

# ZIKA VIRUS INFO



- Facts on **Zika** Virus
- Mosquito Species Involved
- Where Transmission is Currently Happening
- What Mosquito Control is doing
- Response Protocol
- Protect yourself
- Mosquito Control Program
- Website

## What are the symptoms?

- Muscle or joint pain
  - Rash
  - Headache (especially behind the eyes)
  - Conjunctivitis
- 
- One of five infected with Zika will have symptoms
  - Symptoms usually begin 2 to 7 days after infection
  - Once person is infected, there is a period of 7 to 10 days for mosquito to acquire the virus from them

## It is transmitted ways other than through mosquitoes?

- It is suspected to be transmitted to fetus if pregnant.
- It is can be passed through sexual contact

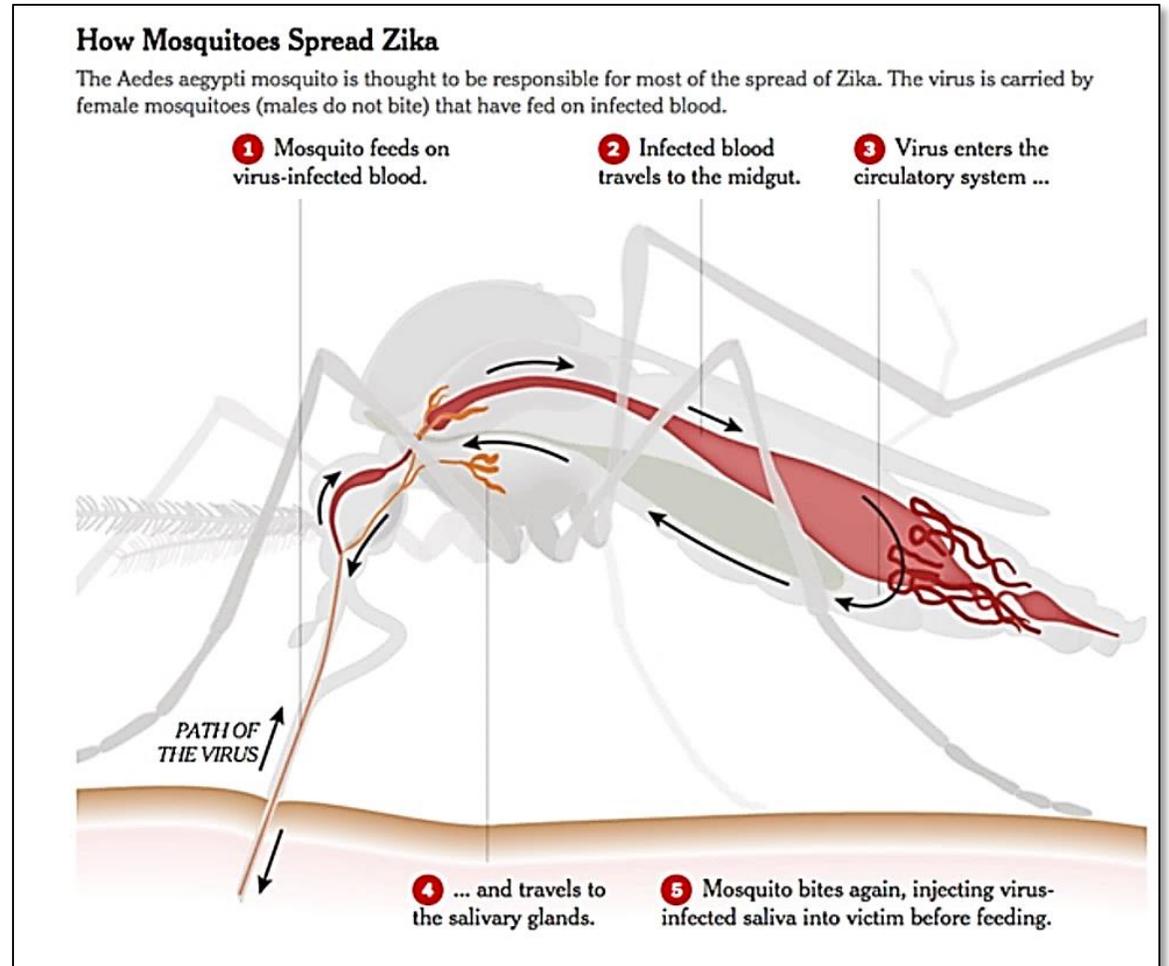


# What is Zika Virus?

- Zika Virus is an infectious disease most often transmitted to people through the bite of a infected mosquito.
- Zika Virus is in the family flaviviridae.
  - Chikungunya and Dengue are also in this family of virus

## How does the mosquito transmit the Virus?

1. Female Mosquito feeds on virus-infected blood.
2. Infected blood travels to the midgut
3. Virus enters the circulatory system of the mosquito ultimately traveling to the salivary glands.
4. Mosquito bites again, injecting virus infected saliva into the victim before feeding.



Ill. by Sarah Almuktar and Mika Grondahl / Sources Dr. W. Augustine Dunn; Oxitec; The Anatomical Life of the Mosquito, R. E. Snodgrass

# Which mosquitoes are we concerned with for Zika virus?

- Of the 56+ species in Georgia, we are currently concerned with two mosquito species for Zika.
  - *Aedes aegypti* – Main Vector
  - *Aedes albopictus*
- These mosquitoes seek artificial containers and lay their eggs in or near standing water and where rain will collect.
- These mosquitoes can breed in a container as small as a bottle cap
- These mosquitoes are aggressive daytime biters, also biting during dusk and dawn.



Yellow Fever Mosquito  
*Aedes aegypti*

- Bites mainly during the daytime, also during dusk and dawn
- not common in Georgia
- Backyard container breeder
- Anthropophilic – Prefer to bite humans



Asian Tiger Mosquito  
*Aedes albopictus*

- Bites mainly during the daytime, also during dusk and dawn
- Common in Georgia and throughout the United States
- Backyard container breeder
- Opportunistic Biter



# Yellow Fever Mosquito

*Aedes aegypti*

- **Main vector of Zika**
- **Prefers to bite Man**
- **“Sippers” – multiple blood meals per egg laying**
- **Have not seen this species in Glynn County**
- **Actively searching for this mosquito through surveillance**
- **Responsible for mosquito-man transmission in South Florida**
- **Currently in the United States, this mosquito has been recorded in South Florida, New Orleans metro area and the Texas/Mexico border**



# Asian Tiger Mosquito

*Aedes albopictus*

- **Considered a possible vector of Zika**
- **Found throughout the United States**
- **Opportunistic biter – bites birds, animals and humans**



# Countries & Territories with Active Transmission



III. from CDC.gov; Current as of August 11, 2016

## Americas

- Anguilla
- Antigua
- Argentina
- Aruba
- Barbados
- Barbuda
- Belize
- Bolivia
- Bonaire
- Brazil
- Cayman Islands
- Colombia
- Commonwealth of Puerto Rico, US territory
- Costa Rica
- Cuba
- Curacao
- Dominica
- Dominican Republic
- Ecuador
- El Salvador
- French Guiana
- Grenada
- Guadeloupe
- Guatemala
- Guyana
- Haiti
- Honduras
- Jamaica
- Martinique
- Mexico
- Nicaragua
- Panama
- Paraguay
- Peru
- Saba
- Saint Barthélemy
- Saint Lucia
- Saint Martin
- Saint Vincent and the Grenadines
- Sint Eustatius
- Sint Maarten
- Suriname
- Trinidad and Tobago
- Turks and Caicos
- U.S. Virgin Islands
- Venezuela

## Oceania/Pacific Islands

- American Samoa
- Fiji
- Kosrae, Federated States of Micronesia
- Marshall Islands
- New Caledonia
- Papua New Guinea
- Samoa
- Tonga

## Africa

- Cape Verde

## United States

- South Florida



# Surveillance & Testing

- Goal is to find high populations of the specific mosquitoes that carry the disease with special attention to *Aedes aegypti*
- This is County wide surveillance
- Use of Multiple surveillance traps and methods
- Larva sampling
- Additional inspections
- Focused treatments
- Testing our chemicals against these mosquitoes to make sure there is not tolerance in these populations



**Gravid Trap:** Used to collect mosquitoes that have had a blood meal.



**Efficacy Testing:** Testing collected or hatched mosquitoes against our chemicals to make sure they are working properly.



**Ovitrap:** Used to collect eggs of container breeding mosquitoes. These eggs will be allowed to emerge and then they will be speciated.



**CDC Trap:** used to collect a broad spectrum of mosquitoes by using light and CO2



# Determining Populations of *Aedes albopictus* & *Aedes aegypti*

- **Ovitrap**

- Monitor container breeders by collection of eggs
- Rotated with other traps throughout the county
- Response to high egg counts



- **Hatching Jars**

- Difficult to distinguish between the two species eggs.
- Eggs collected from Ovitrap are allowed to become adults.
- Adults are speciated



***BG Sentinel Trap:***

- Used to collect adult mosquito container breeders.
- Mosquitoes are collected using different lures, including one that smells like a locker room.



# Zika Response Protocol to a Local Transmission

- The State health department will inform us of a local positive transmission
- Repetitive adulticiding to occur an hour before twilight
- Inspections, larviciding and adulticiding of backyards
- Surveillance for the mosquito vectors for Zika
- Samples collected will be tested for the presence of virus by a state laboratory
- Area will be consistently monitored for elevated populations of Zika vector mosquitoes
- Aerial support will be conducted if deemed necessary



# Protect yourself against Mosquito Bites & Disease

## Eliminating mosquito breeding areas

- Once a week, empty, turn over containers.
- Tightly cover water storage containers
- For containers without lids, use wire mesh

## If you have a septic tank, follow these steps:

- Repair cracks or gaps
- Cover open vent or plumbing pipes

## Keep mosquitoes out of your home:

- Use screens on windows and doors
- Repair holes in screens

## Prevent mosquito bites:

- Wear long sleeves and pants
- Use an EPA-registered insect repellent with one of the following active ingredients:  
DEET, Picaridin, IR3535, Oil of lemon eucalyptus
- Always follow the product label instructions



# Mosquito Control Services



*Glynn County*  
GEORGIA

Mosquito Control Program

# MCS PROGRAM PHASES



Aerial Application



Larvaciding



Encephalitis Surveillance



Surveillance



Ground Spraying



Public Education

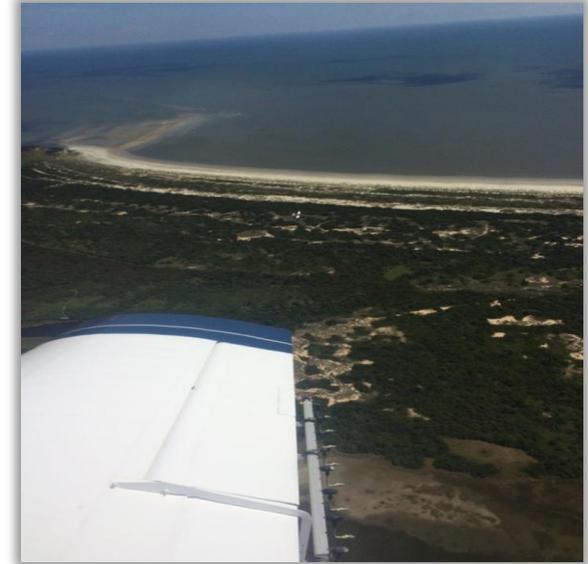


## INSPECTION AND SURVEILLANCE

- GPS Mapping of Breeding Sites
- Rain Gauge Stations
- New Jersey Light Traps
- Gravid Traps/ CDC Traps
- Ovitrap Locations
- Landing Rate Sites



# LARVICIDING



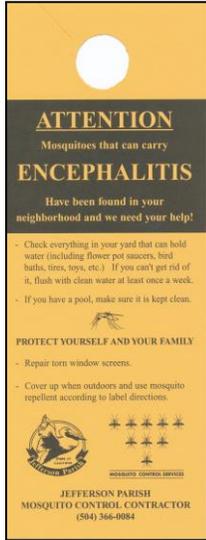
- Mosquito Fish and Bio-Chemical Controls
- Catch Basin Treatments
- Ground Applications
- Aerial Applications

# GROUND ADULTICIDING

- Spray Trucks Fully Equipped with Flow Control and Truck Tracking
- ATV Equipped w/ ULV (ultra low volume) Sprayer and Larvacide Application tank
- Handheld ULVs & Thermo-foggers







## DISEASE SURVEILLANCE

- Monitoring Disease Vector Populations Year Round
- Mosquito Control Services Laboratory is Backup to State Laboratory
- Proven Surveillance & Response Protocols
- Gravid Traps, CDC Traps, Sentinel Traps



# PUBLIC EDUCATION PROGRAM

- Informative Pamphlets
- PowerPoint Presentations
- Contracted Radio Spots





## ADDITIONAL SERVICES

- Special Event Barrier Treatments
  - Truck & Backpack Applications
- Encephalitis and Efficacy Testing
  - Bottle Bio-Assays
  - Field Cage Tests
  - Larvacide Ditch Tests
- Droplet Testing
- ULV Spray Applications of Drains



# From Research to Practice

We are proud to be a leader in procedural development

- Education
  - Hire trained biologists and entomologists
  - Attend National, Regional, and State conferences
  - Train public employees
  - Teach at State conferences and State training sessions
- We have used these resources to develop procedures
  - Expanded surveillance
  - Virus responses
  - Operational practices
- Results
  - Increase efficacy
  - Less Environmental impact



- GPS controlled
  - Speed of Spray Trucks
  - Ounces per minute
- Droplet characterization
- Rotation of chemicals



- Rotary Atomizers
- AgNav Spray System
- Onboard Weather system
- Field Tested



WEBSITE: [mosquitocs.com](http://mosquitocs.com)

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**Mosquito Control Services is an industry leader due to its science-based approach.**

The effective control of mosquitoes is a technical, ecological and fiscal challenge. Mosquito Control Services provides targeted strategies that work to eliminate your mosquito problems, protect the environment and prevent potential liabilities. Our science-based strategy combines biological control with modern short-lived insecticides that are of little threat to the environment—giving you the best and most comprehensive mosquito control program available.

**SERVICE REQUEST**  
SUBMIT REQUEST  
ZIKA VIRUS INFO

**Encephalitis Notifications**  
What does an encephalitis notification mean to me and my family? View the latest encephalitis information [here >>>](#)

**What Can I Do in My Backyard?**  
You can help by taking a few precautions in your own backyard. [Learn more >>>](#)

**Information Request**  
Need some additional information on the services we offer to governments and industries? Submit an information request [here >>>](#)

**STAT topic:**  
February 18, 2016  
Study Suggests Zika can cross the placenta, adding to evidence of microcephaly link ([Reuters](#))  
-statnews.com/series/zika-update

**What is Zika Virus?**  
*Zika is an infectious disease transmitted to people through the bite of an infected mosquito.*

**What are the Symptoms?**  
*Symptoms include: Muscle or joint pain, rash, vomiting, headache (especially behind eyes), and conjunctivitis.*  
*Not all persons infected will become ill. Symptoms usually begin 2 to 7 days after being infected by the mosquito. You should see a doctor if you believe you have been exposed to Zika.*  
*Once a person is infected, there is a period of 7 - 10 days where an Aedes mosquito can acquire the virus from them.*

**Am I at risk?**  
*Currently, the risk of Zika in our area is low. There have been no recorded cases of a mosquito transmitting Zika in the Gulf Coast region.*  
*Travelers visiting areas of the world where Zika virus is active should guard themselves from being bit by a mosquito. Currently, these areas include parts of Africa, Southeast Asia, the Pacific Islands, Caribbean, Central and South America.*

*Click on your State to visit your Department of Health to get local updates!*



Official Zika Facts.



Pregnancy & Zika: What is known.



Traveling? Check here to see where Zika currently is...



Know your mosquitoes  
Learn the life cycle



Learn to Prevent Bites & Mosquito Breeding