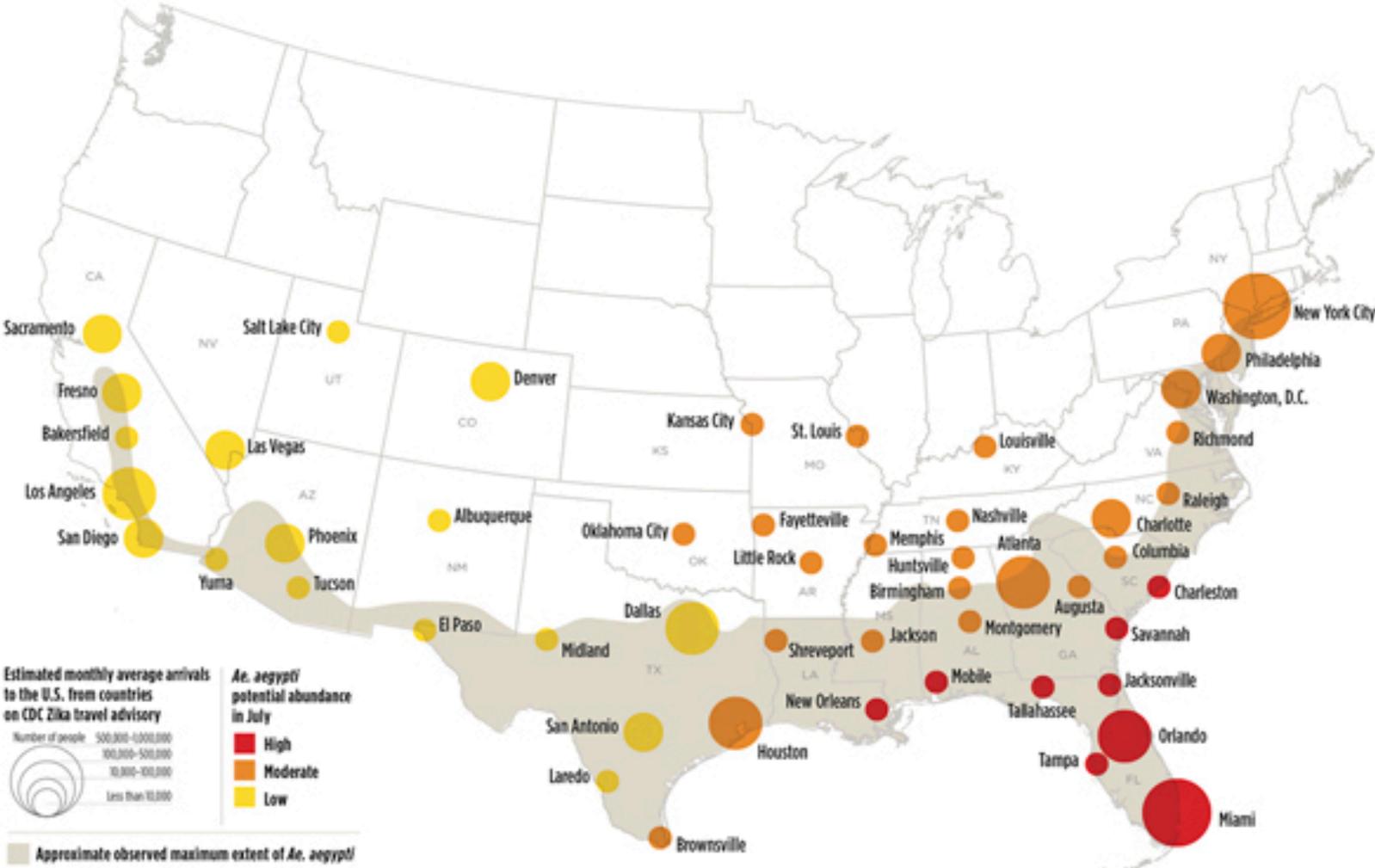
## Zika is here, now what?

**Will an epidemic happen here in the United States?**

**How are we different from other places  
where Zika is prevalent?**

**14 cases of Zika, not travel-related,  
in South Florida as of August 1, 2016.**

# ZIKA in the USA





- **Mosquito-Borne Virus**
- **Aedes Aegypti and Aedes Albopictus**
  - both live in our climate
  - day biters
  - Aedes Aegypti is the more common vector of transmission because they prefer to feed on people
- no treatment
- no vaccine
- only 1/5 of those infected have symptoms
- causes microcephaly, blindness, deafness, mentally-challenged children

## Community Forum: ZIKA



Education of the public is **THE** most important component of Zika prevention.

- prevent bites
- mosquito control





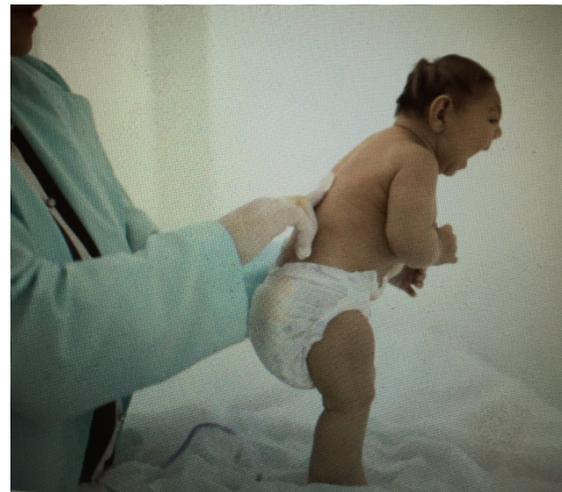
## **Incidence in the United States**

- **increases daily**
- **1,658 travel-related cases (as of July 27, 2016)**
  - 433 pregnant women
- **307 Floridians infected**
  - 55 pregnant women
- **15 cases of male to female transmission**
- **1 case of female to male transmission (NYC)**
- **1 case of non-sexual transmission**
- **1 case of lab exposure**
- **12 mosquito-borne transmission (Miami-Dade)**
- **2 mosquito-borne transmission (Broward)**

## Community Forum: ZIKA



- 5 babies born with Zika-caused microcephaly
- June 29, 2016 – first baby born in Florida with Zika-caused microcephaly
- since December 2015 – 5,500 cases in Puerto Rico, 672 pregnant women with Zika



## Community Forum: ZIKA



- Actual incidence is unknown because only 20% of persons infected have symptoms.
- CDC recommends testing if you or your partner have traveled to an area of Zika prevalence.





## Symptoms

- most will have no symptoms or very mild symptoms
- fever
- rash
- joint pain
- muscle pain
- conjunctivitis (red eyes)
- headache
- may last a few days to a week
- Guillain-Barré Syndrome
  - muscle weakness of extremities and respiratory muscles



## Diagnosis

- blood
- urine



## **Pregnant or planning to become pregnant**

- **CDC guidelines changing as more is known**
- **discuss with family doctor/obstetrician**
- **avoid travel to high risk areas**
- **avoid sexual contact with partner infected with Zika for duration of pregnancy: condoms, abstinence**



## Prevention

Prevention is a personal and a governmental responsibility.

### What can you do?

- prevent mosquito bites
- survey your surroundings: **DRAIN** and **COVER**
- remove objects that collect water
- repair screens
- air conditioning – use it
- bromeliads
- larvicides
- adulticides

*Continued on next slide...*



### What can you do?

*(continued)*

- repellents
- safe sexual practices
- long sleeves, long pants, ankles covered
- light clothing
- hand washing
- be vigilant, help your neighbors
- interior and exterior spraying
- mosquito netting – strollers and car seats
- plants and critters that may keep mosquitoes away



## Repellents: EPA-approved

- DEET up to 30%
- Picaridin [Cutter Advanced, Skin-So-Soft, Bug Guard]
- Oil of Lemon Eucalyptus (OLE) [Repel]
- Para-Methane-Diol (PMD) [Repel]
- IR 3535 [Skin-So-Soft, Skin Smart]
- Permethrin insecticide – spray on clothing, not on skin!



## Treatment

- elimination is the ultimate goal;  
we need to develop a vaccine

# Preventing Mosquito Bites



**Zika** is primarily spread  
through mosquito bites.  
Protect yourself and  
others.

Preventing Mosquito Bites



## STEP 1 Keep mosquitoes outside

- Here's what you can do to help control mosquitoes outside your home:
  - Use an outdoor insect spray made to kill mosquitoes in areas where they rest.
  - Once a week, empty and scrub, turn over, cover, or throw out items that hold water.
  - Tightly cover water storage containers.
  - Use window and door screens.
  - Use air conditioning when possible.

## Preventing Mosquito Bites



## STEP 1 Keep mosquitoes outside

- When traveling:
  - Stay in places with air conditioning and with window and door screens.
  - Use a bed net if air conditioned or screened rooms are not available or if sleeping outdoors.

### Preventing Mosquito Bites



## STEP 2 Create a barrier between you and mosquitoes

- Cover up!
  - Wear long-sleeved shirts and long pants.
- Treat clothing and gear
  - Use permethrin\* to treat clothing and gear or buy pre-treated items.
  - See product information to learn how long the protection will last.
  - Do not use permethrin products directly on skin.

\* Permethrin is not effective in Puerto Rico.

## Preventing Mosquito Bites



## STEP 3 Wear insect repellent

- Always follow the product label instructions.
- Do not spray repellent on the skin under clothing.
- If also using sunscreen, apply sunscreen before applying insect repellent.

### Preventing Mosquito Bites



## STEP 4 Protect your family

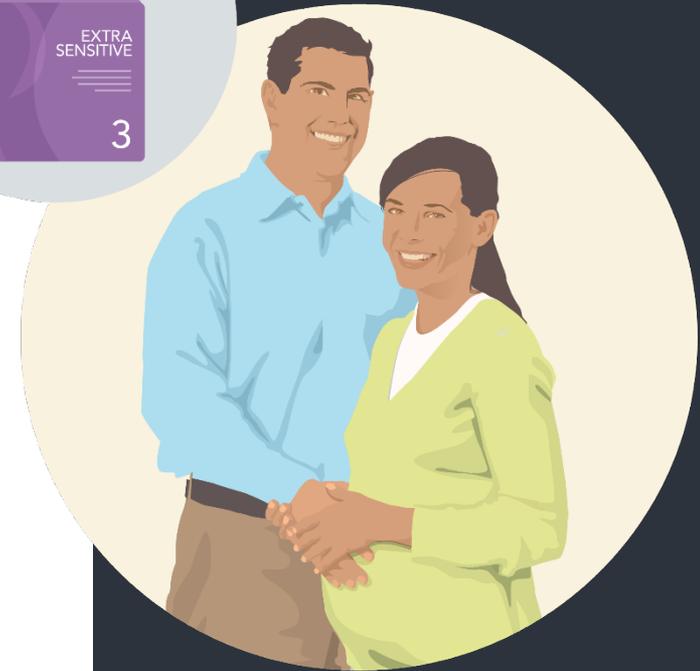
- For babies and children
  - Dress your child in clothing that covers arms and legs
  - Cover crib, stroller, and baby carrier with mosquito netting.
  - Do not use insect repellents on babies younger than 2 months old.
  - Do not use products containing oil of lemon eucalyptus or para-menthane-diol on children younger than 3 years old.
  - Cover crib, stroller, and baby carrier with mosquito netting.

## Preventing Mosquito Bites



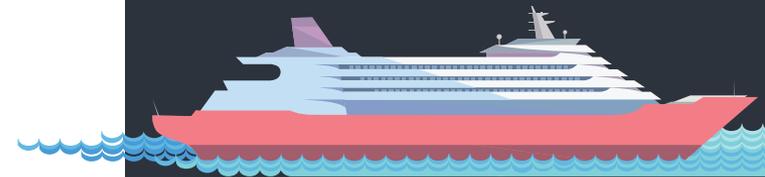
## STEP 5 Protect your partner

- Zika can be passed through sex from a person who has Zika to sex partners.
- Zika can be passed through sex before symptoms start, during, and after symptoms end.
- Zika virus can remain in semen longer than in other body fluids.



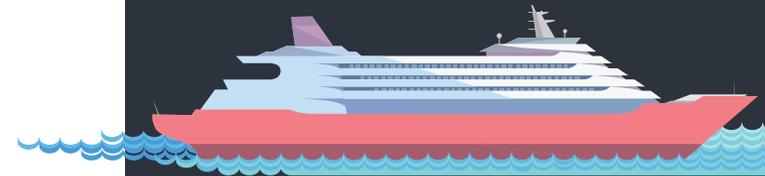
## STEP 6 Do your homework before traveling

- If you are pregnant, do not travel to areas with Zika.
  - If you must travel, talk to your doctor or other healthcare provider before your trip.
- If you are trying to get pregnant, talk to your doctor or other healthcare provider before you travel.



## STEP 6 Do your homework before traveling

- If you choose to travel:
  - Strictly follow steps to prevent mosquito bites to protect yourself and your family.
  - Even if you do not feel sick, travelers from an area with Zika should take steps to prevent mosquito bites for 3 weeks so they do not spread Zika to uninfected mosquitoes.
  - Use condoms (or other barriers to prevent infection) or do not have sex while traveling to areas with Zika.



# STEP 6 Do your homework before traveling

See the latest travel notices at:

[wwwnc.cdc.gov/travel/page/zika-travel-information](http://wwwnc.cdc.gov/travel/page/zika-travel-information)

## Zika Travel Information



For the most current information about Zika virus, please visit [www.cdc.gov/zika](http://www.cdc.gov/zika).

### Zika Travel Notices

- [Zika Virus in Cape Verde](#)
- [Zika Virus in the Caribbean](#)  
Currently includes: Aruba; Barbados; Bonaire; Curaçao; Dominican Republic; Guadeloupe; Haiti; Jamaica; Martinique; the Commonwealth of Puerto Rico, a U.S. territory; Saint Martin; U.S. Virgin Islands
- [Zika Virus in Central America](#)  
Currently includes: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama
- [Zika Virus in Mexico](#)
- [Zika Virus in the Pacific Islands](#)  
Currently includes: American Samoa, Samoa, Tonga
- [Zika Virus in South America](#)  
Currently includes: Bolivia, Brazil, Colombia, Ecuador, French Guiana, Guyana, Paraguay, Suriname, Venezuela

### For Travelers

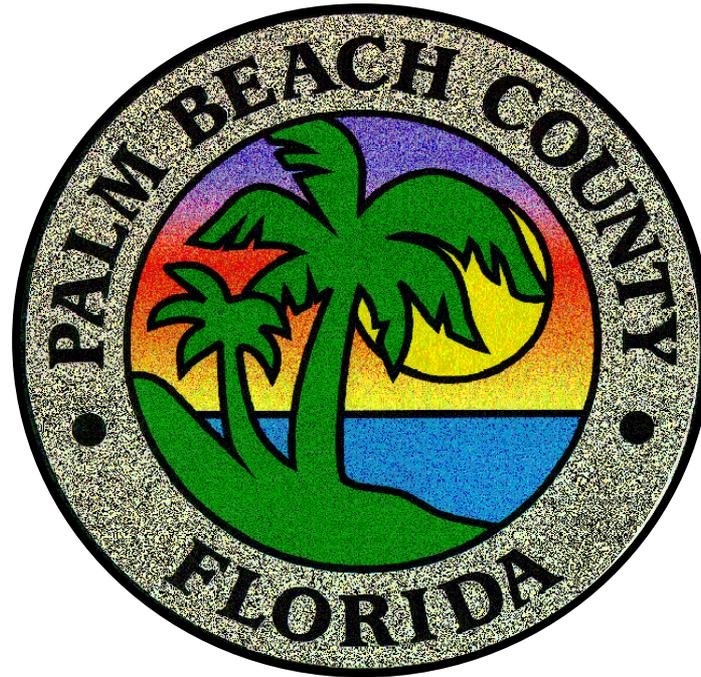
- [Avoid Bug Bites](#)
- [Insect Repellent Use and Safety](#)
- [Zika virus | CDC](#)

### For Clinicians

- [Zika: For Healthcare Providers](#) on CDC's Zika site
- [Update: Interim Guidelines for Health Care Providers Caring for Pregnant Women and Women of Reproductive Age with Possible Zika Virus Exposure — United States, 2016](#)
- [Interim Guidelines for Prevention of Sexual Transmission of Zika Virus — United States, 2016](#)
- [CDC Health Alert Network advisory: Recognizing, Managing, and Reporting Zika Virus Infections in Travelers Returning from Central America, South America, the Caribbean, and Mexico for Zika virus](#)
- [Possible Association Between Zika Virus Infection and Microcephaly — Brazil, 2015](#)

# It's Easier Done Than Said:

Practical Mosquito Control for Your Neighborhood

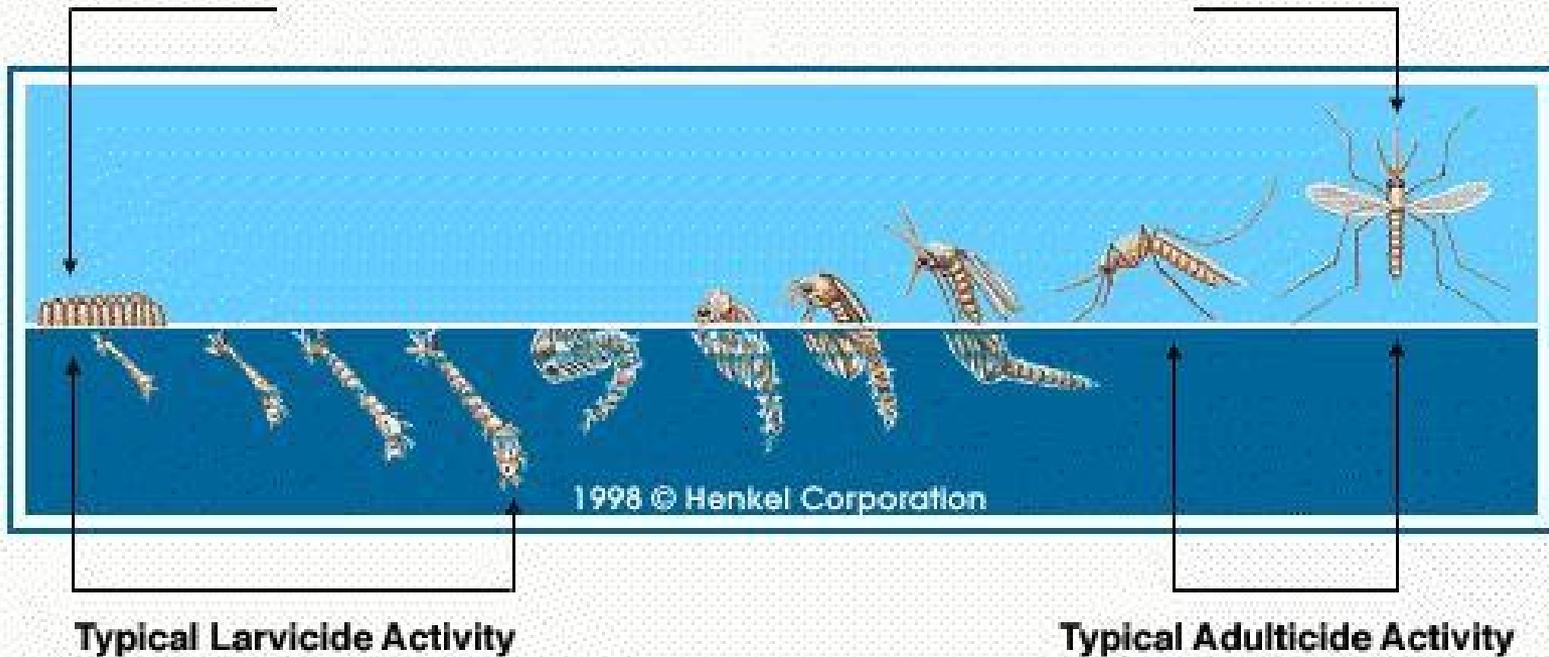


# Mosquito Control Is Dependent Upon Mosquito Identification



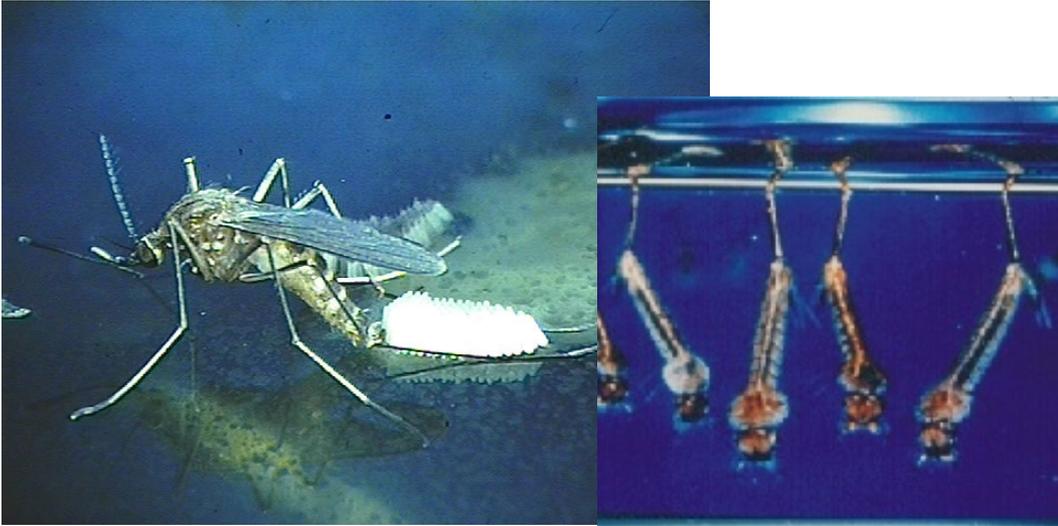
# Mosquito Insecticide Strategies

## MOSQUITO LIFE CYCLE



Larviciding is more effective but can be expensive, while adulticiding is less effective but more targeted to regions where human contact occurs.

# Most Disease Vector Mosquitoes Require Standing Water To Lay Eggs

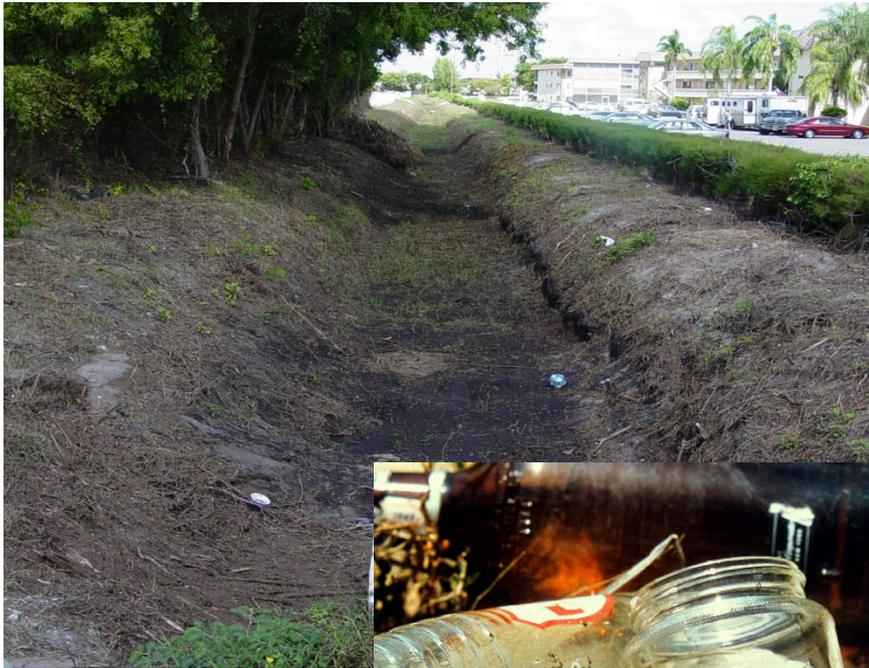


Palm Beach County's vector mosquito populations are mostly flooded woodland and pasture type mosquitoes, particularly *Culex nigripalpus*. Testing has indicated it is our primary vector of West Nile Virus.

Unlike most coastal counties, Palm Beach County has very little salt marsh left. The result is a low incidence of salt marsh mosquitoes, the leading type of nuisance mosquitoes in coastal Florida.



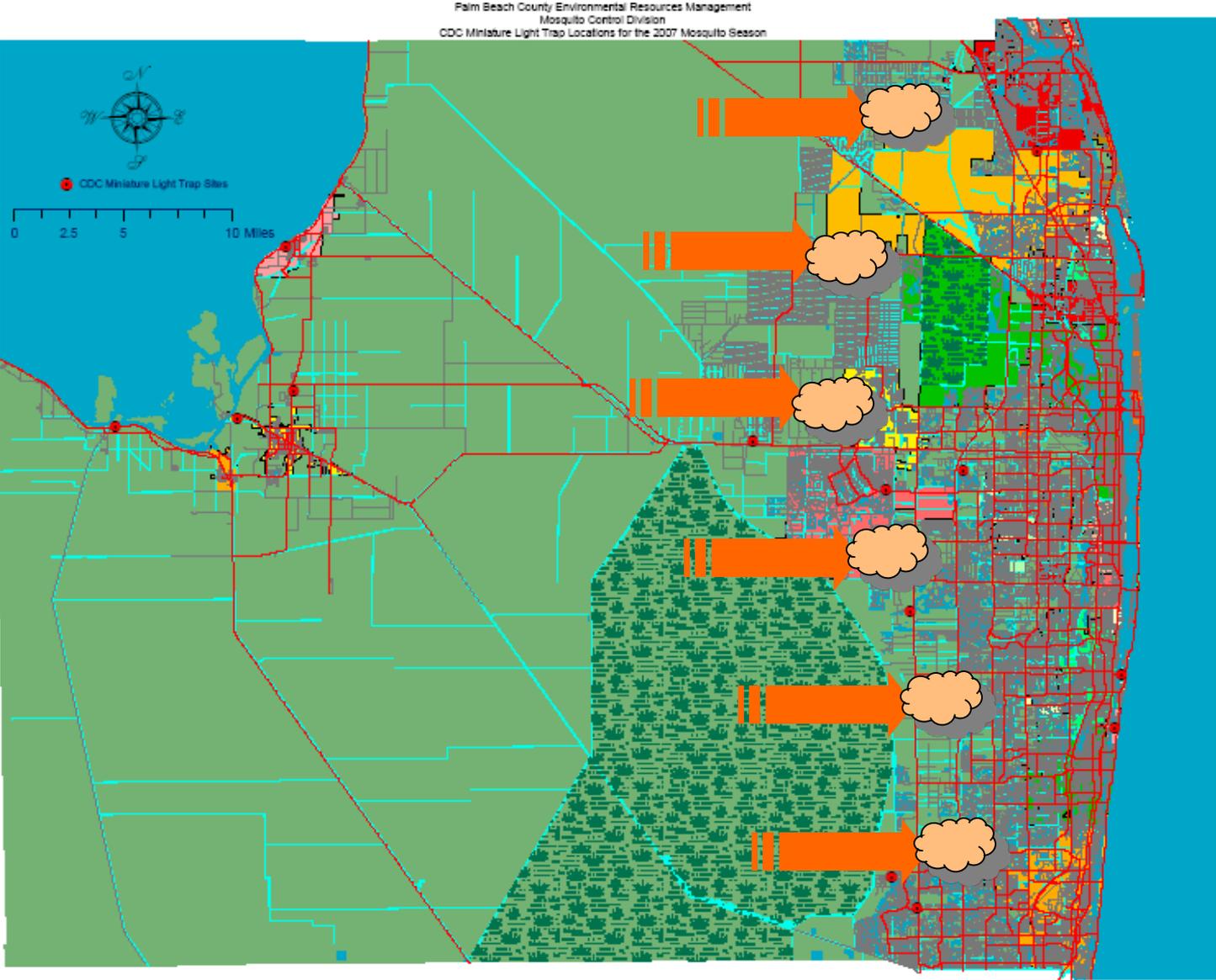
# Most Nuisance Mosquitoes Lay Eggs Singly On Dry Soil or in Artificial Containers Instead Of Directly On Water



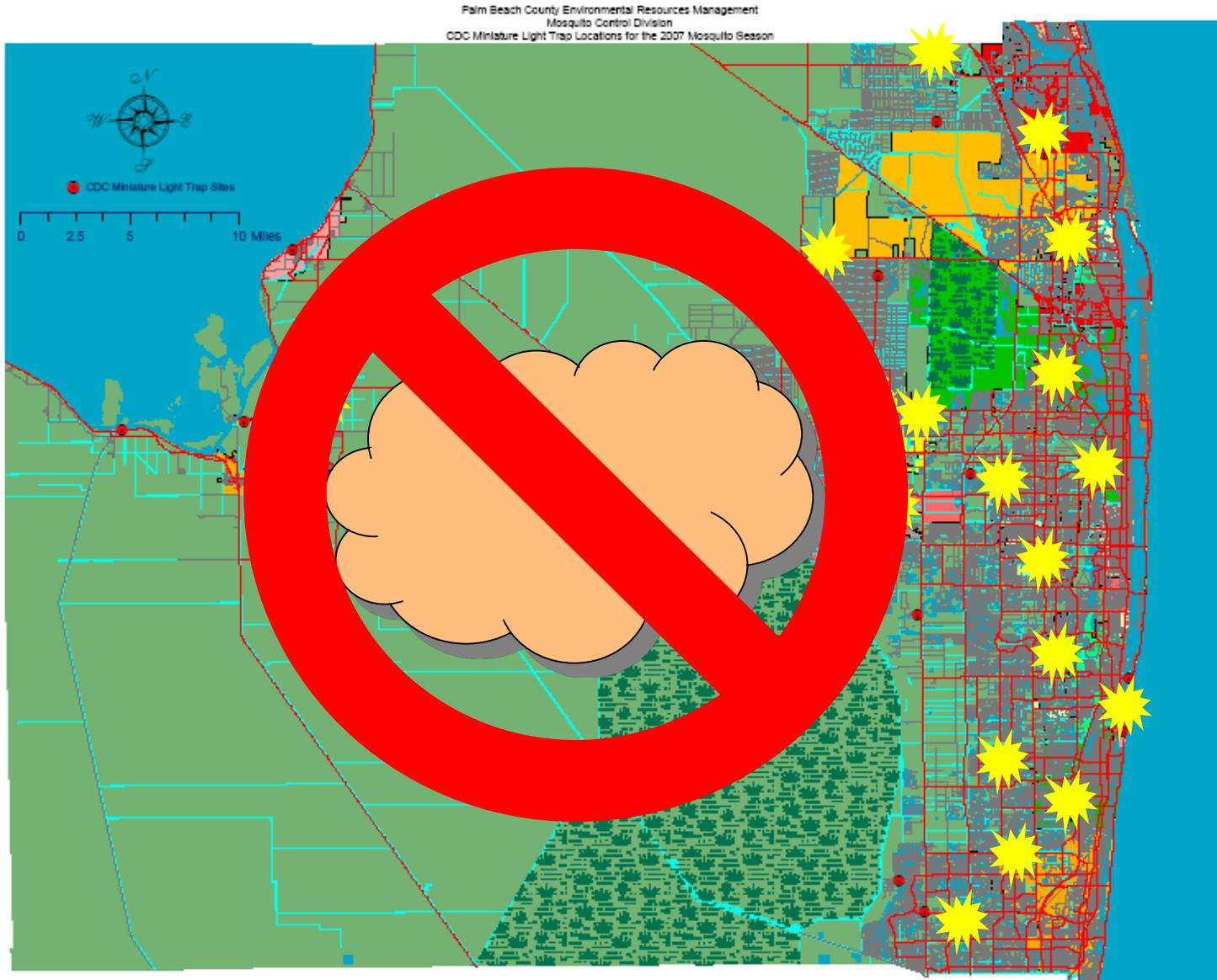
Mosquito eggs can stay dormant for years, hatching when flooded by rainfall (or even tides). This produces synchronous “broods” of mosquitoes, the key to their success and, unfortunately, their annoyance.

Most annoyance mosquitoes utilize this strategy, while most but (not all) disease vector mosquitoes do not. Those mosquitoes that carry disease do so because the developmental cycle can be extended if no water is present for egg laying.

# Palm Beach County Rainfall Event Mosquito Production



# Palm Beach County "Dry Event" Mosquito Production



# Mosquito Control Technology



# Pros and Cons of Ground Versus Aerial Adulticiding

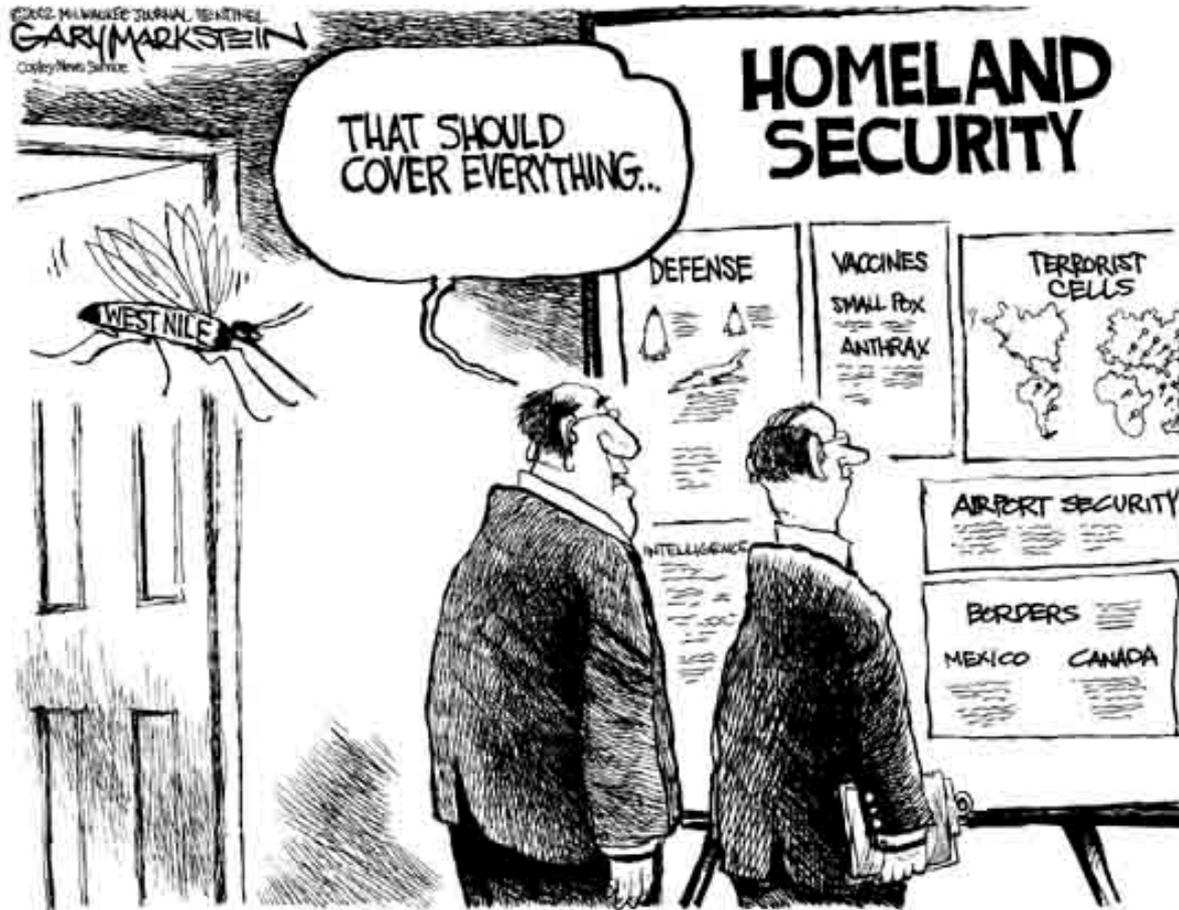


Ground applications are limited to roadways, but are not as prone to be limited by weather conditions.



Aerial applications are highly subject to weather conditions, but can be more effective since off-road areas can be treated.

The mosquito abatement industry is by nature one that gains no attention when it is being done properly and effectively.



**Dry years tend to lull the public and politicians into a false sense of security, only to be reminded with the rains arrive bringing nuisance and disease along with them.**

# Integrated Pest Management (IPM) Strategies For Mosquito Control in Palm Beach



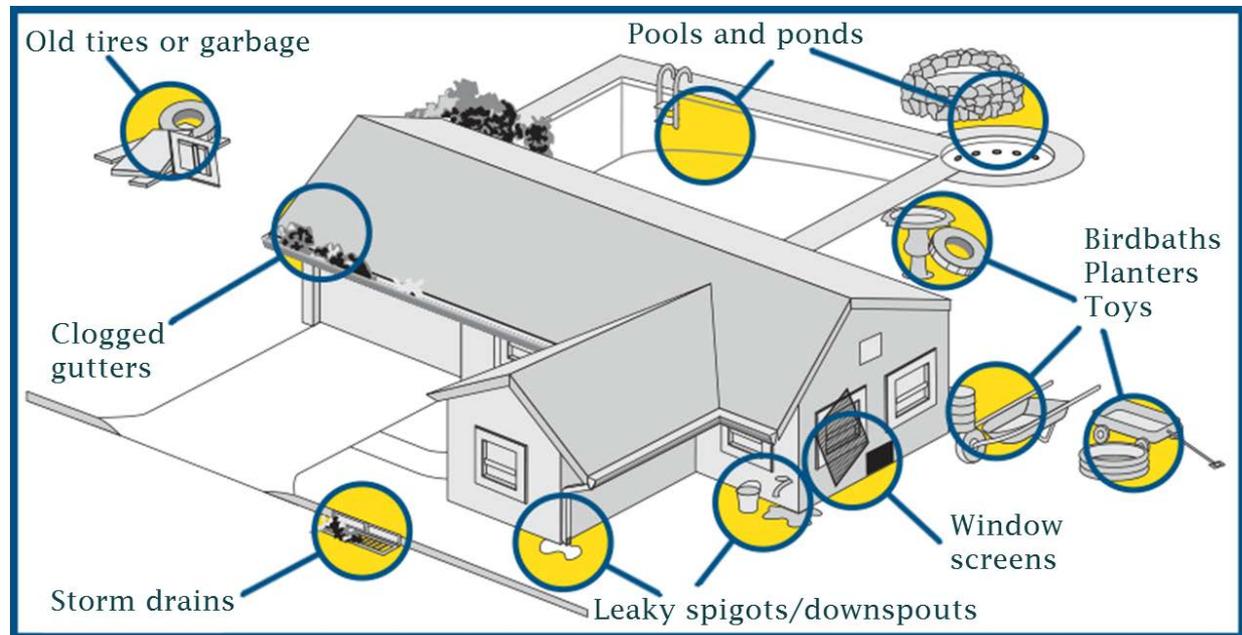
**Pest Management**

David Paladino, PhD  
Technical Director, Native Pest Management

# General Breeding Site Information

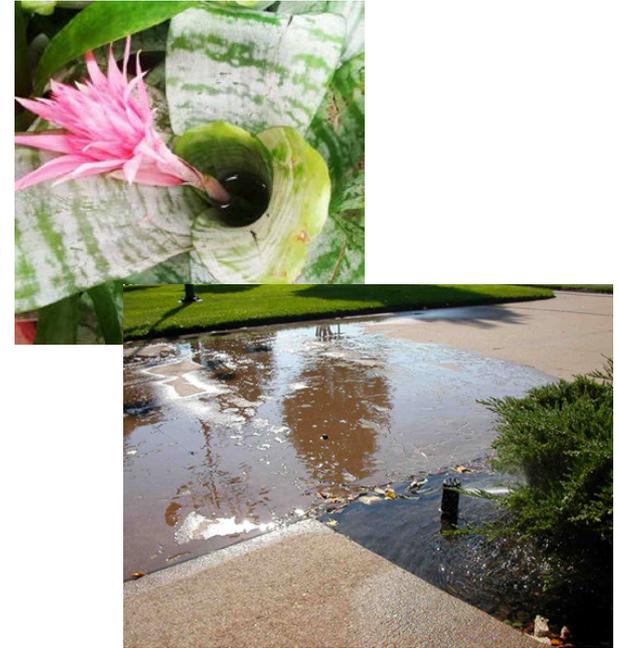


- Deposit eggs in moist areas that may hold standing water
- Milk cap provides enough water to breed
- Prefer to lay eggs near ground height
- Standing water must be removed weekly

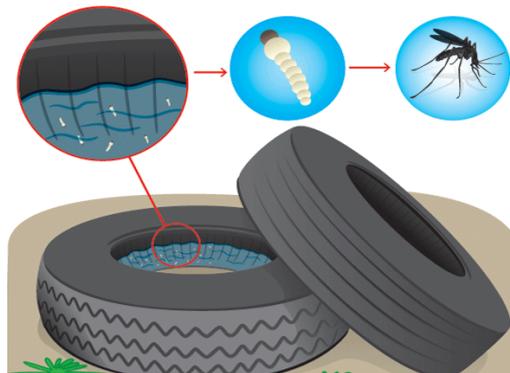


# What to Look For – Landscapers

- Around the Home
  - Planter beds
  - Broken or leaky irrigation heads
  - Bromiellids
  - Vegetation over gutters



- Around the Nursery
  - Pots
  - Tires
  - Tarps



# What to Look For – Occupants or Property Managers

- Clogged gutters/storm drains
- Trash in yard or hedges
- Children's toys
- Buckets/recycling bins
- Bird baths/fountains
- Openings in doors or window screens



# Prevention Through Active Control

- Citronella Candles
  - Modestly effective at repelling mosquitoes outside
  - Maximum effective range ~5 feet with no breeze
- Larvicides
  - *Bacillus thuringiensis israelensis* (Mosquito bits/dunks)
  - Can be applied easily by homeowners
- Misting Systems
  - Can be effective
  - Adulticidal
  - Can promote resistance
  - Can burn landscape plants



# Professional IPM Mosquito Control Services

- Pros and cons of adulticides and larvicides vs. misting systems



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## Q&A

