



Environmental Health and Mosquito Control

A Natural Partnership

Presentation to: **GMCA**

Presented by: **Dr. Chris Rustin, DrPH, MS, REHS**

State Director, Environmental Health

Date: **10/18/2018**



Georgia Department of Public Health

EH Mission:

Inform the public of Environmental Health Hazards

-keep general public informed of the benefits of mosquito control and other public health pest control

Prevent illness and injury through monitoring, assessments, and education

- prevent illness by controlling mosquitoes and public health pests
-prevent injury from improper use of pesticides

Protect the public from Environmental Health risks

-protect the health and welfare of people, animals, and their environment

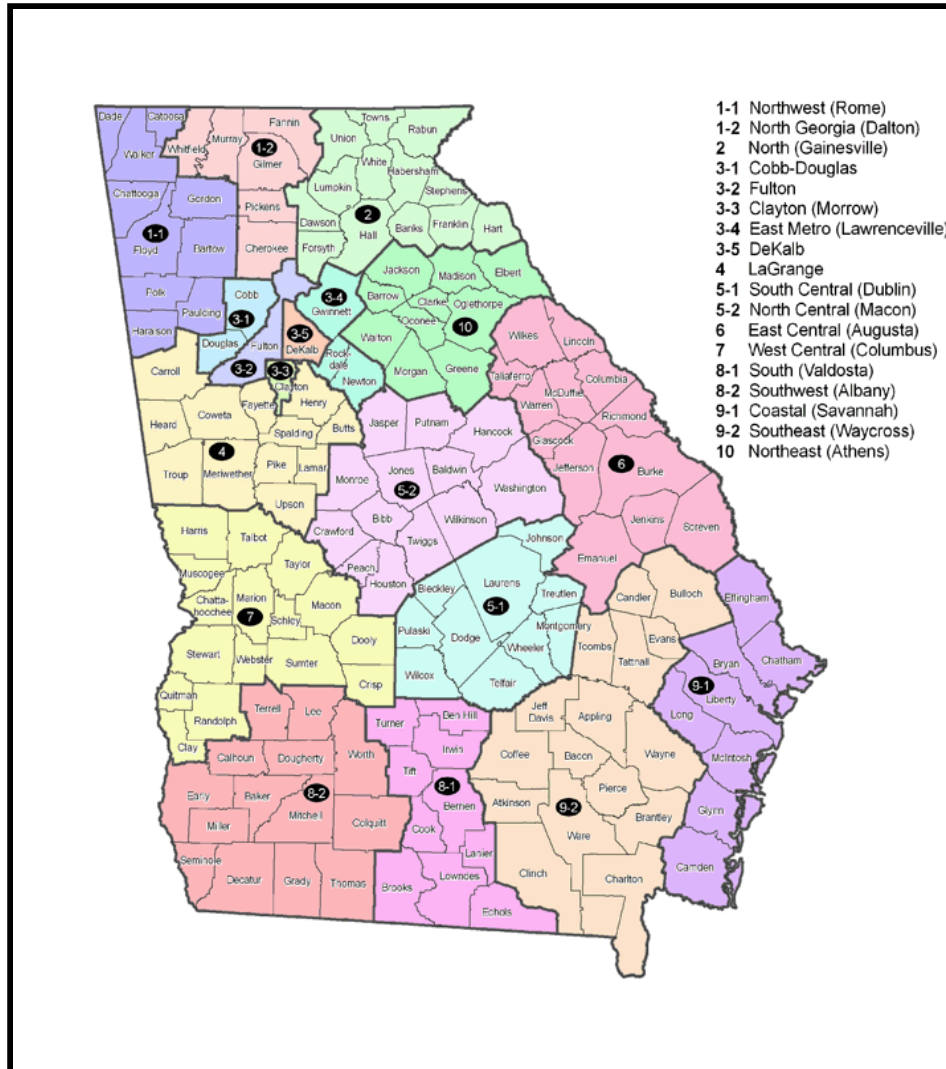
Environmental Health Mandates

- **Food Service Establishments: O.C.G.A. 26-2-373**
- **Public Swimming Pools: O.C.G.A. 31-45**
- **Tourist Accommodations: O.C.G.A. 31-28**
- **On-Site Sewage Management: O.C.G.A. 31-2a-11**
- **Portable Sanitation: O.C.G.A.31-2A-6**
- **Rabies Control: O.C.G.A. 31-19**
- **Tattoo Studios: O.C.G.A. 31-40**
- **Tanning Facilities: O.C.G.A. 31-38**

EH Program Mandates

- **Childhood Lead Poisoning Prevention Program: O.C.G.A. 31-41-10**
- **Healthy Homes Program**
 - Indoor Air: O.C.G.A. 31-12A "Smokefree Air Act"
 - Asthma
- **Chemical Hazards Program: O.C.G.A. 31-12**
 - Health Impact Assessment
 - Brownsfield Grant
- **Non-Public Water Supply: O.C.G.A. 12-5-134**
- **Emergency Preparedness: O.C.G.A. 31-2A-4(9); 31-12-1.1**
 - EH Emergency Prep
 - Mass Fatality Coordination
 - **Emergency Vector Control**
- **Control of Mass Gathering: O.C.G.A. 31-27**
- ***Surveillance and Response: O.C.G.A 31-2A-(1) (2)***
 - ***Mosquito Surveillance***
 - ***Public Health Pest Surveillance***
 - ***Response***

Public Health System in Georgia



GA Department
of Public Health



18 Public Health
Districts



159 County
Boards of Health



All of us are Public
Health

Environmental Health Workforce

- Environmental Health services are provided by approximately 453 professional staff statewide.
 - 30 State Office
 - 18 EH District Directors
 - 5 regional vector surveillance coordinators
 - 423 County Environmental Health Specialists

Rubber meets the road

"Environmental Health...

Touching Everyone's Life Every Day"

We Protect Lives.

Early Years of Georgia Public Health

"Sanitary Science"

1786-Savannah GA-First State Health Officer

1900-1970s (Infectious Disease Control)

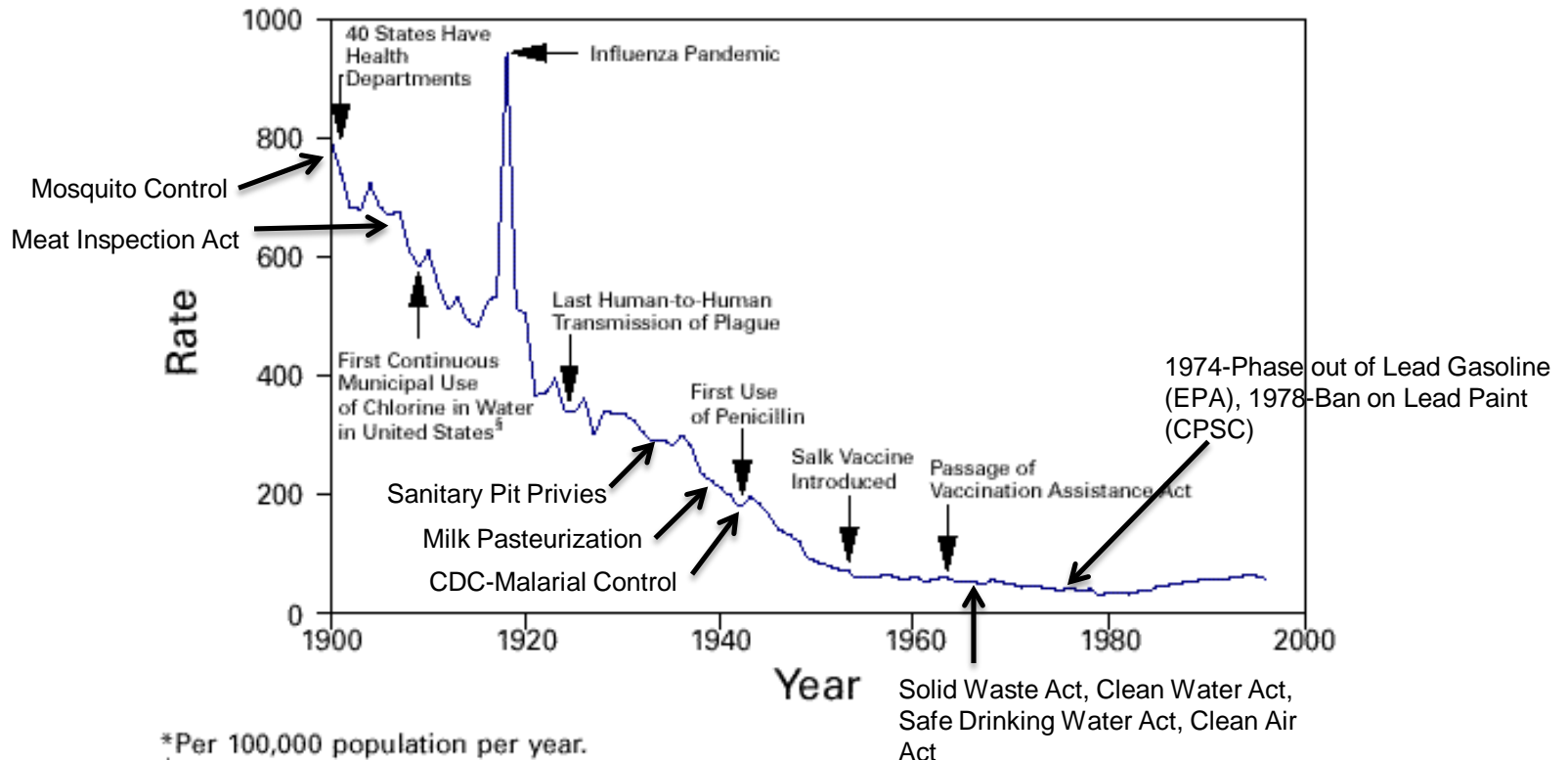
- *Mosquito Control (Yellow Fever and Malaria)*
- Septic and Sewage Systems Developed
- Garbage Reduction with Proper Disposal
- Water Treatment and Disinfection
- Milk Pasteurization-1940s
- Food Safety
- Housing Codes



In this ALCOSAN photo circa 1940s, sewage overflows into water. Photo copyright, ALCOSAN. All Rights Reserved. Downloads and reuse are not permitted.

Decreased Mortality

FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†



*Per 100,000 population per year.

†Adapted from Armstrong GL, Conn LA, Pinner RW. Trends in infectious disease mortality in the United States during the 20th century. JAMA 1999;281:61-6.

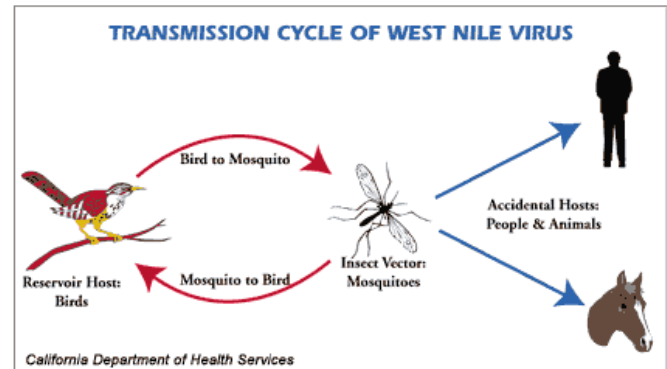
‡American Water Works Association. Water chlorination principles and practices: AWWA manual M20. Denver, Colorado: American Water Works Association, 1973.

History of MC Programs

- Many programs started within public health sanitation programs
 - Yellow Fever
 - Malaria
 - Dengue
- 1960s-70s-Public policy decision cut programs and funding due to reduced threats of disease
 - Critical shortage of vector specialists and fragmented programs that respond to perception
- 2000 WNV and funding increased; Dr. Kelly hired
 - 2004 funding cut

West Nile Virus

- New and sexy disease to the media
- Funding for surveillance
- EH staff became the eyes and ears of PH
 - Dead bird pick-up and shipment
 - Education
 - Mosquito trapping

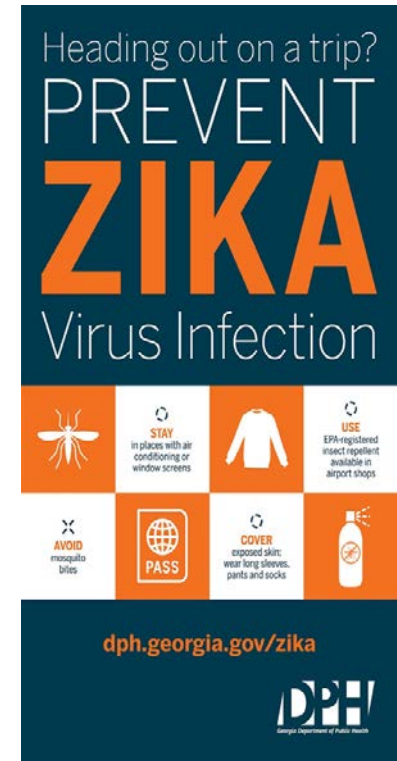


Zika: Reality in 2016

- Only 13 counties were conducting active surveillance
- One statewide mosquito surveillance and response trailer and limited surveillance equipment
- Limited capacity for PH to respond to an emergency

Zika

- Almost two years ago, the mosquito-borne Zika virus was beginning to reveal itself as a threat to pregnant women and their unborn babies.
- Zika outbreak “firsts”:
 - First-ever mosquito-borne cause of serious birth defects like microcephaly, other brain defects, and poor pregnancy outcomes
 - First mosquito-borne sexually transmitted disease (STD)
- Although no longer an “emergency response”, Zika remains a significant public health threat, and **our priority is still to protect pregnant women and their fetuses.**



DPH Investment in Surveillance and Control

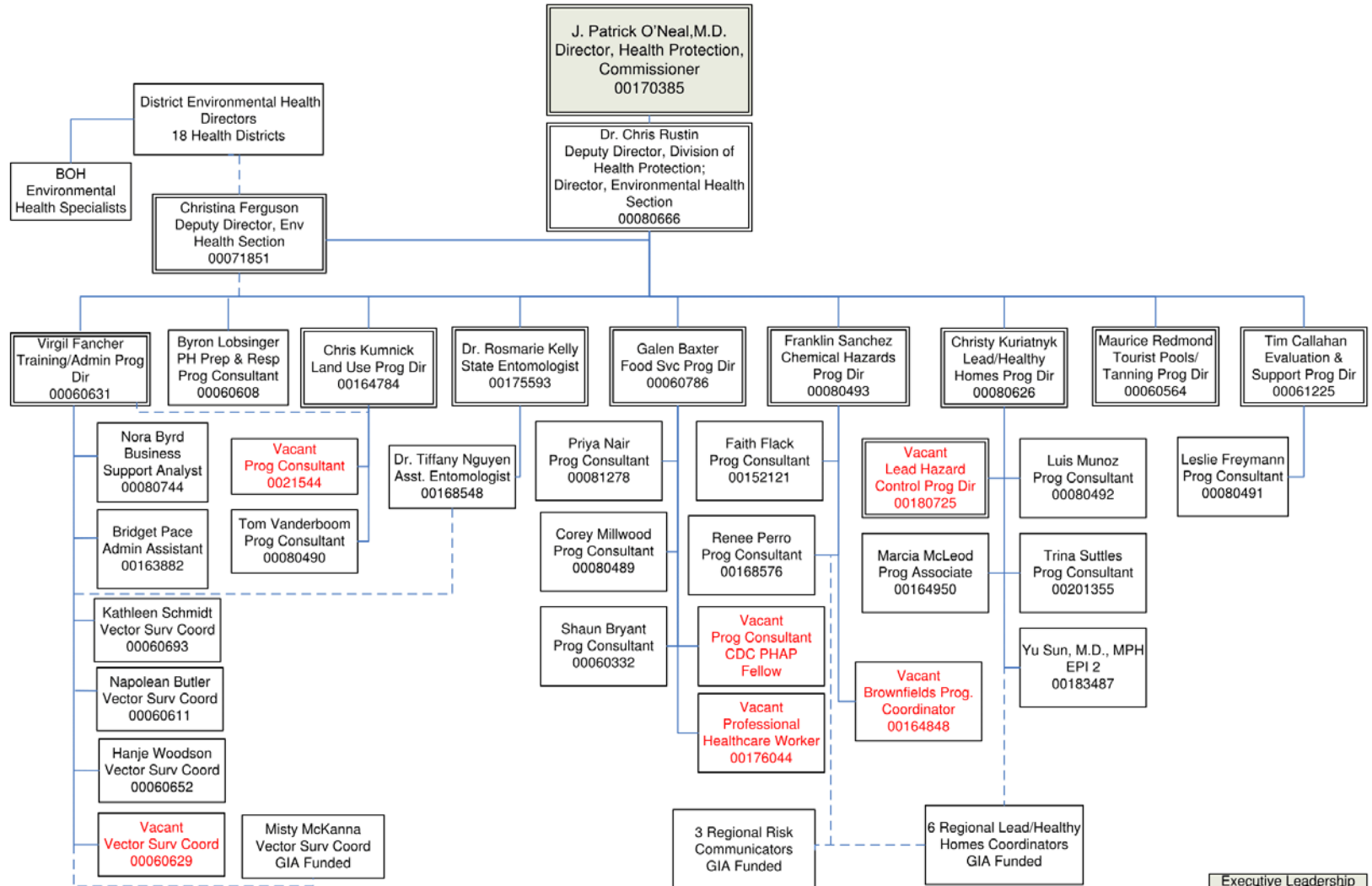
GA Public Health Entomologist

- Dr. Rosmarie Kelly transferred to EH Team from Epidemiology
- Connections with AMCA, GMCA, MAMCA ensures it is a priority for EH
- Training for new and seasoned EHS across the State
 - PH Pest of significance
 - ID
 - Risk Communication
- Mosquito's, Bedbugs, Chaga's, Flea Complaints

Department of Public Health

Division of Health Protection

Environmental Health Section



ELC and EP Zika Funding

- Funding to support VSC program and training to VSCs, EH strike teams
- All districts received mosquito surveillance equipment
- 6 Districts received additional \$\$ for mosquito surveillance, equipment and travel funding for EHS in May 2017
- Allocated funds to non VSC district for FY 18

The Role of Environmental Health (EH)

Zika Virus Prevention + Control

- **Public Health Entomologist**

- Hired Dr. Tiffany Nguyen
- Vector Control and SME
- Mosquito Surveillance for Arboviruses
- Public Education and Enhanced Communication

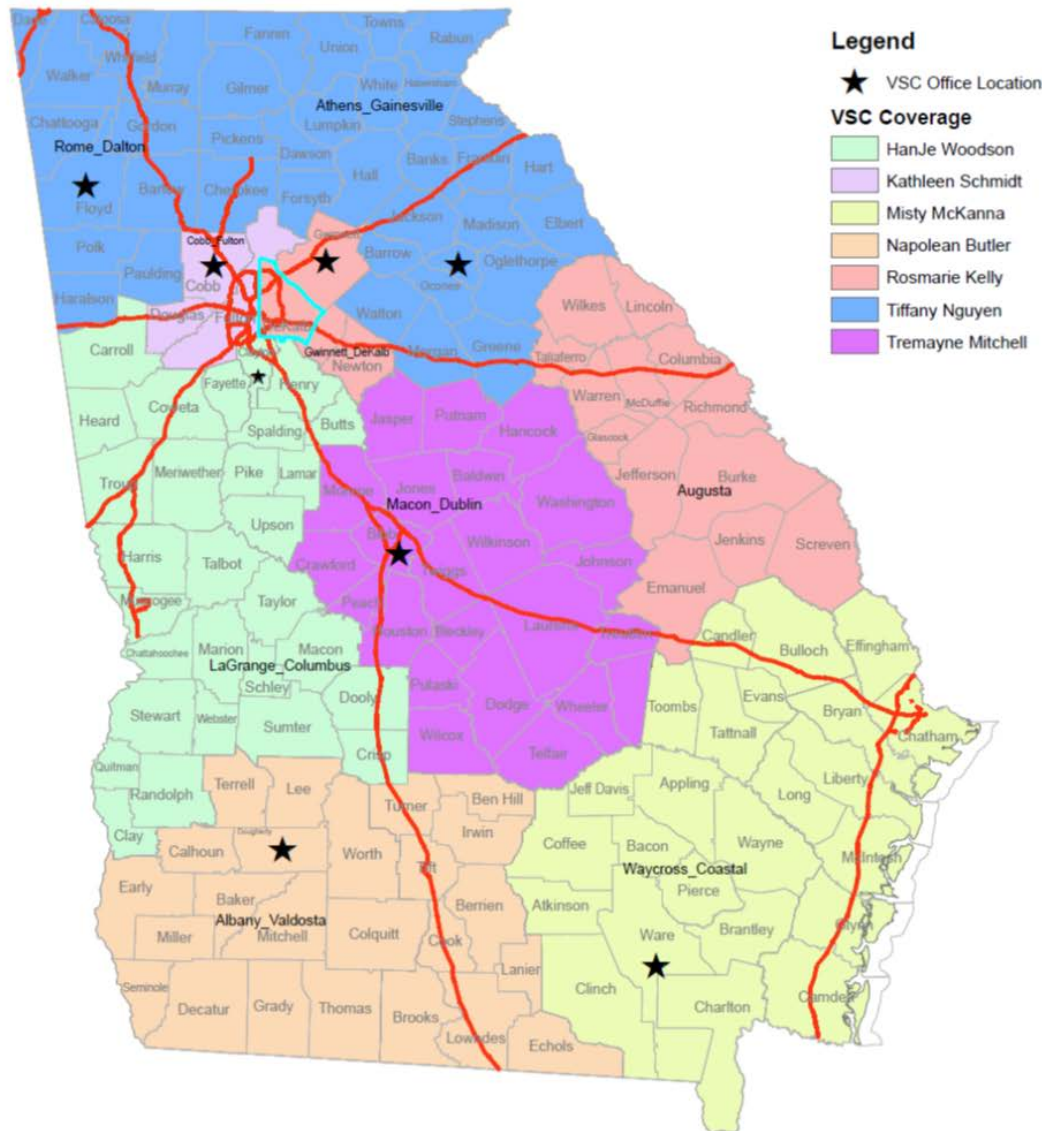


- **Surveillance**

- Workforce:
 - Dr. Rosmarie Kelly, PhD, MPH and Dr. Tiffany Nguyen
 - DPH Vector Surveillance Coordinators
 - Training
 - EH EP Strike Teams, 6 teams of 6 EH
- Equipment
 - Mosquito Surveillance Trailer
 - Traps, Microscopes, Backpack Sprayers, etc.



Environmental Health Vector Surveillance Regions



Legend

★ VSC Office Location

VSC Coverage

- HanJe Woodson
- Kathleen Schmidt
- Misty McKanna
- Napoleon Butler
- Rosmarie Kelly
- Tiffany Nguyen
- Tremayne Mitchell

Vector Surveillance Coordinator

Position has primary responsibility to conduct and coordinate mosquito surveillance for arboviral diseases such as West Nile Virus, Eastern Equine Encephalitis, Lacrosse Encephalitis, Zika and other arboviral diseases in a multi-county region. Duties will include

- establishing surveillance locations throughout the PH Districts,
- setting up traps and collecting mosquitos,
- mosquito identification,
- community assessments, and
- education programs.
- When necessary, coordinate mosquito control activities with existing city/county/contracted mosquito control agencies and assist with localized control efforts.

FOR OFFICIAL USE ONLY

0 5 10 20 30 40 Miles



Environmental Health
Emergency Preparedness and Response Planning

Created Date: March 07, 2016
Updated Region: May 26, 2017
Source: Georgia Department of Public Health
Office of Environmental Health
Office of Emergency Preparedness and Response
Office of Health Information and Planning
Prepared: Georgia Statewide Landmark Compliance
For Official Use Only

We Protect Lives.

Vector Surveillance and Response Trailers

- Using funds provided through a cooperative agreement with the CDC, purchased 10 Vector surveillance and response trailers and equipment
- Supports ongoing surveillance of vector and nuisance mosquito species around the state
- For use in any emergency or disaster where mosquitoes constitute a public health problem either by virtue of disease transmission or by nuisance factor.
- For use in emergency-related exercises, testing, or other training activities.



Trailer Information

- All trailers are tagged and titled through the state
- Equipment List
– ICAM

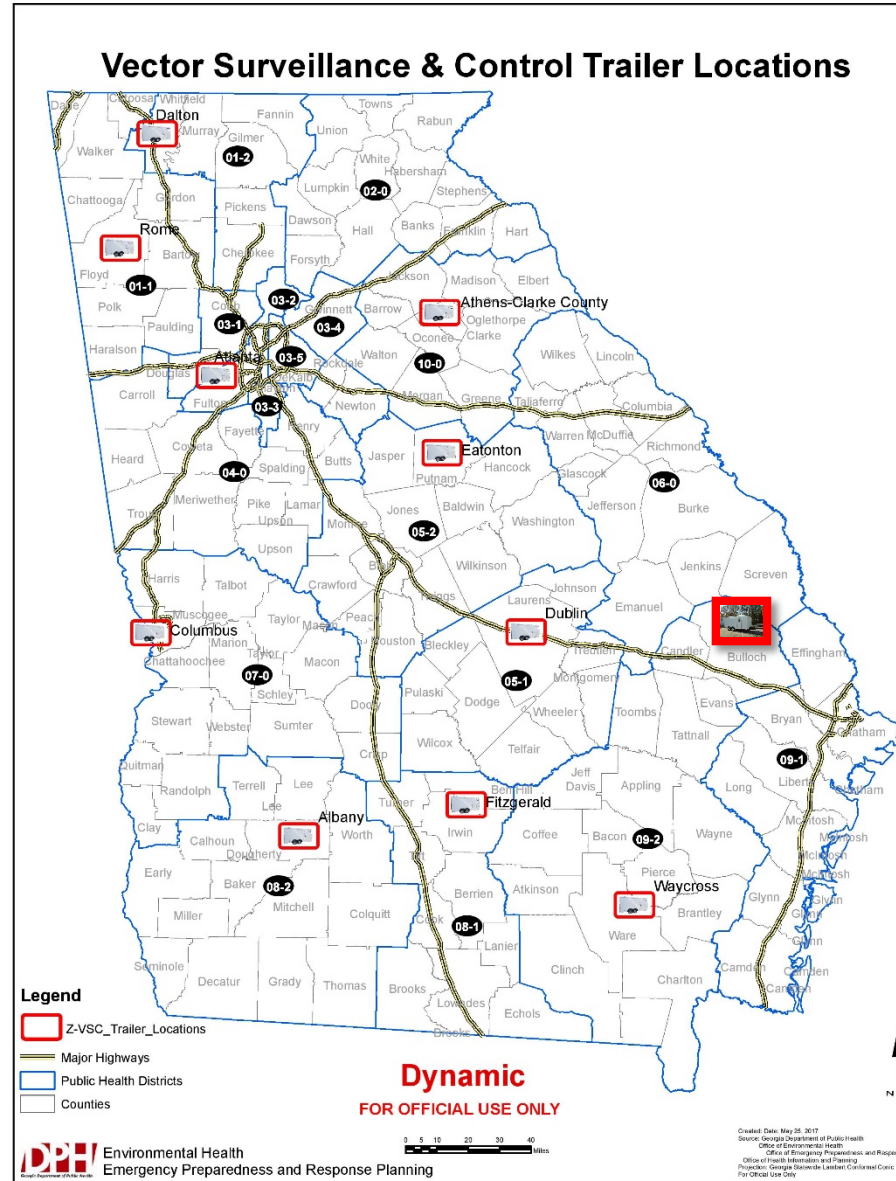
Zika Trailer		Final Trailer
Items	Unit Type	Inventory
Husky 18 Gal Tote	EA	5
Rubbermaid 32 Gal Trash Can w/lids	EA	1
Folding Tables	EA	3
Folding Chairs	EA	1
Backpack Sprayers	EA	1
Wheel Chock Lock	EA	1
W1" Ring	EA	3
W2" D-Ring	EA	3
12X2 Spring Fitting strap/buckle	EA	4
Tool Set 102 pcs	EA	1
Multimeters	EA	1
Large mouth jug	EA	1
Fiber Optic Microscope	EA	1
Fiber Optic Microscope Illuminator	EA	1
CDC Mini Light Trap	EA	7
Dry Ice Containers (Igloo)	EA	1
Double Ring Collection Bag	EA	10
Battery 6V-10amp HR	EA	10
DC Battery Pack w/charger 12V/14Hr	EA	4
Sentinel 2 Traps	EA	2
Replacement Battery, 12V DC	EA	2
Coolers 1/3 Gal. (Red)	EA	5
2-5/16" Hitch ball	EA	1



Trailers



District Locations



Environmental Health Localized Response

Work Directly with Local Partners with Controlling *Aedes* Species (*albopictus* and *aegypti*) in a Focused Area

- VSC and EH Strike teams can respond to local transmission

Action Triggers: Locally-acquired Zika

CDC Guidelines for Risk Based Zika Action Plans

Focus on a positive sample location (Local Transmission) or other area of concern and provide elevated control and education radiating out 150-yard radius and approximately 5 or more blocks or possibly county wide if Widespread Local Transmission.

These Elevated Controls Include:

- Inform Local Mosquito Control
- Surveillance and Testing
- Public Education TIP 'n TOSS
- Door-to-Door Inspections and Education

Other Control Measures Would Include Mosquito Population Suppression

- Larviciding (backpack and dunks)
- Barrier sprays for adults
- Possible ULV spraying if wide spread

Note: ULV adulticiding is not very effective for *Aedes albopictus*



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New Capacity + Partnerships

Funding

CDC Funding

- Received \$1.5 million to sustain the VSC program
- Purchase more equipment to ensure adequate VC
- Support additional Entomologist at Richmond County MC
- Pesticide resistance studies

Statewide Partnerships

- Consistent Public Health message for all districts and counties
- Data sharing between programs and DPH
- Refer EHS and public to credible websites for information
 - DPH, GMCA, AMCA, MAMCA, UGA
- VSCs provide complaint investigation, disease inv., and referrals
- Code Enforcement
 - International Property Maintenance Code



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We Protect Lives

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Mosquito-borne Viral Diseases

Several mosquito-borne viruses circulate in Georgia each year and are capable of causing disease in humans and other animals. The most common mosquito-borne viruses in Georgia include West Nile virus, Eastern Equine encephalitis virus, and LaCrosse virus. Saint Louis encephalitis virus has also been detected in Georgia in the past. Mosquito-borne viruses are most active late spring through early fall in Georgia.

Information for the Public

Mosquito-borne viruses can infect birds, horses, and other animals in addition to humans. If public health reports positive birds or horses in your area, or if you see large numbers of mosquitoes, you could be at increased risk of infection. Always take personal protective measures to avoid mosquito bites, especially when mosquito-borne viruses have been identified near you.

Information on Repellents:

- [Picaridin](#)
- [Oil of Lemon Eucalyptus](#)
- [DEET](#)
- [DEET Education Program](#)
- [CDC Repellent Use FAQs](#)

Information for Healthcare Providers and Laboratories

Testing for West Nile Virus – Forms and Instructions:

Commercial tests to detect WNV and other arbovirus antibodies are readily available at most commercial laboratories. During 2009, GDPH recommends that diagnostic testing for human arbovirus infections be performed at commercial laboratories. The Georgia Public Health Laboratory (GPHL) can perform testing for

Stay Connected

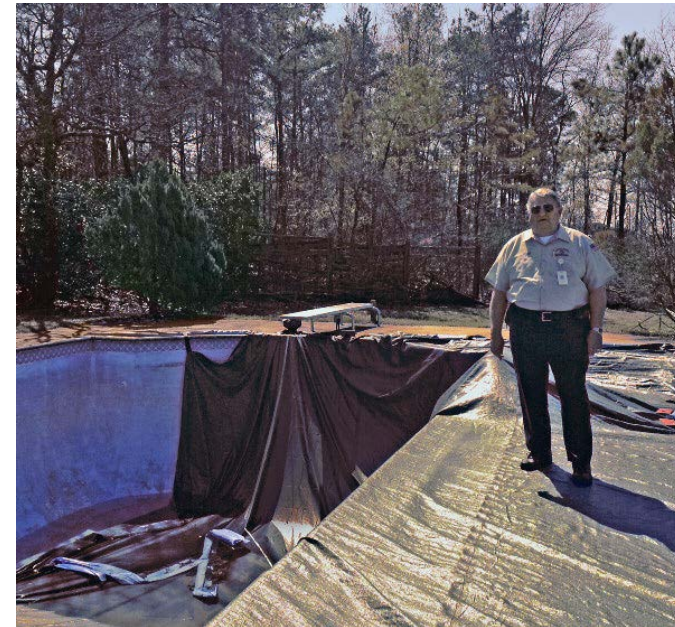


PH Mosquito Control Programs

- Columbus HD
- Richmond County HD *
- DeKalb County HD *
- Fulton County Health and Wellness
 - Contracted

Richmond County Health Department

- Successful Program supported by County
- Obscure county ordinance allows enforcement
- Education first
- Enforcement
- Natural remedies (Gambusia)
- Lessons learned shared with all 159 EH programs
- **Model for other counties**



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DeKalb County Health Department

DeKalb County Board of Health Arbovirus Program Update

2014 Season Update Reporting Activity January through September 30, 2014

Human Surveillance:

- 1 case* of West Nile virus (WNV) in a DeKalb County resident
- 11 WNV cases* in Georgia (Coffee [1], DeKalb [1], Forsyth [1], Fulton [6] and Richmond [2] counties)
- 1,177 WNV cases* (43 deaths) in CDC National Report including 374 in California, 155 in Texas and 102 in Louisiana

Mosquito Surveillance:

- 15 WNV positive mosquito collections from 11 locations in DeKalb County
- 69 WNV positive mosquito collections in Georgia (Chatham [4], DeKalb [15], Fulton [38], Liberty [1] and Lowndes [10] counties and Robins Air Force Base [1])
- 29 mosquito trap locations sampled in DeKalb County
- 313 collections of mosquitoes submitted for arbovirus testing
- 281 mosquito trap nights
- 5,700 mosquitoes counted and identified

Avian Surveillance:

- 15 reports of dead birds in DeKalb County
- No WNV positive birds

Mosquito Control Efforts:

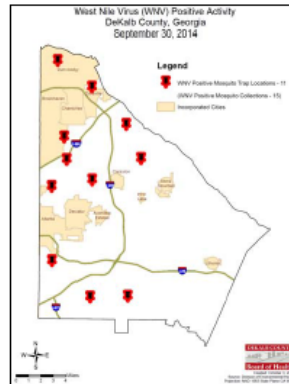
- 271 calls requesting mosquito control efforts received and visited
- 232 priority facilities including senior centers, personal care homes, higher risk centers and green spaces have been visited, larvicided and staff educated on eliminating mosquito breeding sites on their property
- 6,370 homes visited in door-to-door educational efforts
- Storm drains in the county larvicided
- Detailed assessments in the environment around positive activity and areas where surveillance has indicated increased risk for virus activity

Additional Arbovirus Activity in Georgia:

- 1 case with La Crosse/California encephalitis in north Georgia
- 3 cases of internationally-acquired dengue (Douglas [1] and Fulton [2] counties)
- 20 cases of internationally-acquired chikungunya (Bulloch [2], Cherokee [1], Clarke [1], Cobb [2], Columbia [1], DeKalb [2], Franklin [1], Fulton [3], Gwinnett [3], Hall [1], Oconee [1], Muscogee [1] and Tattall [1] counties)

**Includes confirmed and probable cases*

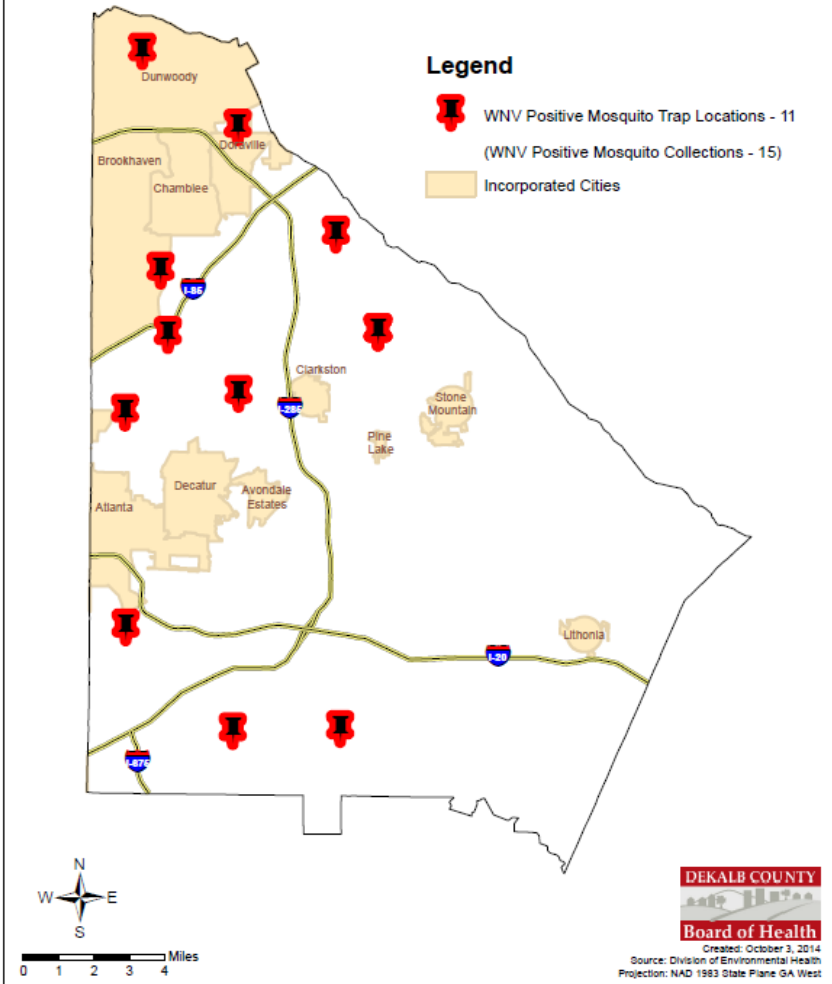
Compiled by the Division of Environmental Health at the DeKalb County Board of Health



West Nile Virus (WNV) Positive Activity DeKalb County, Georgia September 30, 2014

Legend

- WNV Positive Mosquito Trap Locations - 11
- (WNV Positive Mosquito Collections - 15)
- Incorporated Cities



DEKALB COUNTY
Board of Health

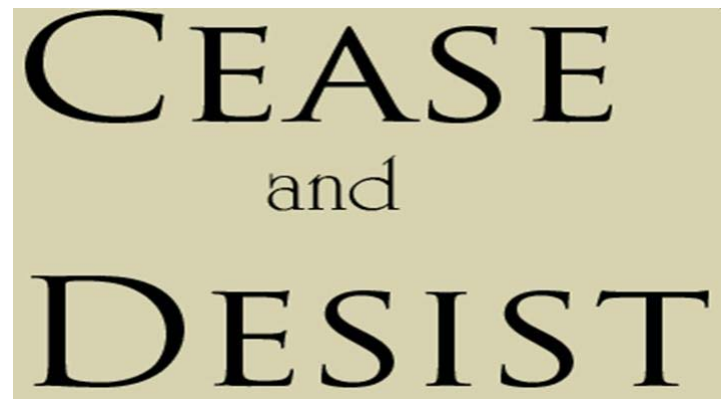
Created: October 3, 2014
Source: Division of Environmental Health
Projection: NAD 1983 State Plane GA West



We Protect Lives.

Chatham County

- Long standing partnership between PH and Mosquito Control
- Coordinated messaging to the public
- Complaint referral
- Public Health Orders to treat property



We Protect Lives.

Albany Public Health District

- Limited mosquito control with many complaints
- Public Health risk communication
- Purchas mosquito dunks to provide public with education
- Media interviews



We Protect Lives.

Columbus PH Vector Control

- Vector Control staff investigates rat, roach, mosquito, and other pest complaints.
- Larviciding and adulticiding in warm months
- Rat baiting program on public right-of-way and sanitary sewers in cold months



Academic Partnership DPH, GSU and City of Statesboro

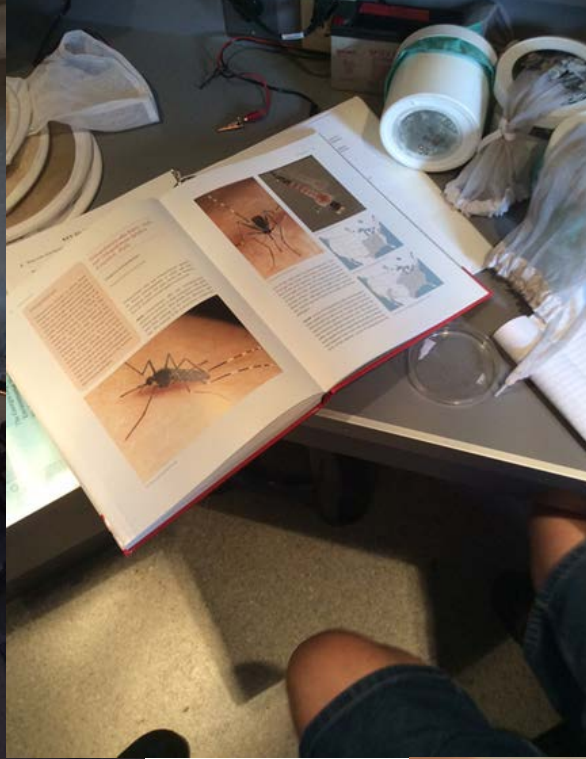


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Training

- Moved DPH Surveillance and Response trailer to Statesboro
 - Laboratory and response capability
 - Storage of equipment
- Provided training on the trailer and sent students to mosquito ID training
- Orientation with the City staff and trap locations





Valdosta State University

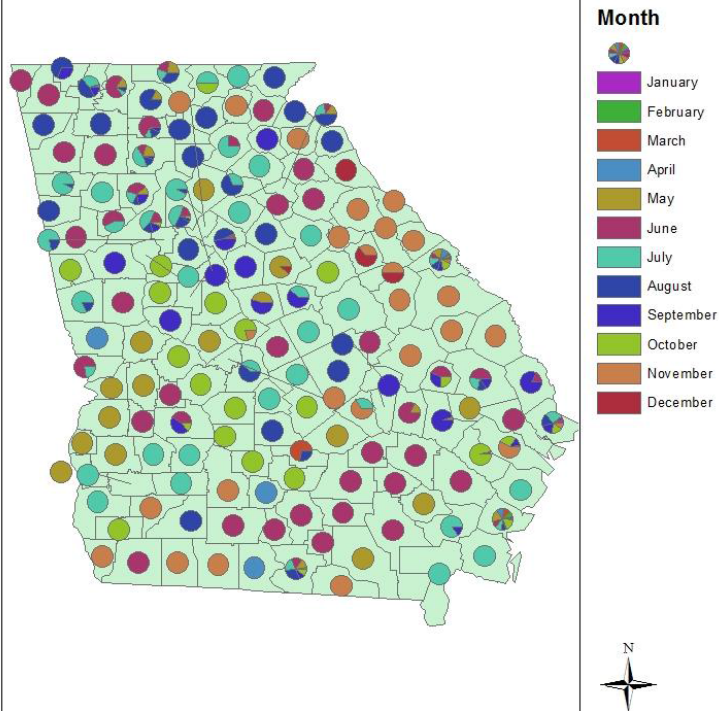
- Contracted with City of Valdosta and Lowndes County to conduct surveillance and viral testing
- Future partnership with the Valdosta Public Health District

State Level Commitment

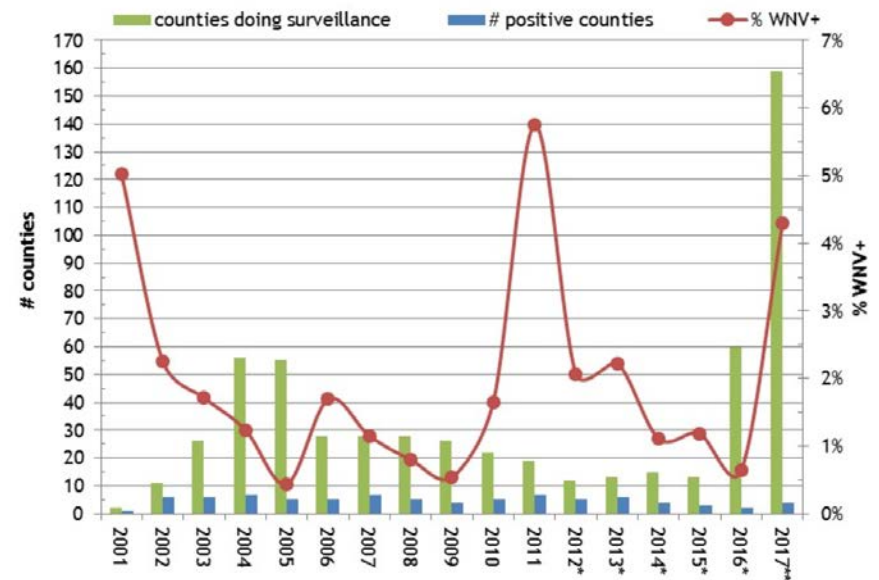
- Training for EH staff and partners
 - Mosquito ID courses
 - Pesticide resistance
 - Emergency Vector Control
- Consistent Public Health Education and Risk Messages
- Support to State PH Entomology program
- *Data collection and analytics*

Mosquito Surveillance

Mosquito Surveillance Data by County

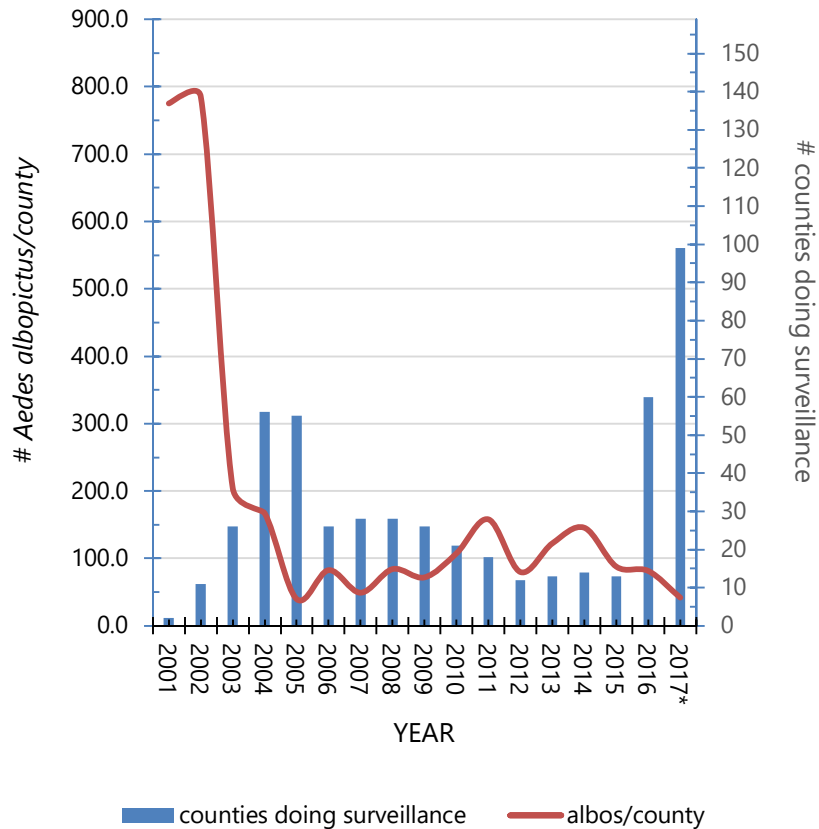


Georgia Mosquito Surveillance

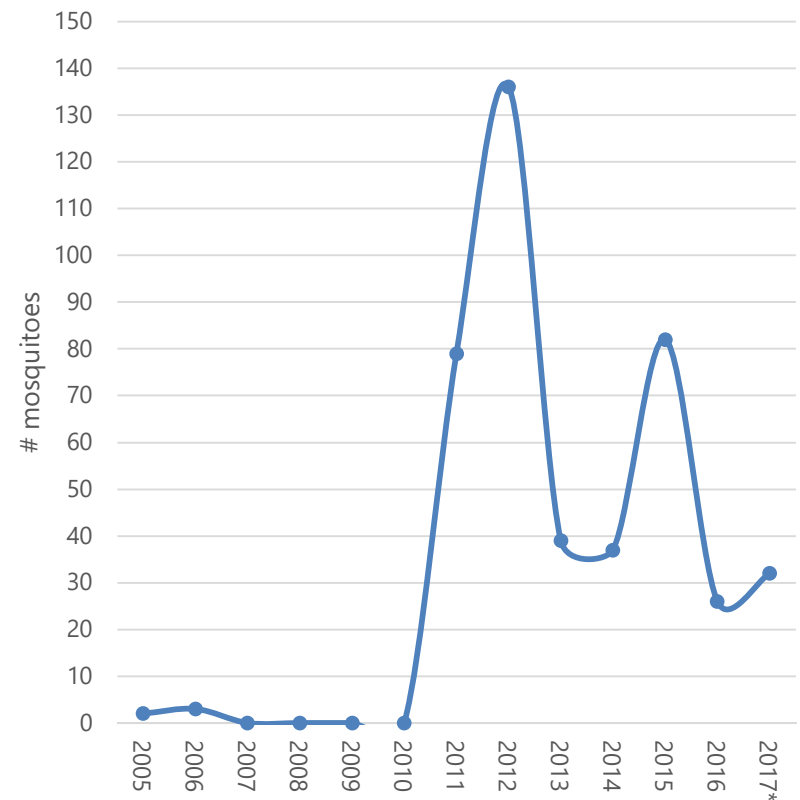


ZIKV Surveillance

Aedes albopictus Surveillance



Aedes aegypti Surveillance, Columbus GA



Challenges

- **Funding**
- Diseases are just a plane ride away
- CDC focus on clinical specimens and not arboviral surveillance
- Public complacency
- Fear of chemicals
- Loss of programs
 - Cobb County Health Department eliminated programs

Contact

Dr. Chris Rustin, DrPH, MS, REHS

Director, Environmental Health Section

Georgia Department of Public Health

2 Peachtree Street NW, Suite 13-102

Atlanta, GA 30303

404-657-6534

Chris.rustin@dph.ga.gov