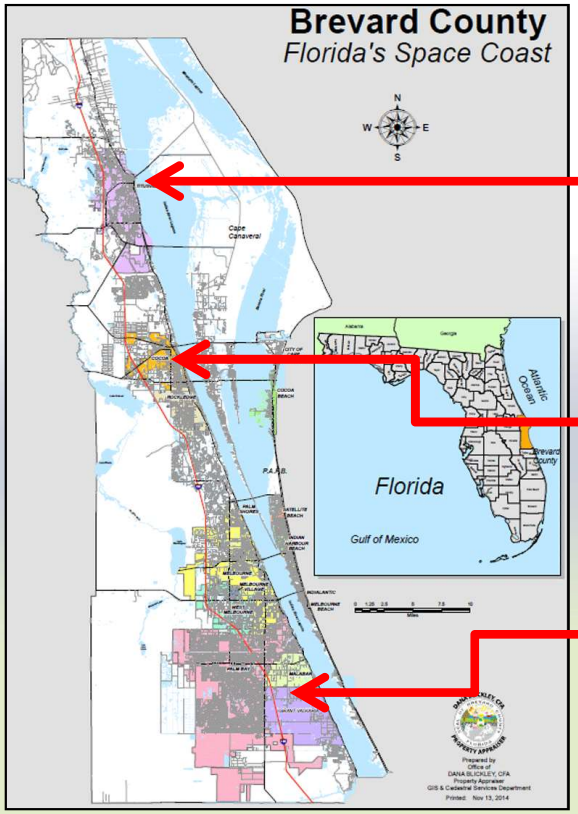
Brevard COUNTY

Mosquito Control Department

Countywide Operations

- **Brevard Mosquito Control District created in 1937 by the Florida Legislature**

- **State approved Mosquito Control District under Chapter 388, F.S. and Rule 5E-13, F.A.C.**



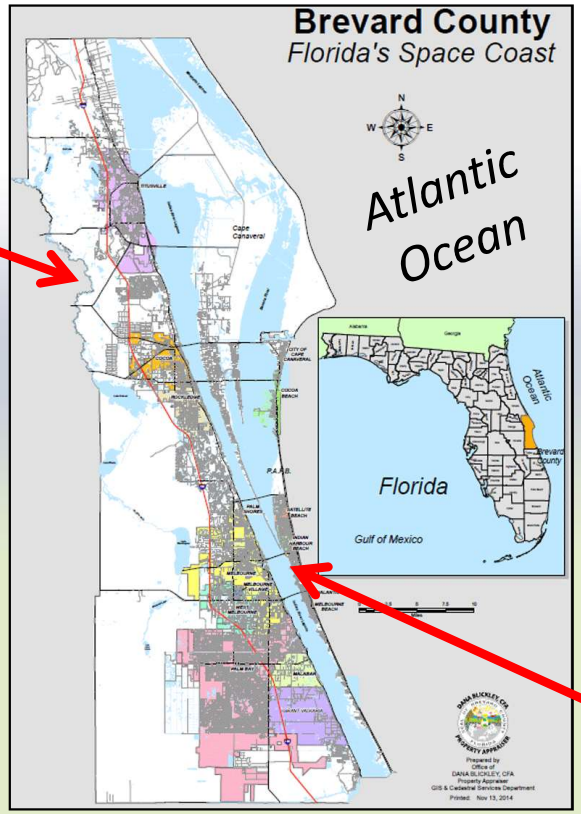
- **MCD North Office in Titusville**
  - Aircraft Operations
  - Environmental Lab
  - Ground Operations
  - Shop/ Vehicle Maintenance
- **MCD Central Office in Cocoa**
  - Native Mosquitofish Hatchery
  - Watercraft Operations
  - Shop/ Vehicle Maintenance
- **MCD South Office in Valkaria**
  - UAS/ Drone Operations
  - Water Quality Lab
  - Ground Operations
  - Shop/ Vehicle Maintenance

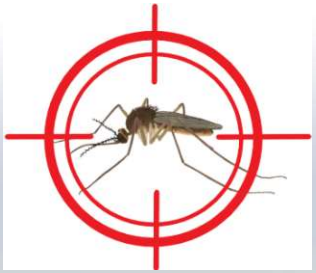
Mosquito Control Team…

- Administrative and Support Staff
- Aquatic Plant Inspector/Sprayers
- Environmental Technicians and Biologists
- Impoundment Technicians (Heavy Equip, Pumps)
- Mosquito Control Inspector/Sprayers
- Manned/ Unmanned Aircraft Pilots and Mechanics
- Safety, Calibrations, Compliance Staff
- Shop Mechanics, Fabricator and Maintenance Staff

Productive Mosquito Habitats in Brevard

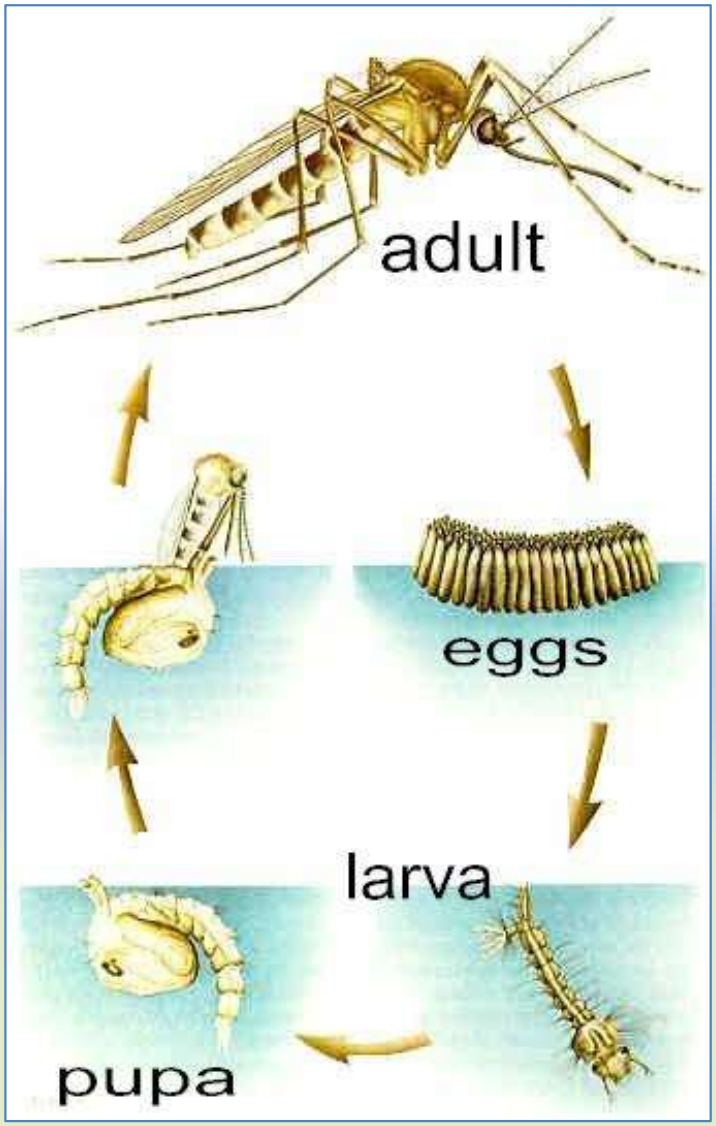
St. Johns River

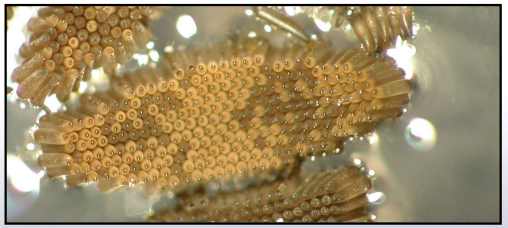




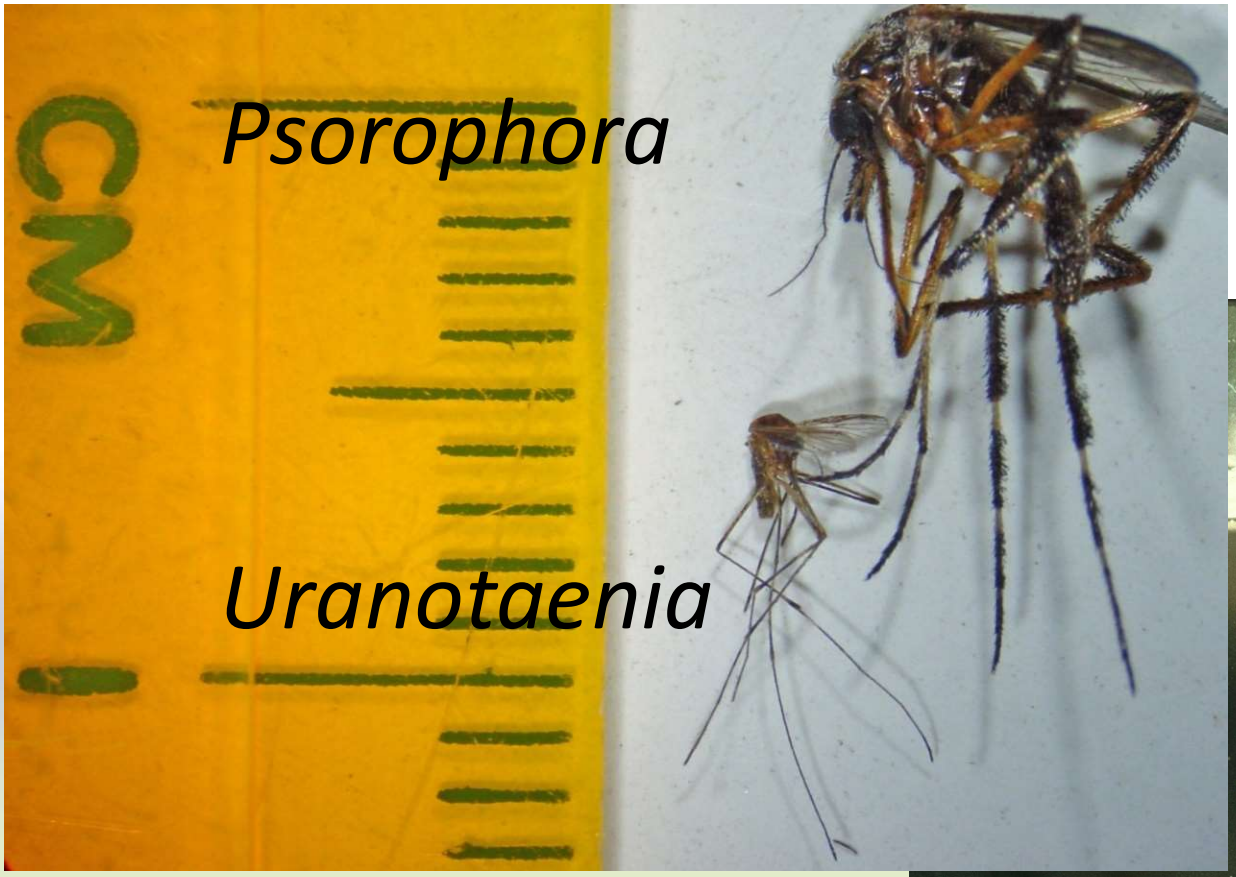
Indian River Lagoon

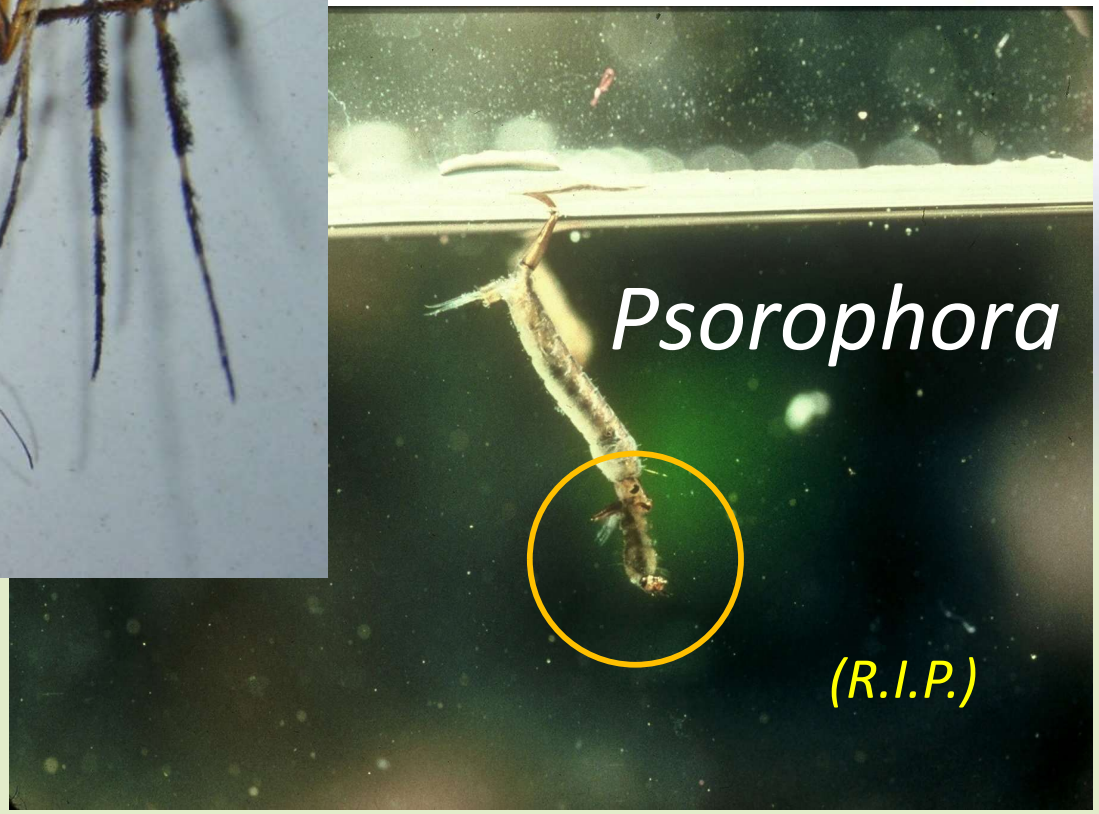
The Mosquito





Approx. 45 known species of mosquitoes in Brevard!


Psorophora
Uranotaenia


Psorophora
(R.I.P.)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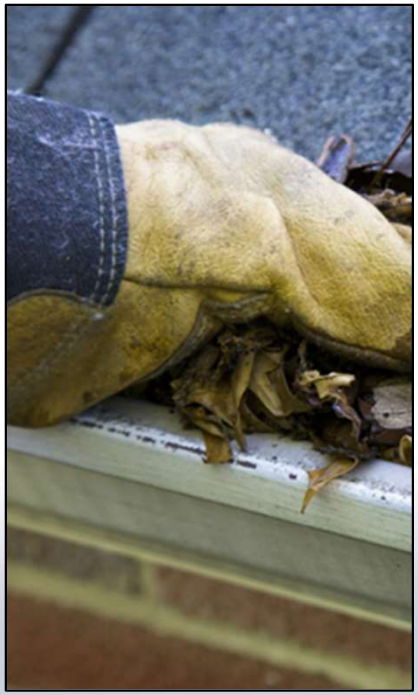
- West Nile virus (WNV)
- St. Louis encephalitis virus (SLEV)
- Eastern equine encephalitis virus (EEEV)
- Highlands J (HJ)
- Dengue virus (DENV)
- Yellow Fever
- Zika virus (ZIKV)
- Chikungunya virus (CHIKV)
- Oropouche virus (OROV)
- Malaria
- Dog heartworm

Local History of Mosquito-borne Illnesses

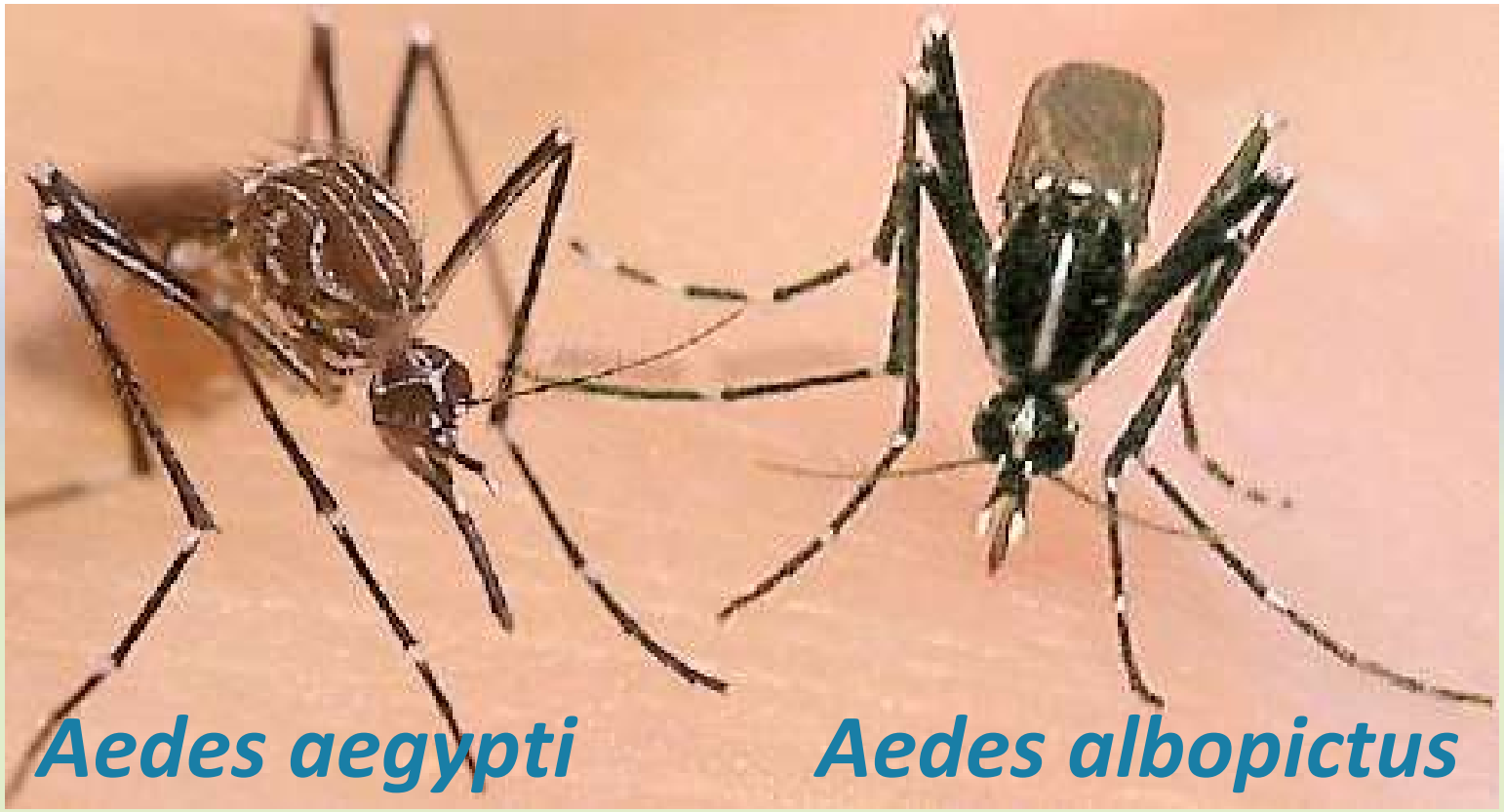
Integrated Mosquito and Environmental Management

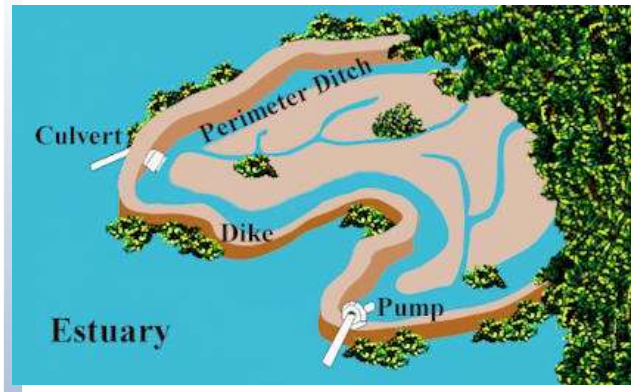
Source Reduction



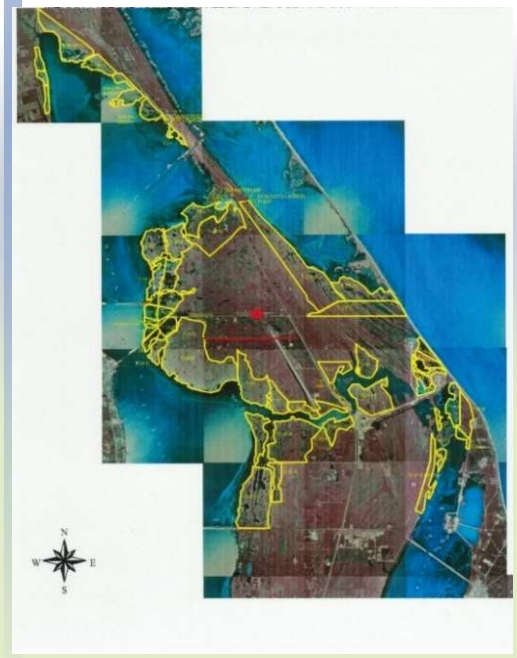





Aedes aegypti
Aedes albopictus



Managing the Habitat: Mosquito Impoundments

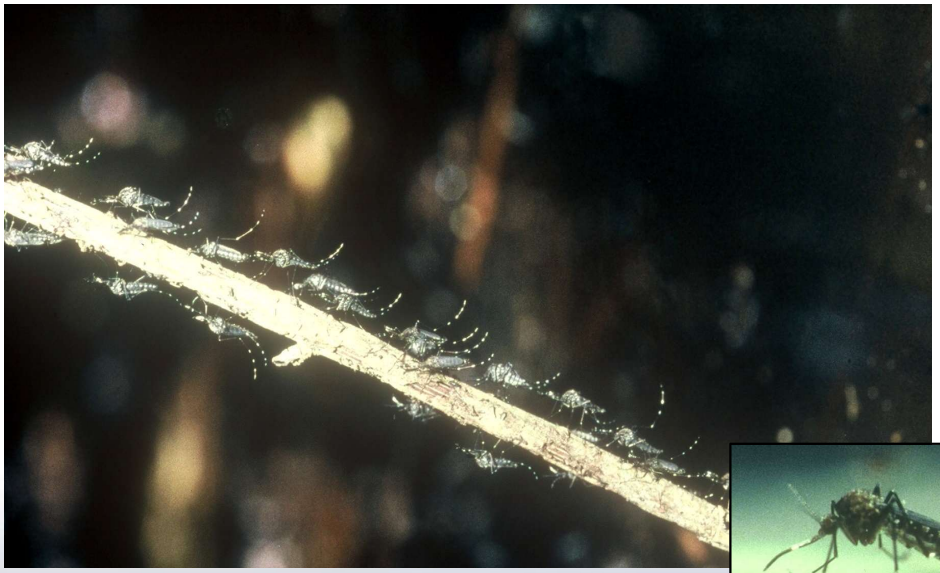


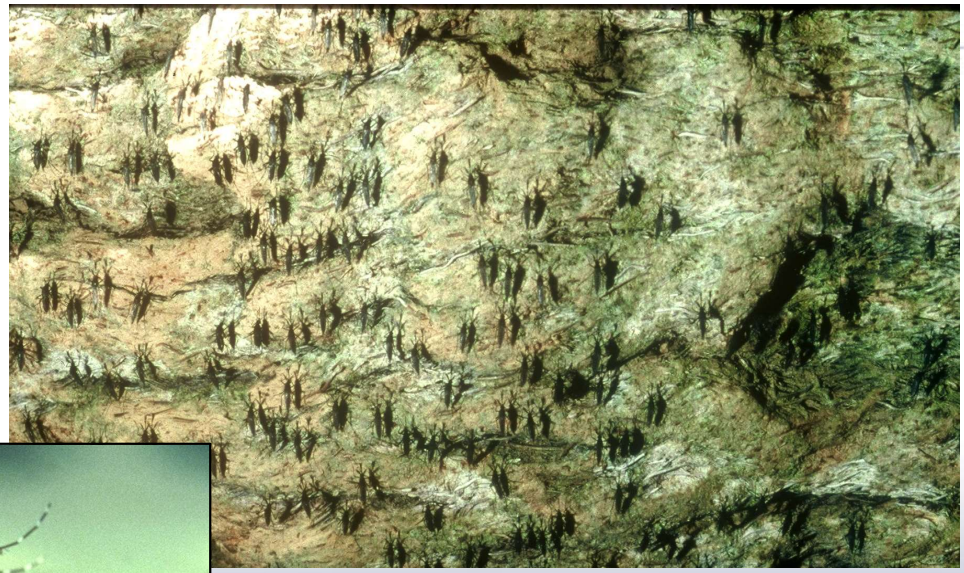
- Salt marshes known to produce up to 2 billion mosquitoes per acre (primarily *Aedes taeneorhynchus* and *Ae. sollicitans*)
- Salt marsh mosquitoes known to fly up to 25 miles
- Impoundments built in the 1950's and 1960's
- Approx 28,000 acres managed in Brevard
- Enhanced by culverts and pumps over the years…

Salt Marsh (Floodwater) Mosquitoes

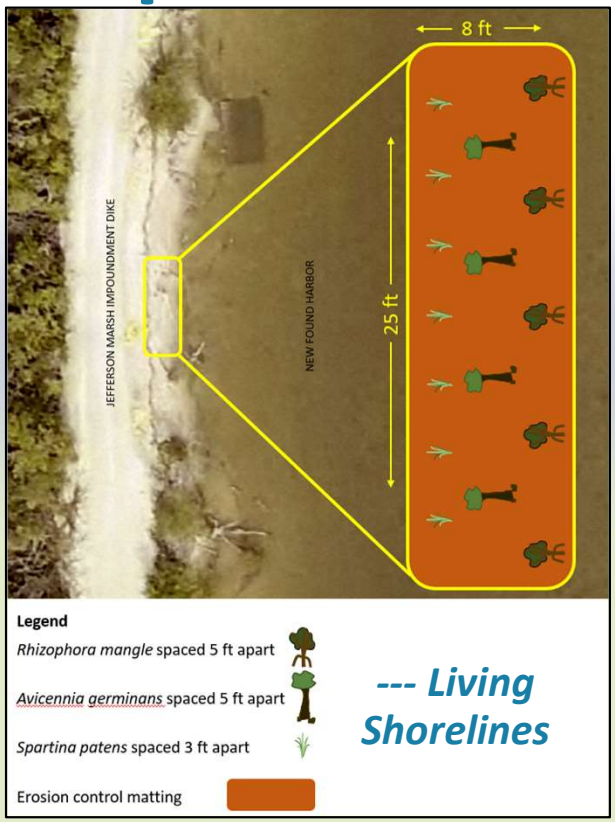
Aedes sollicitans

Aedes taeniorhynchus





Ongoing Indian River Lagoon Restoration Project Opportunities at Mosquito Impoundments



Biological Control: Native Mosquitofish Stocking Program


Gambusia holbrooki

- One adult consumes up to 100 mosquito larvae per day
- Large-scale stocking during water level rise events (tidal/ rain-driven)
- Mosquitofish giveaways for residents at community outreach events
- Over 160,000 mosquitofish distributed in 2025!

Biological Control: Male Mosquito Release Program

- **Male mosquitoes *<u>do not</u>* bite**; not equipped for blood feeding like females
- These males mate with local females; eggs do not hatch; population and disease risk reduced
- Technique developed in 1940s; used in the US since 1950s (e.g., Screwworm, Mediterranean fly and other fly species, and many moths)
- Successful mosquito trials (e.g., 79% reduction found in Lee County's program)
- Environmentally friendly: helps reduce pesticide usage and resistance

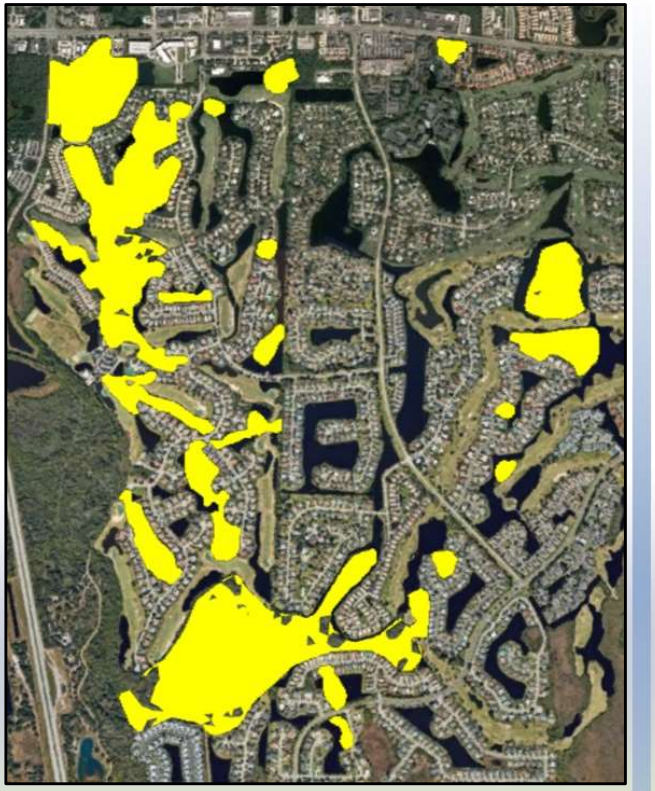
Daily Habitat Inspections and Larval Treatments

- EPA tested and approved materials used
- Derived from such natural materials such as soil bacteria
- Treatments are targeted to minimize impacts
- All applicators on staff are licensed in Public Health by FDACS

Various Retrofits & Innovations Developed to Enhance Efforts

Accessories are Interchangeable: Liquid / Granule / Fish Tank Attachments

Drone (UAS) Inspection and Treatment Program Off the Ground!

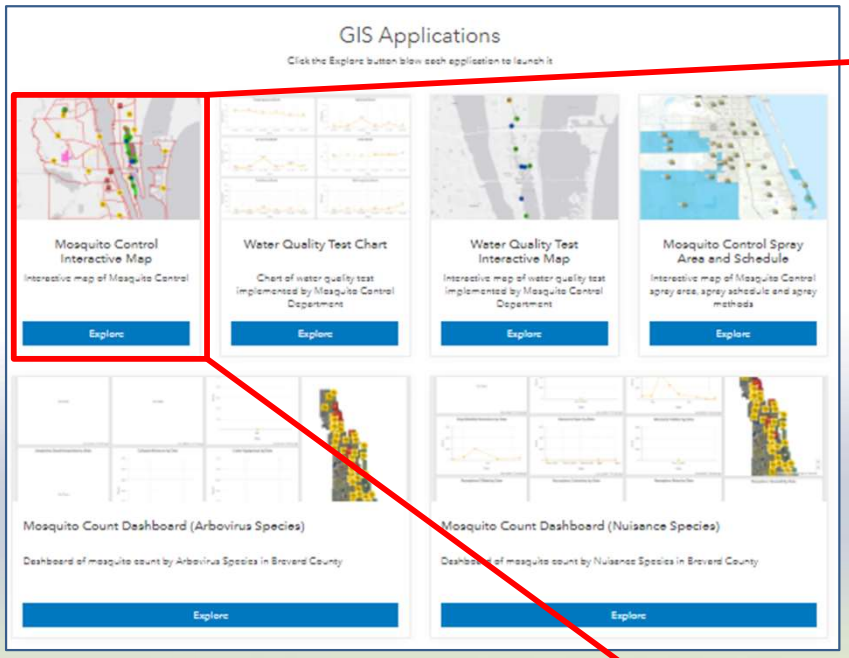


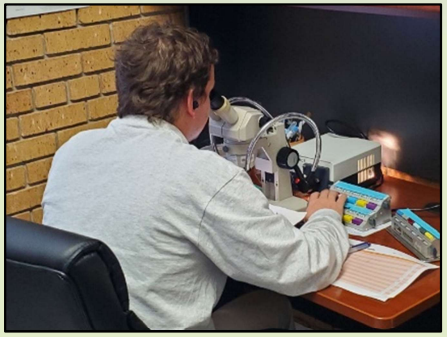
- Started with in-house inspections and contracted treatments
- In-house drone pilots fully licensed by FAA and FDACS
- Initially intended for a specific niche: small, inaccessible sites
- Now capable of conducting all daytime aerial treatments of larval mosquitoes, Countywide

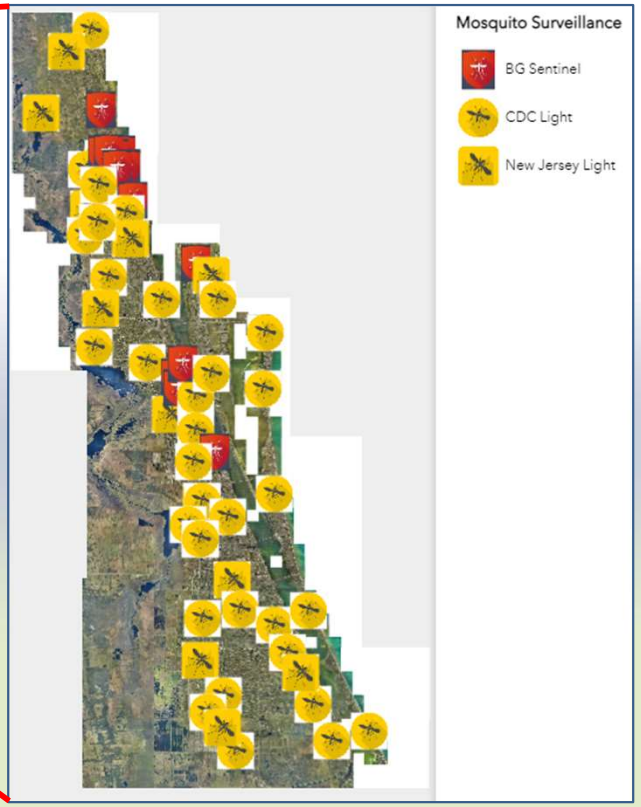
Drone Program Equipment

Drone Treatment Mobilization

Weekly Mosquito Trap Surveillance



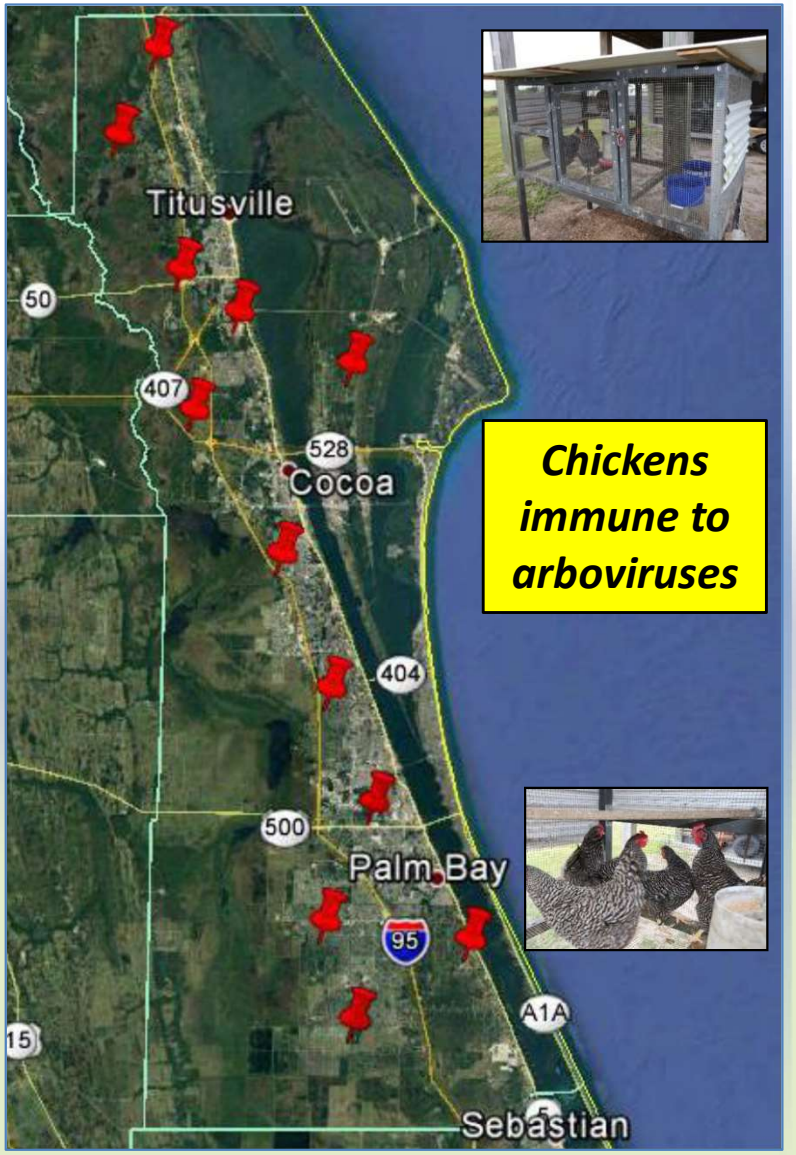




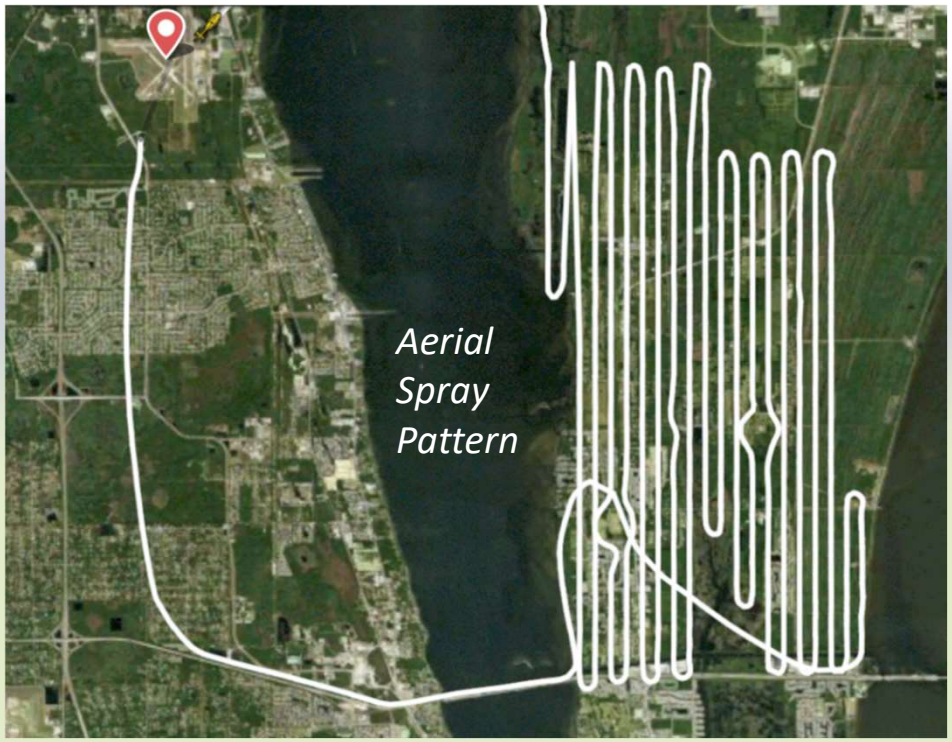
50 traps collected per week

Mosquito-borne Virus Monitoring: Sentinel Chickens

- **Weekly monitoring of 72 chickens Countywide (12 coops with 6 birds each)**
- **Residential sites, WTP and Mosquito Ctrl offices**
- **Blood samples collected weekly and sent to FL Dept. of Health for testing**
- **Weekly review of regional/ statewide trends conducted, beyond local trapping, to set priorities**

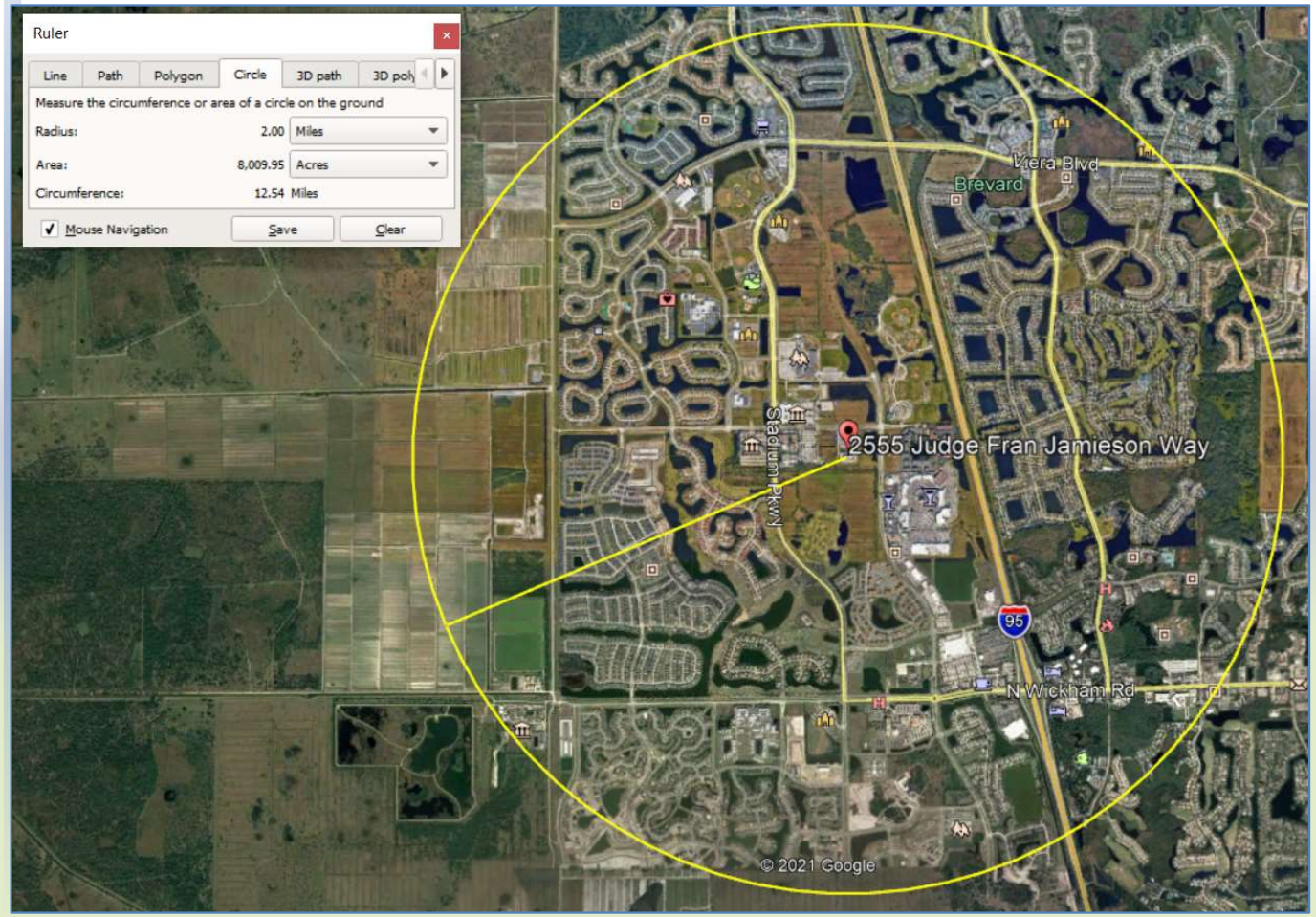


Nighttime Spray via Ground and Air



- EPA tested and approved pesticides used
- Applied after sunset to reduce potential impacts to pollinators and other wildlife
- Ultra Low Volume (ULV) systems deliver microscopic droplets (0.6 to 1.0 oz/acre)
- All applicators on staff are licensed in Public Health by FDACS

Responses to Presumptive and Confirmed Cases



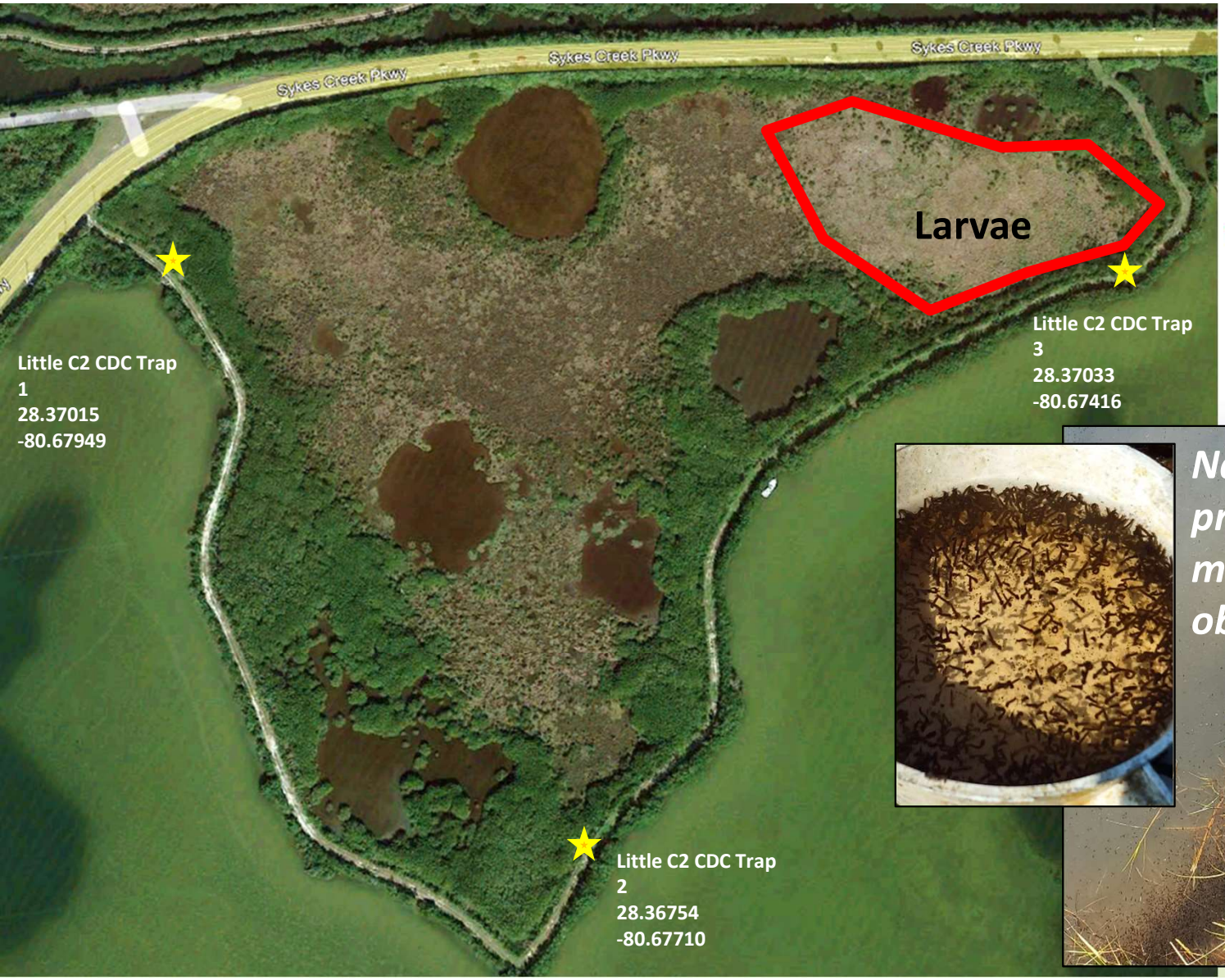
- Local or travel case reported by DOH
- Review existing surveillance data
- Conduct additional surveillance
- Conduct larval treatment and/or adult spraying as needed
- Repeat!

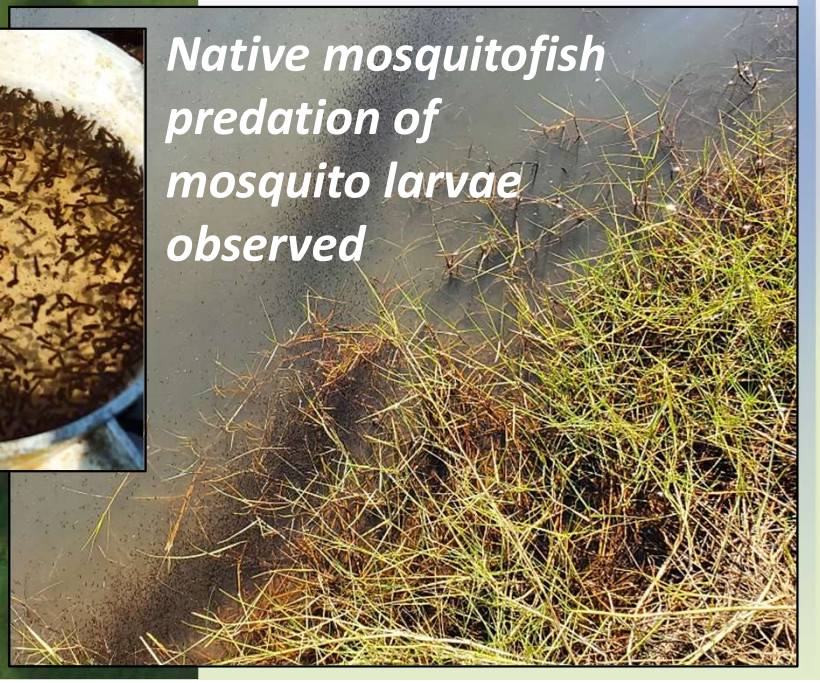
Countywide Emergency Readiness

- Closely coordinate with EOC as hurricanes approach
- Measures taken to protect Department resources ahead of storm
- Immediate field and facility reconnaissance as storm passes
- Countywide floodwater assessments and mosquito surveillance
- Conduct larval treatments, fish stocking and nighttime spraying
- Coordinate with State (FDACS) on FEMA-funded spray missions
  - If declared emergency, requires trap data, support letters, spray maps, etc.
  - Yielded 98% reduction in mosquitoes following Hurricane Milton

Research, Testing, Partnerships and Grant Funding

2023 Pre-Season Pilot Study at Little C-2 Impoundment

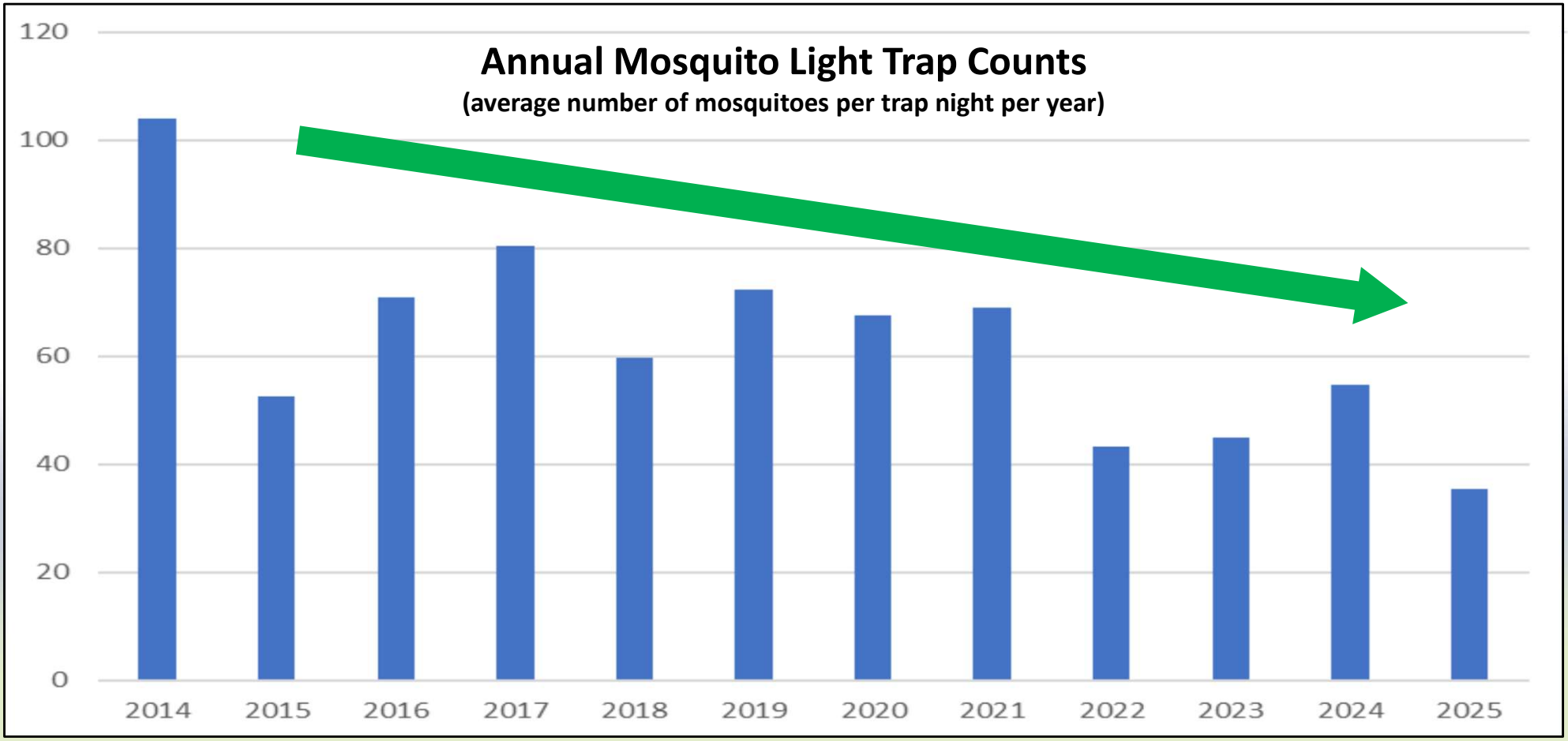




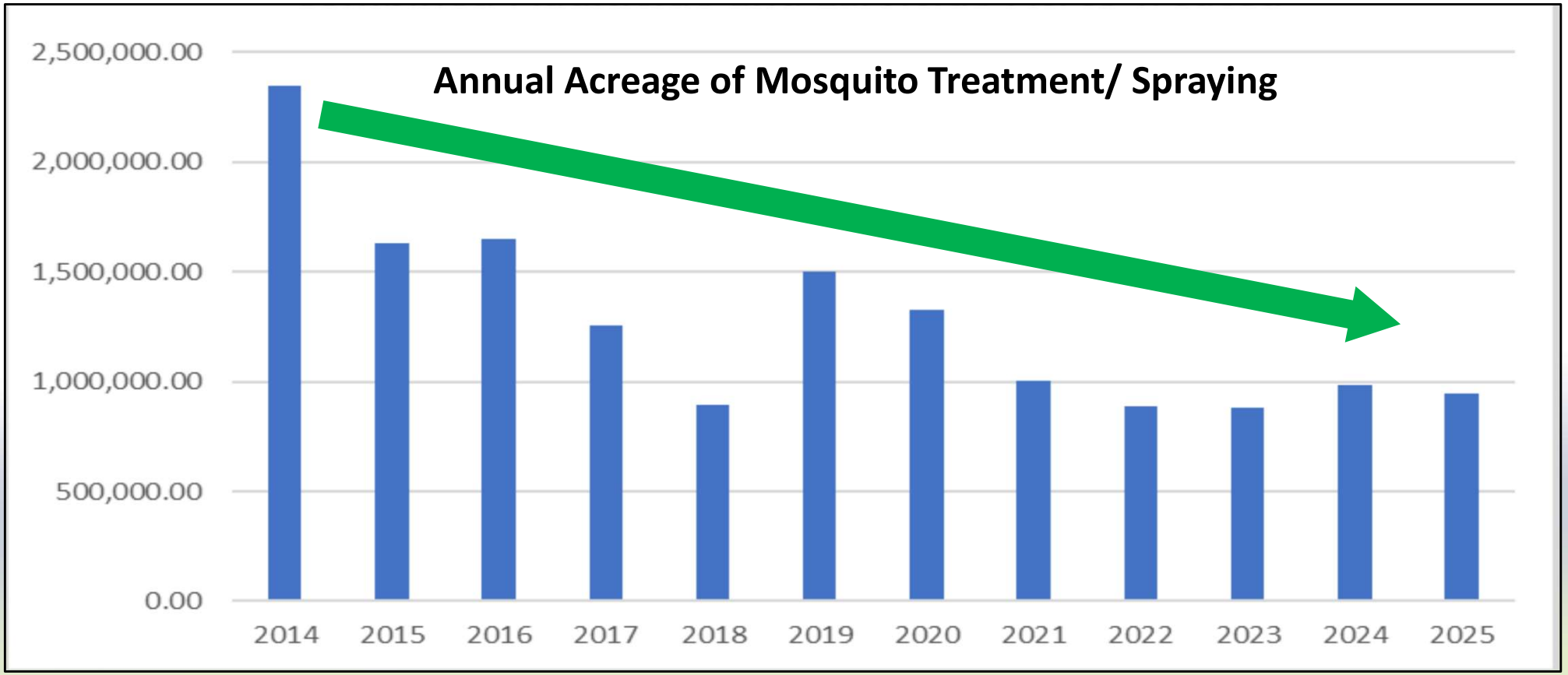
Native mosquitofish predation of mosquito larvae observed

Expanded and Applied Testing

- Tested larger-scale impoundment sites
- Enhanced pumping and fish stocking efforts to head off first mosquito brood
- Reduced need for pesticide applications
- No significant mosquito emergence occurred in test areas

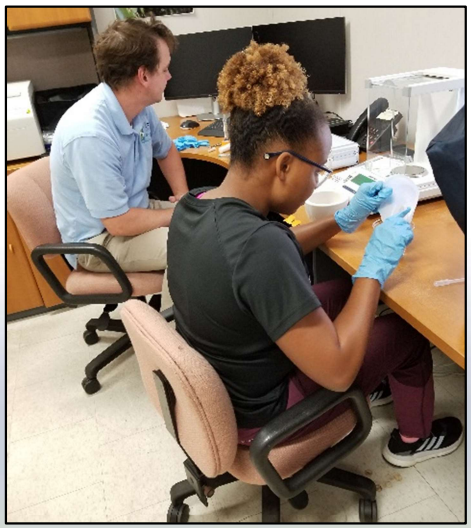


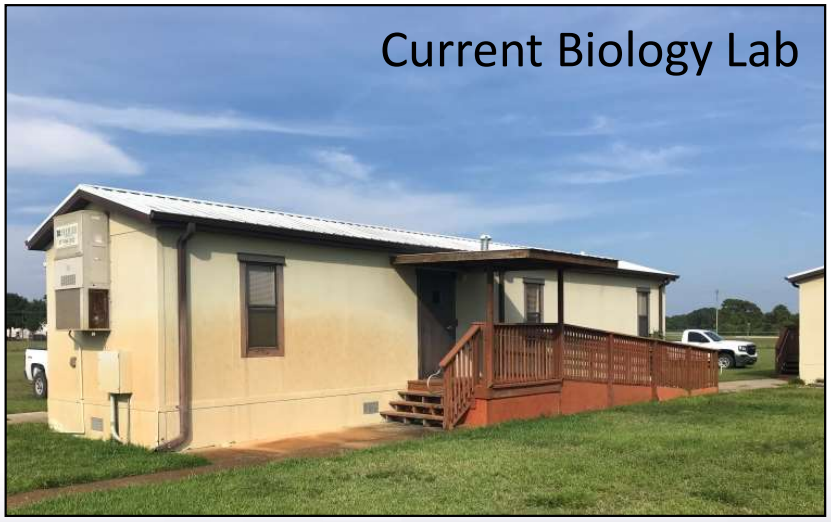
Continuous Improvement of Mosquito Management and Environmental Methods Appear to Yield Reductions in Mosquito Populations Over Time



Long-Term Trends Indicate an Overall Reduction in Pesticides as New Technologies and Developments in Mosquito and Environmental Management are Implemented

New Lab Equipment *Squeezed* into Existing Facility





- Expanding in-house resistance, efficacy and disease testing program
- Awarded $300,000 in ARPA funds for laboratory equipment
- New laboratory design underway; anticipate 2025-2026 construction

Grant Funding: Mosquito Impoundment/ Indian River Lagoon Projects

- FDEP: $15,017 awarded for current Melbourne Beach breakwater and living shoreline resilience project
- FDEP: $23,100 awarded for upcoming wetland restoration project (culvert connections to IRL)
- US FWS: $465,000 (+ NRM partnership) awarded for wetland acquisition
- FDEP: $25,000 funding pending to host community waste tire amnesty events

CDC/ FDACS Grant Funding: Equipment

Budget Category	Equipment	Amount
BLI- 30794 Drone Support	– 2 portable lifts – 2 inverter generators – 2 truck toppers	$117,800.00
BLI-30816 Mosquito traps	– 6 biogents counter traps – 4 floating emergence traps – 40 CDC traps – 4 gravid traps	$28,500.00
BLI-30735 Larvicide equipment	– 2 Buffalo Turbine air blast machines – aerial larvicide broadcasters	$274,000.00
BLI-30739 Adulticide equipment	– 4 electric ULV truck mounted sprayers	$68,000.00
BLI-30761 Pallet lifter	– Narrow aisle pallet lifter	$52,000.00
BLI-30745 Generator	– 150kW Deisel Generator	$103,050.00
BLI-30742 Droplet measurement system	– DropVision Basic Software & Microscope System	$8,150.00

Budget Category	Equipment/ Supplies	Amount
BLI- 77309	Drone System	$28,400.00
BLI- 77318	Hydraulic Excavator	$181,028.00

$861,500
awarded

Employee Development and Participation

Employee Opportunities and Development

- Department works closely with Human Resources to update job positions and create career ladders/ paths for employee development and succession
- Increased employee participation and graduation from Brevard County's Employee Development Program and Executive Leadership Institute
- These employees represent Brevard County at various community outreach events and at statewide workshops as leaders in the Mosquito Control industry…

Industry Participation and Leadership

Open House Events: Local Health Department and Military Visits

Community Engagement

Thank You…

Be Safe!

DOH-Brevard Issues Mosquito-Borne Illness Alert

Contact:
DOH-Brevard Communications
DOH-Brevard.Communications@FLHealth.gov

Brevard, Fla.—The Florida Department of Health in Brevard County (DOH-Brevard) is informing residents of four confirmed cases of locally-acquired dengue. DOH-Brevard and Brevard County Mosquito Control are coordinating surveillance and prevention efforts by enhanced monitoring for mosquitoes and diseases as well as targeted mosquito treatment and overnight spraying to reduce the risk of disease transmission.