

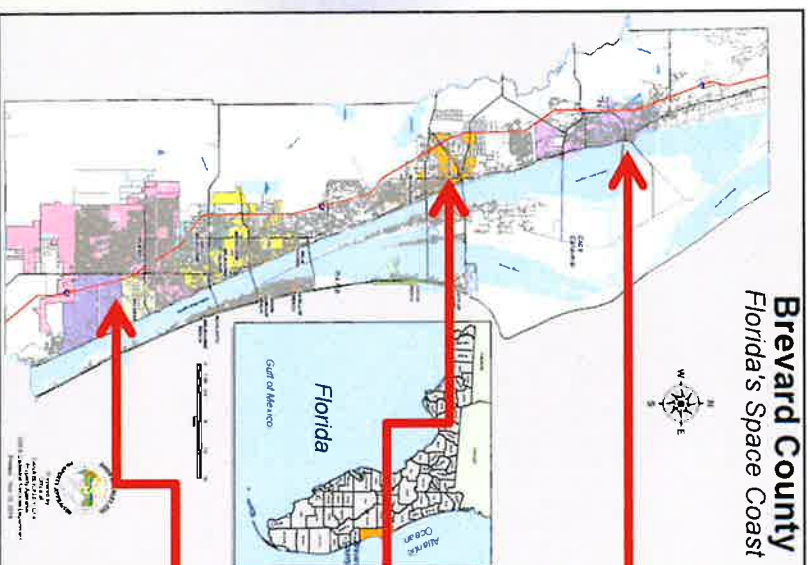
Mosquito Control Department

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

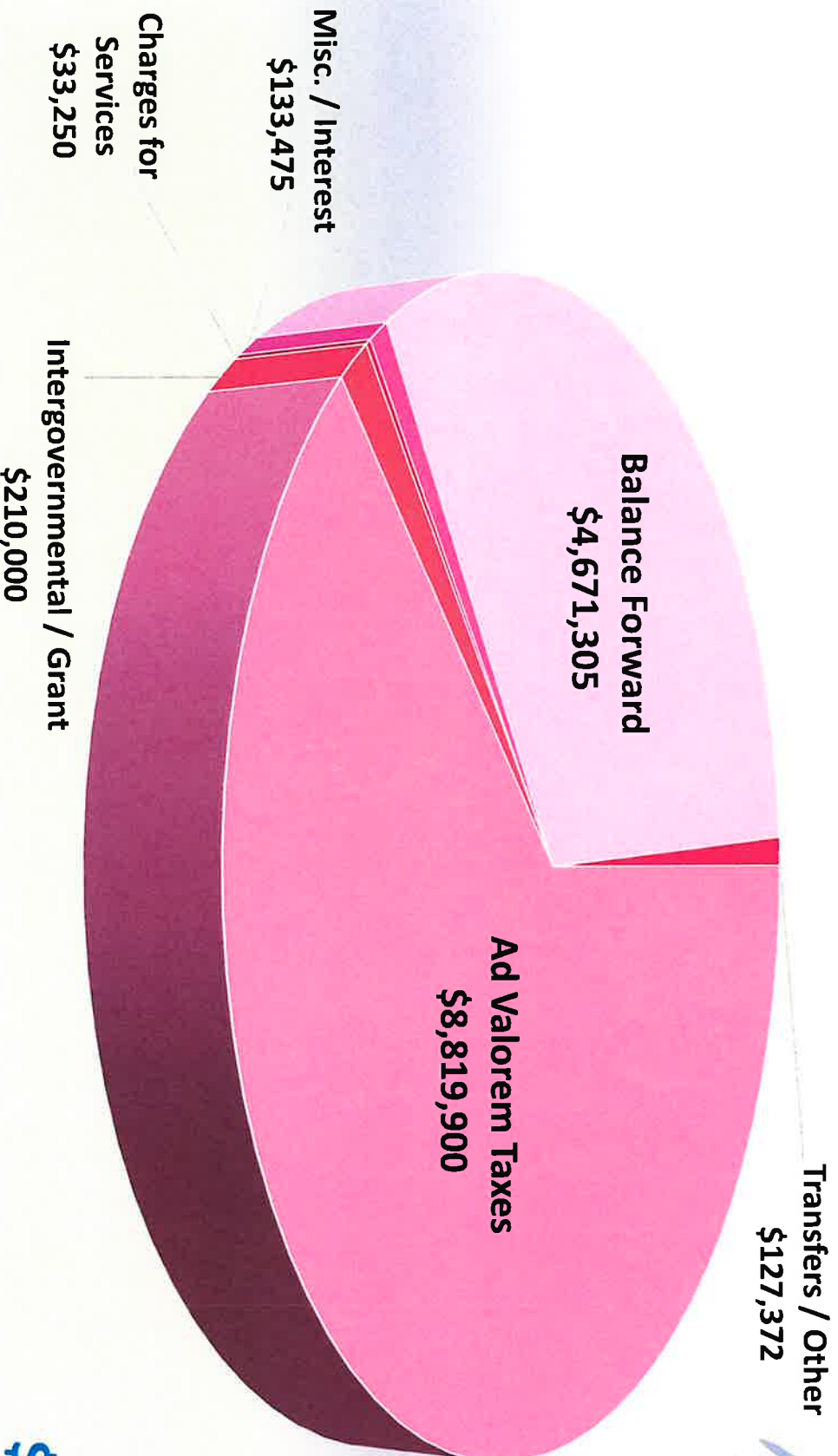
- MCD Central Office in Cocoa
 - Watercraft Operations
 - Shop/ Vehicle Maintenance

- MCD South Office in Valkaria
 - UAS/ Drone Operations
 - Water Quality Lab
 - Ground Operations
 - Shop/ Vehicle Maintenance



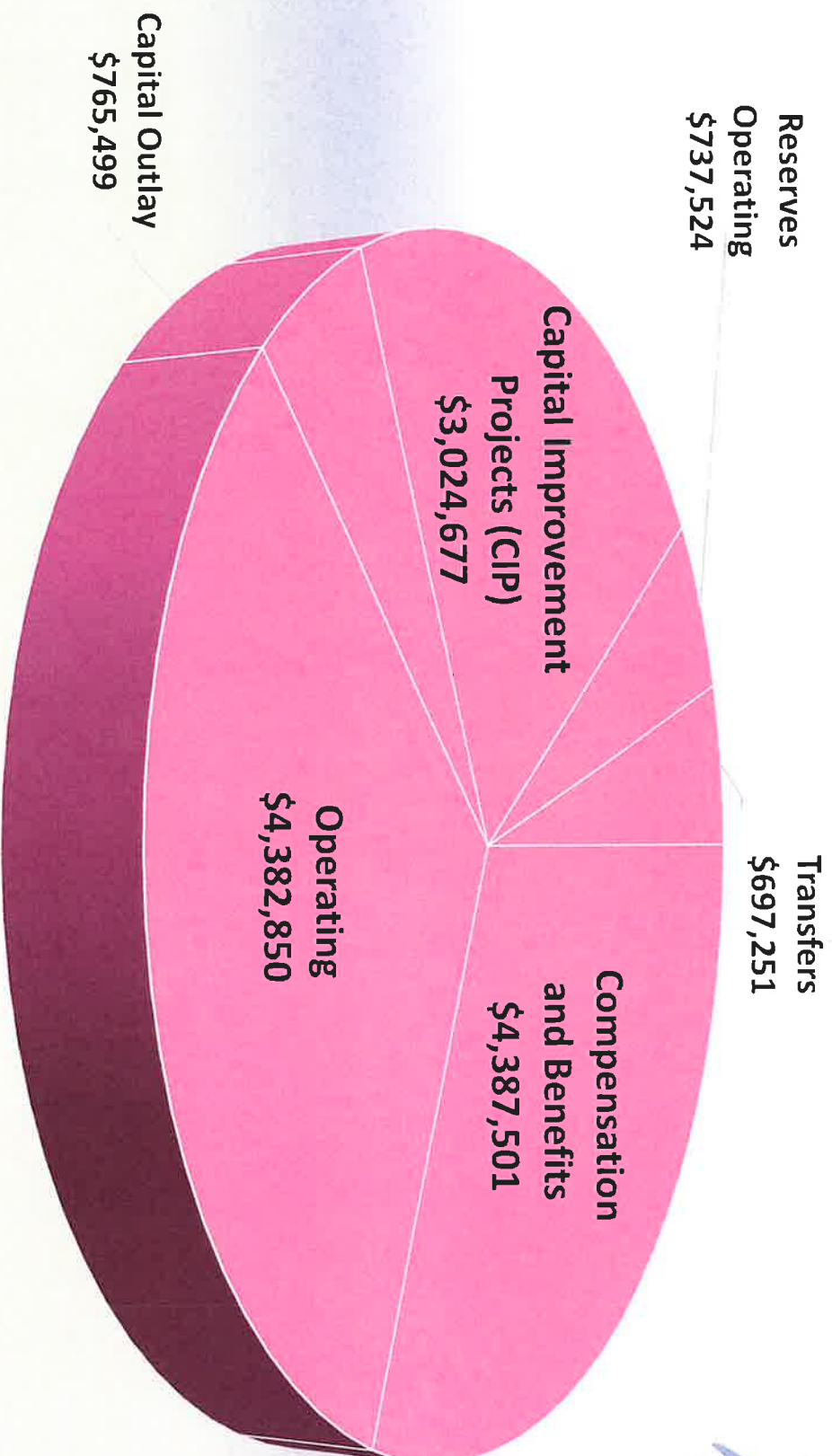
Special Revenue Funding via Ad Valorem Taxes...

FY 2024-2025 Revenue Category



Total
\$13,995,302

FY 2024-2025 Expense Category



Total
\$13,995,302



Mosquito Control Team (51 positions)

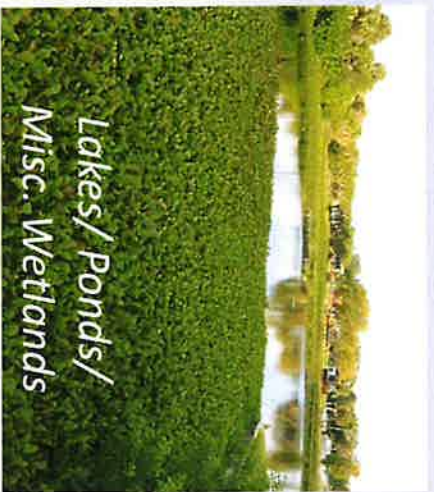
- Administrative, Customer Service and Support Staff (9)
- Environmental Technicians and Biologists (4)
- Heavy Equipment/ Impoundment Technicians (6)
- Ground Inspection and Treatment/ Spray Operations (22)
- Manned/ Unmanned Aircraft Pilots and Mechanics (4)
- Shop Maintenance, Calibration and Safety Staff (6)





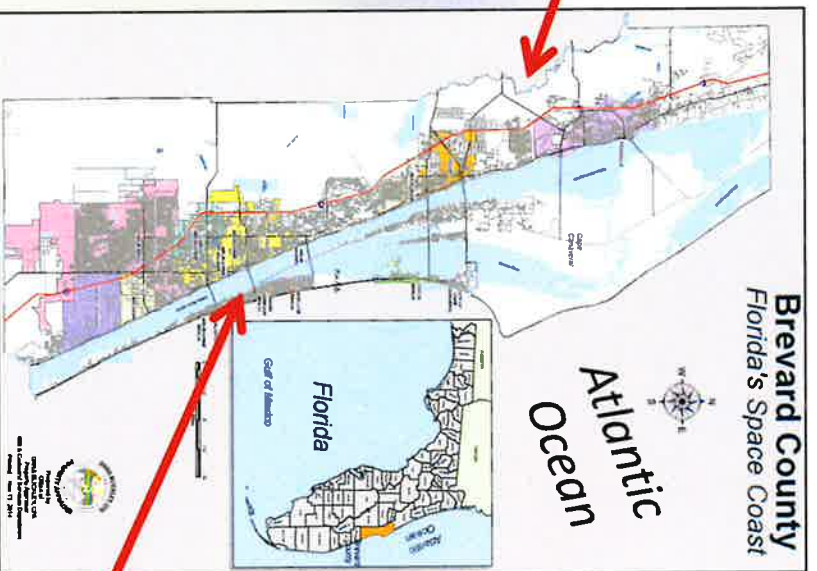
Maple/ Cypress Swamps

St. Johns
River

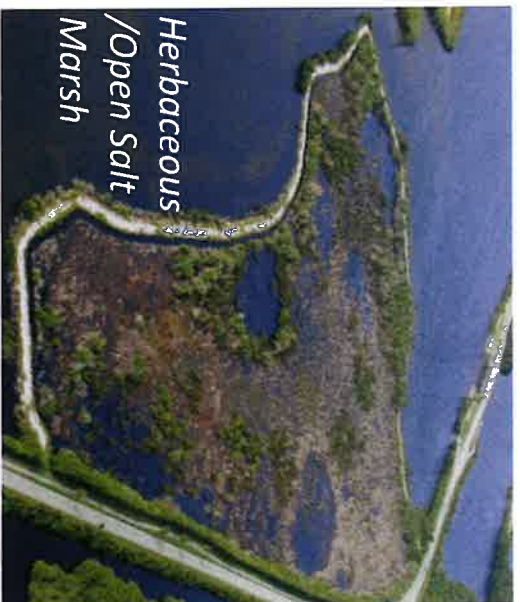


Lakes/ Ponds/
Misc. Wetlands

Productive Mosquito Habitats in Brevard



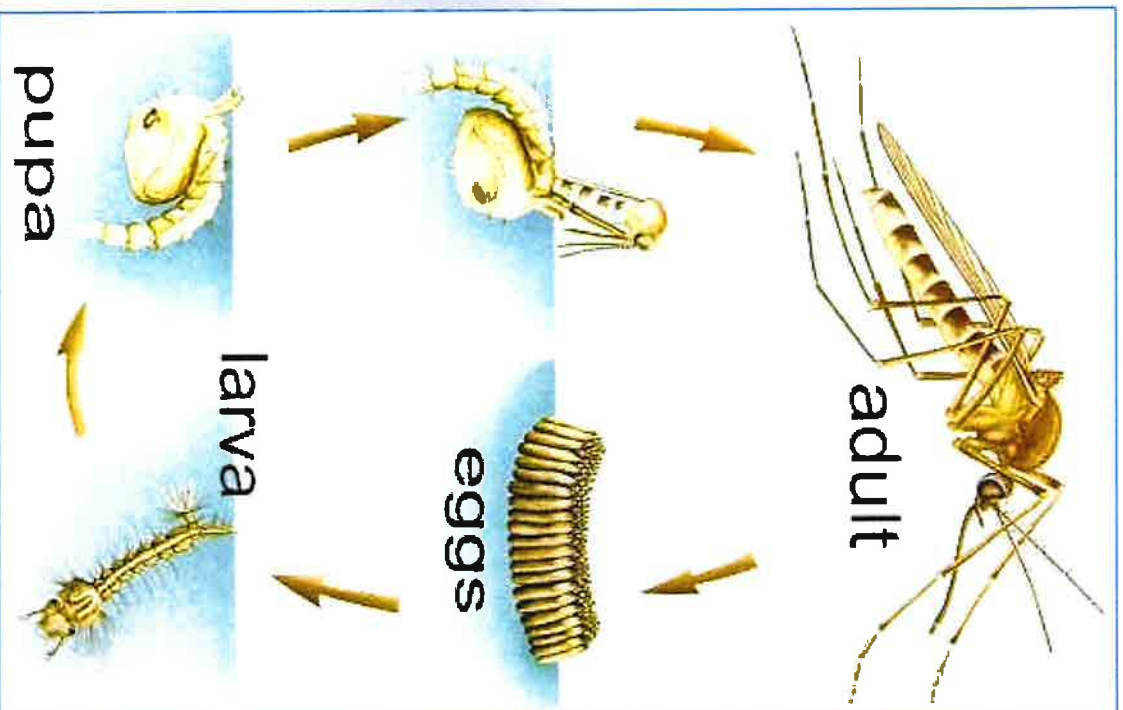
Indian
River
Lagoon



Herbaceous
/Open Salt
Marsh

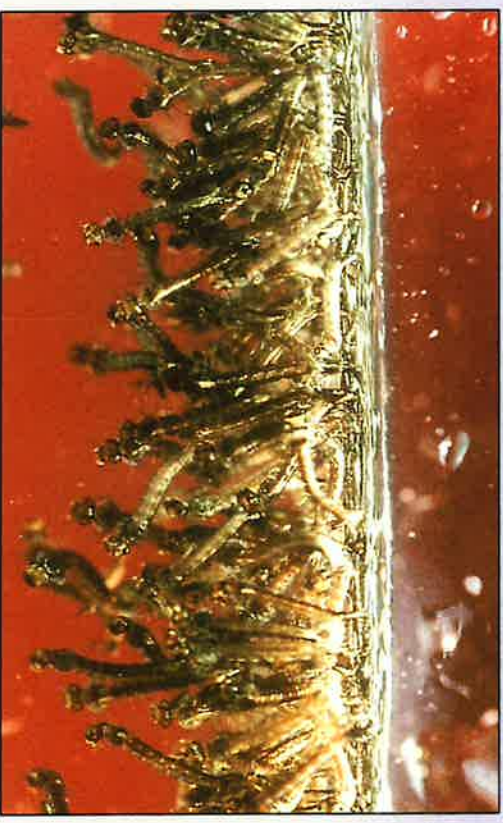


Dense
Mangrove
Forests



The Mosquito

**Over 40 species
of mosquitoes
throughout
Brevard!**



- 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





Managing the Habitat: Mosquito Impoundments



- Salt marshes known to produce up to 2 billion mosquitoes per acre (primarily *Aedes taeniorhynchus* 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 110 culverts and 15 pumps Countywide
 - Plus several culverts within the Merritt Island National Wildlife Refuge

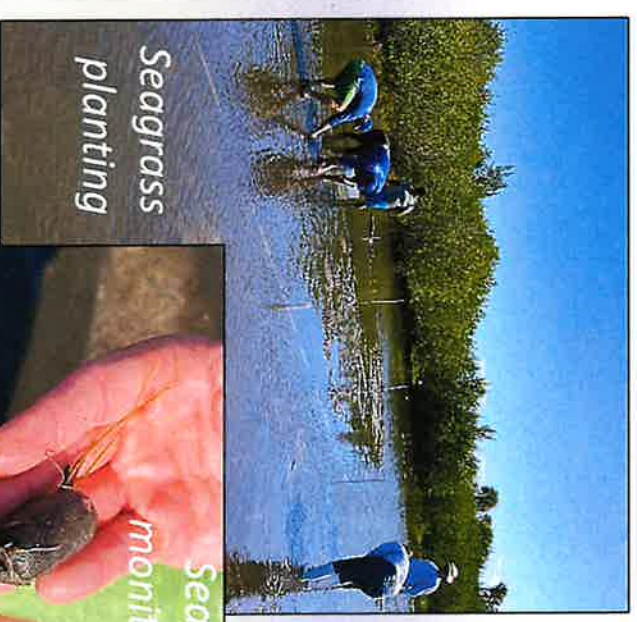
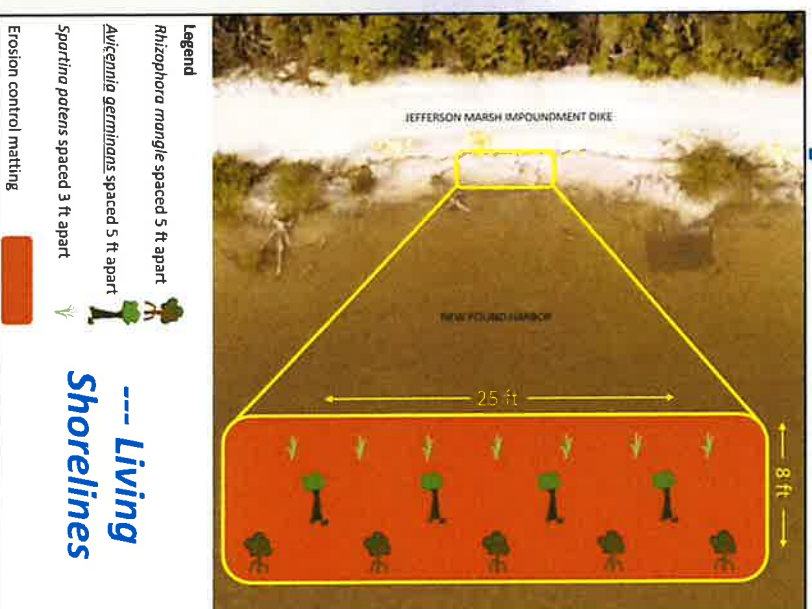




Ongoing Indian River Lagoon Restoration Project Opportunities at Mosquito Impoundments



Water
quality
sampling



Native Mosquitofish Hatcheries and Stocking Program



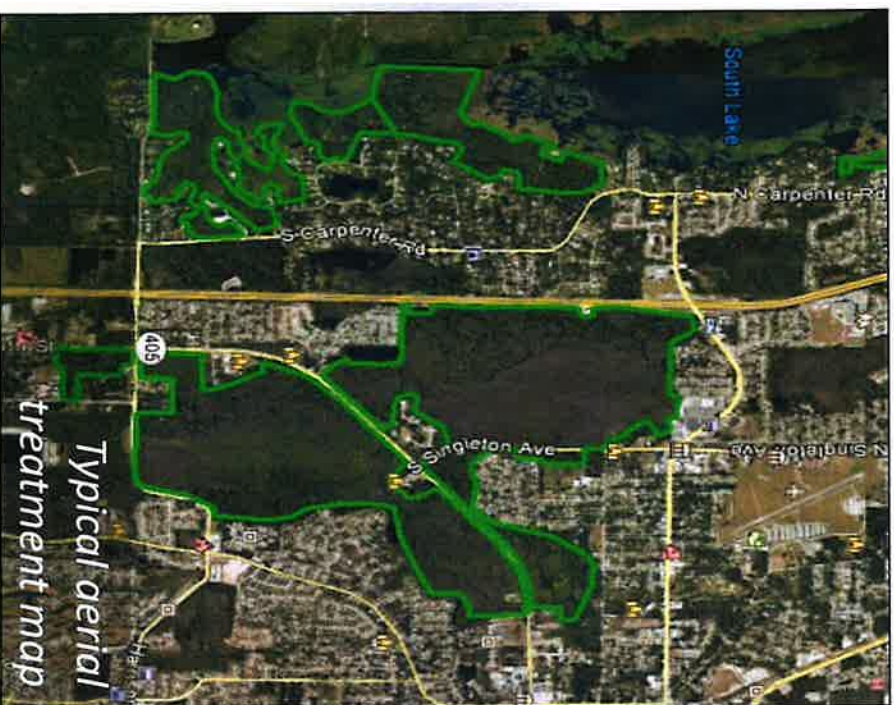
- One adult consumes up to 100 mosquito larvae per day



- Two hatcheries constructed and expanded since 2020 (north and south offices)
- Large-scale stocking conducted during seasonal water level rise events
- Mosquitofish giveaways for residents initiated at community outreach events



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



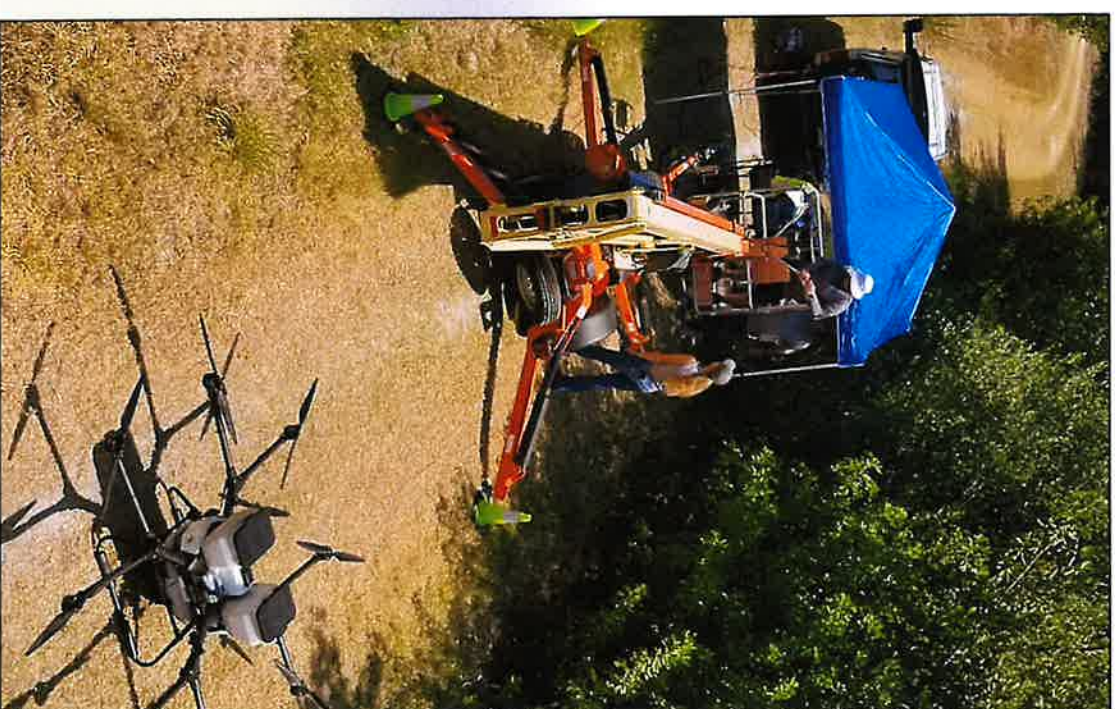
Drone (UAS) Inspection and Treatment Program Off the Ground!



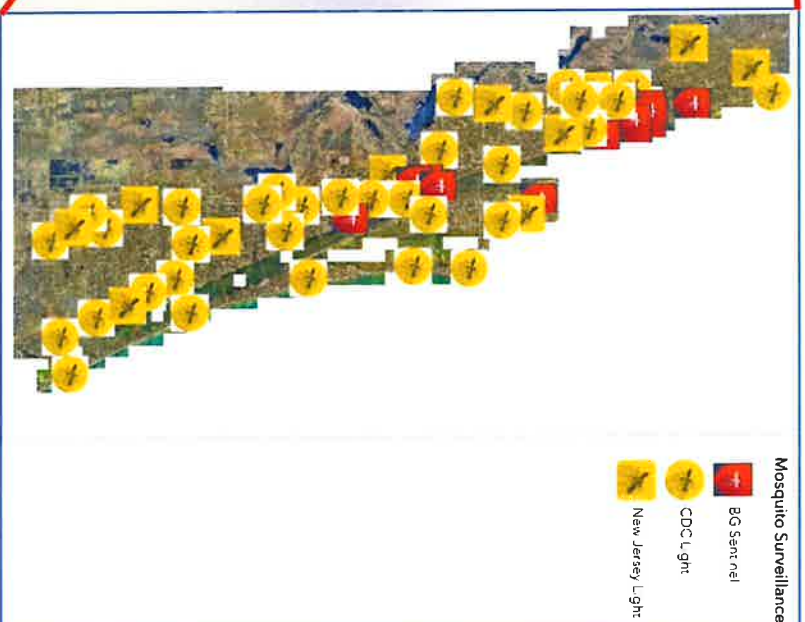
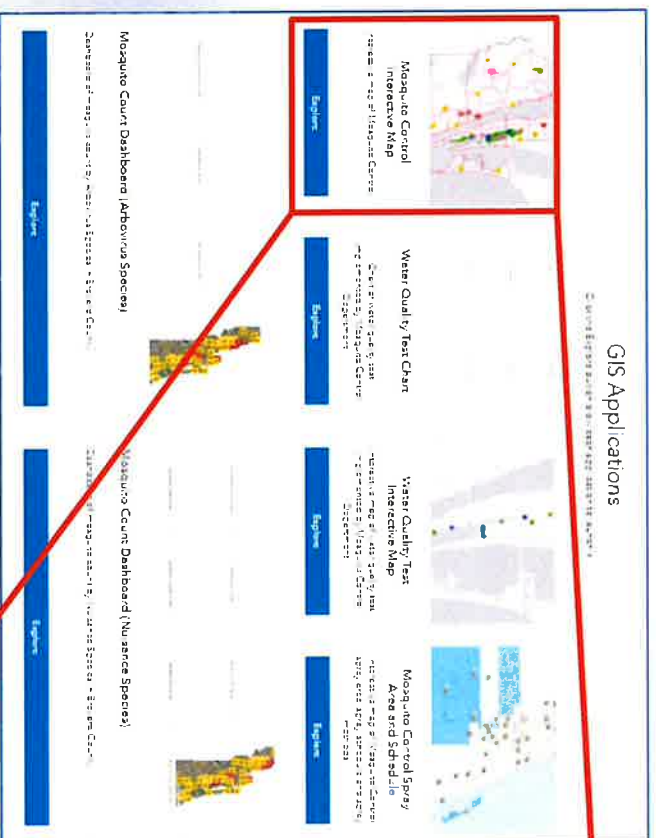
- Started with in-house inspections and contracted treatments
- In-house drone pilots fully licensed by FAA and FDACS
- Initially intended for a specific niche: small, inaccessible sites
- Now capable of conducting all daytime aerial treatments of larval mosquitoes, Countywide



Drone 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 Spraying 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

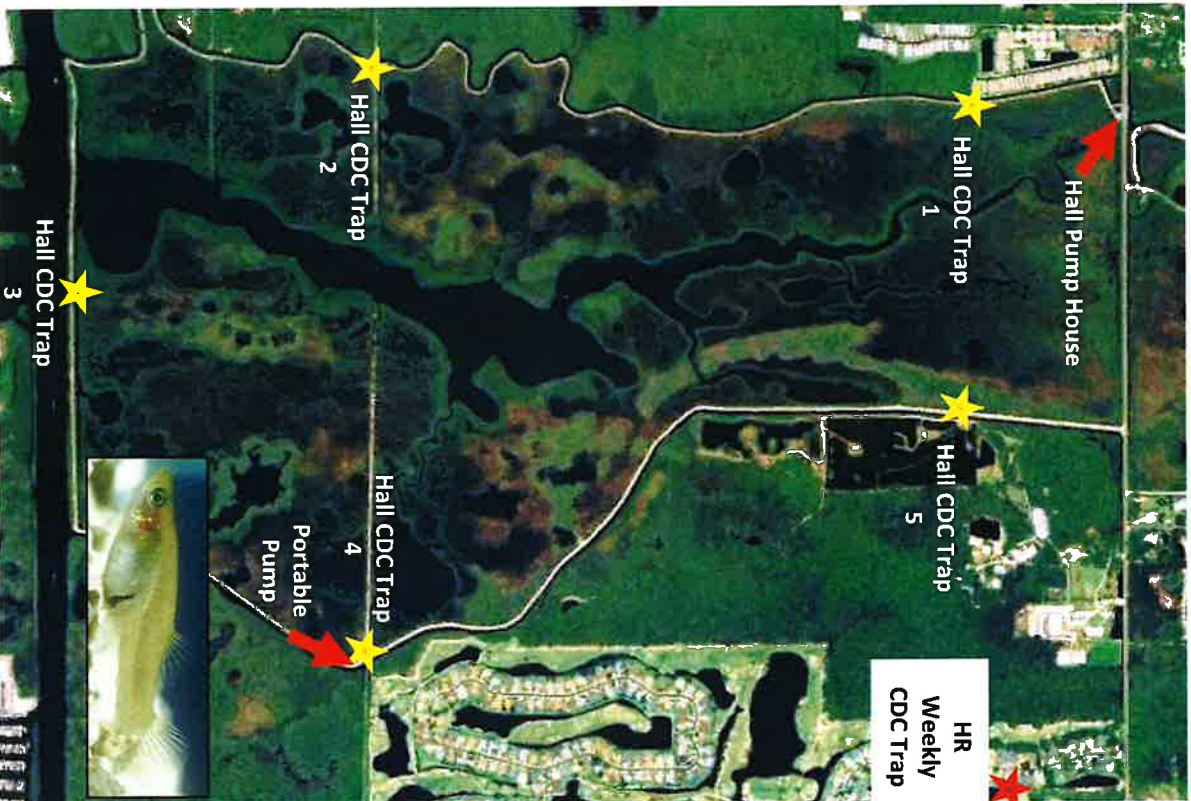


Countywide Emergency Readiness



- 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

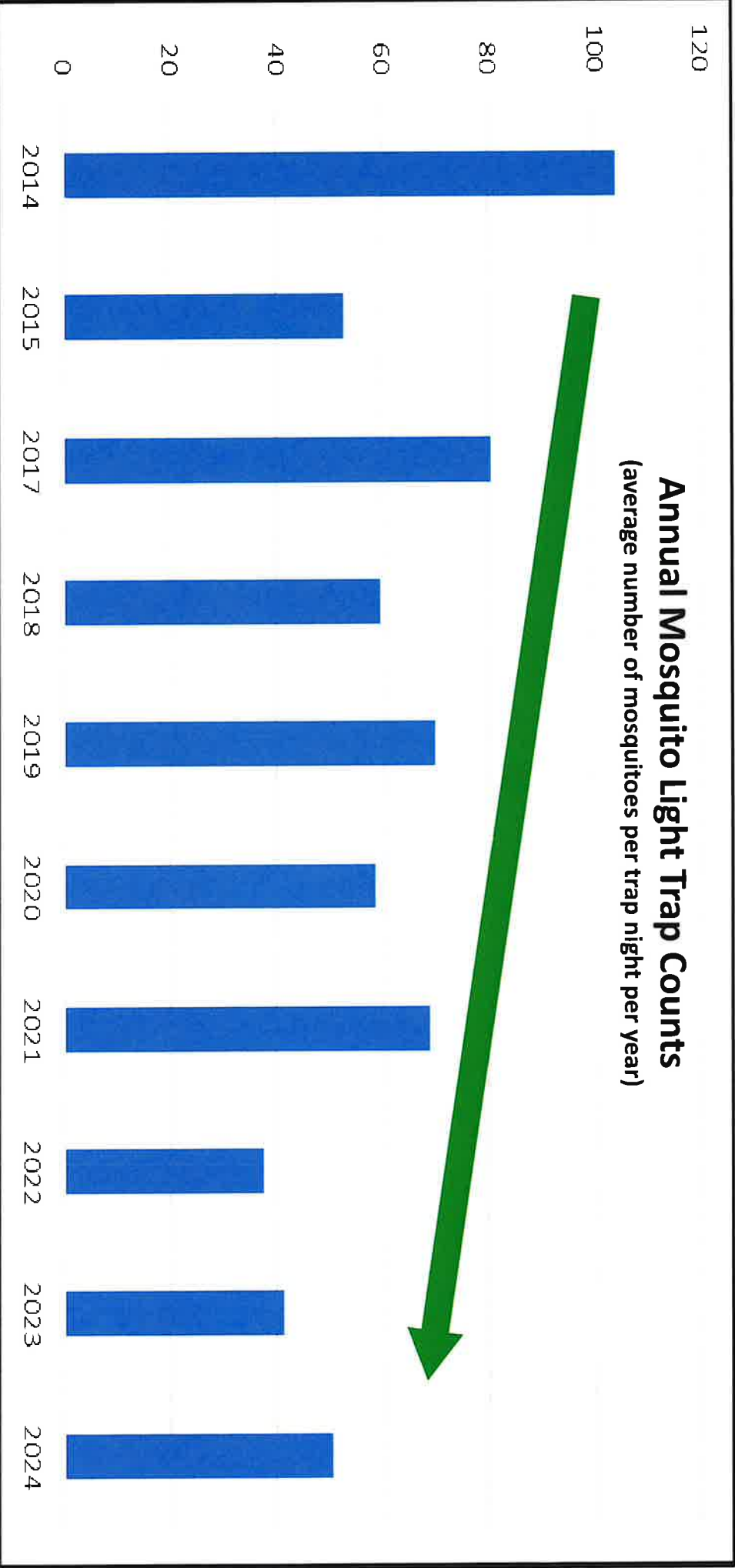




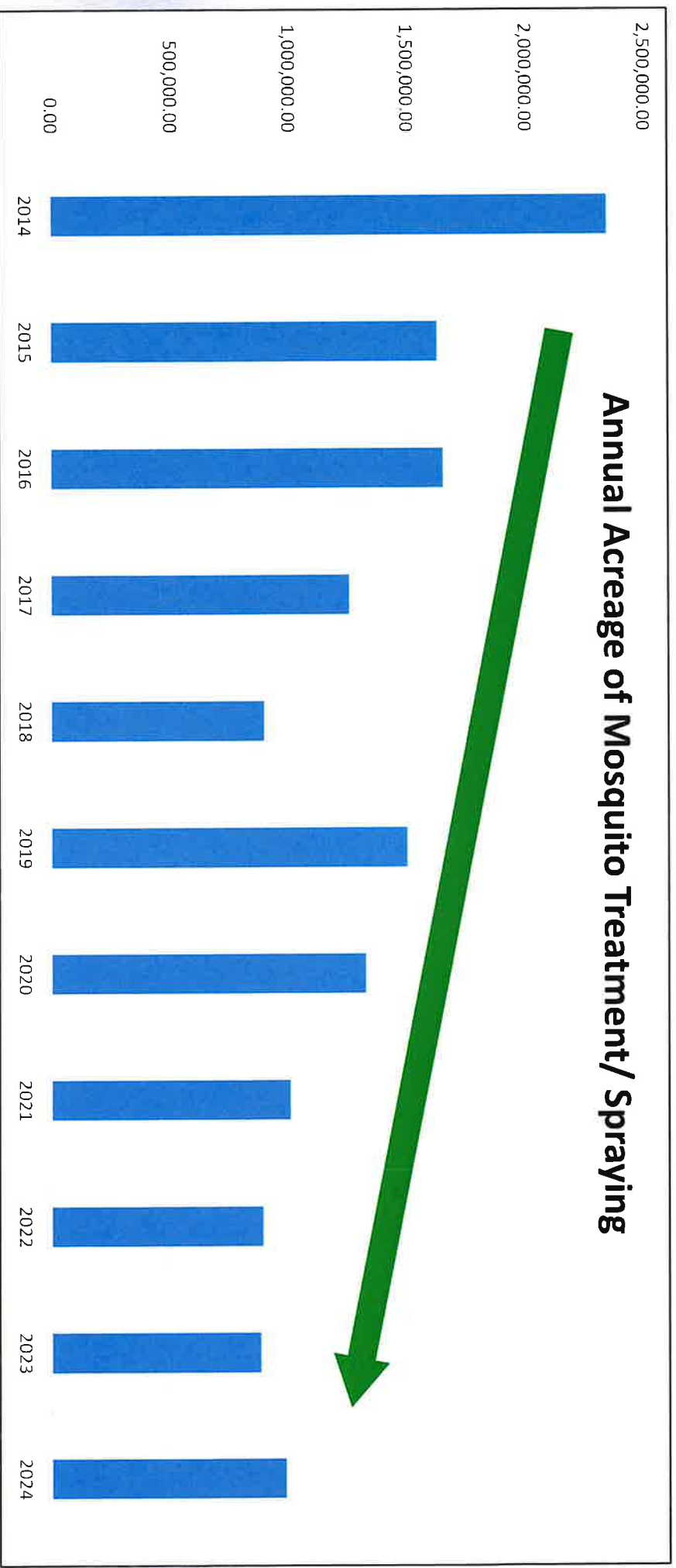
Environmental Testing and Development



- Enhanced pumping and fish stocking to head off first mosquito brood of season
- Successful small-scale pilot study in 2023
- Tested larger-scale sites in 2024
- Reduced need for pesticide applications
- No significant mosquito emergence occurred in test areas
- New proactive protocol implemented in 2025

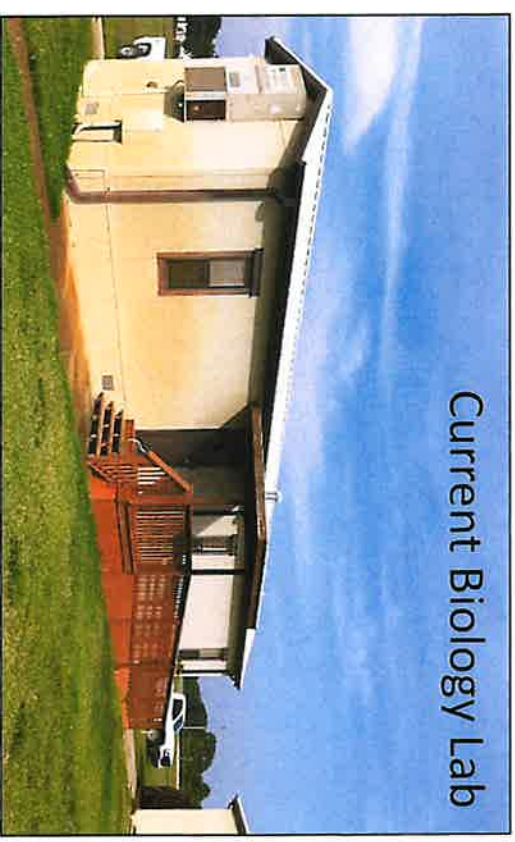


Continuous Improvement of Mosquito Management and Environmental Methods Appear to Yield Reductions in Mosquito Populations Over Time



*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, and Other Projects

- FDEP: \$15,017 awarded for current Melbourne Beach breakwater and living shoreline resilience project
- FDEP: \$23,100 awarded for upcoming wetland restoration/ IRL culvert connection project
 - Additional IRL restoration projects pending approval
- US FWS: est. \$104,000 (NRM partnership) pending award for impoundment property acquisition
- FDEP: \$25,000 funding reimbursement available to host community waste tire amnesty events (SW and DOH partnership) – *recent event yielded 12,300 lbs of tires...*



CDC/ FDACS Grant Funding: Equipment

Budget Category	Equipment	Amount
BLI- 30794 Drone Support	<ul style="list-style-type: none"> - 2 portable lifts - 2 inverter generators - 2 truck toppers 	\$117,800.00
BLI-30816 Mosquito traps	<ul style="list-style-type: none"> - 6 biogents counter traps - 4 floating emergence traps - 40 CDC traps - 4 gravid traps 	\$28,500.00
BLI-30735 Larvicide equipment	<ul style="list-style-type: none"> - 2 Buffalo Turbine air blast machines - aerial larvicide broadcasters 	\$274,000.00
BLI-30739 Adulticide equipment	<ul style="list-style-type: none"> - 4 electric ULV truck mounted sprayers 	\$68,000.00
BLI-30761 Pallet lifter	<ul style="list-style-type: none"> - Narrow aisle pallet lifter 	\$52,000.00
BLI-30745 Generator	<ul style="list-style-type: none"> - 150kW Deisel Generator 	\$103,050.00
BLI-30742 DropIet measurement system	<ul style="list-style-type: none"> - 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



Current and Future Partnerships



- Mosquito Impoundment FEMA Hurricane Repairs
 - Career Source Brevard and Sebastian Inlet Tax District
- Mosquitofish Hatchery and Stocking Program
 - Nat Marine Fish Hatchery, MI Nat Wildlife Refuge (FWS/NASA), FL State Parks and EELS
- Mosquito-borne Gopher Tortoise Parasite (microfilaria) Study
 - Brevard Zoo and University of Florida
- North Siphon Impoundment Seagrass Restoration Project
 - Bethune-Cookman University, FWC and NOAA
- Northern IRL Impoundment Seagrass Restoration Project
 - Brevard Zoo and FDEP
- LiDAR Identification of Saltmarsh Mosquito Breeding Areas
 - University of Florida
- Ulumay Impoundment Water Quality and Nutrient Cycle Study
 - University of Florida and EELS



Employee, Community and Industry Participation

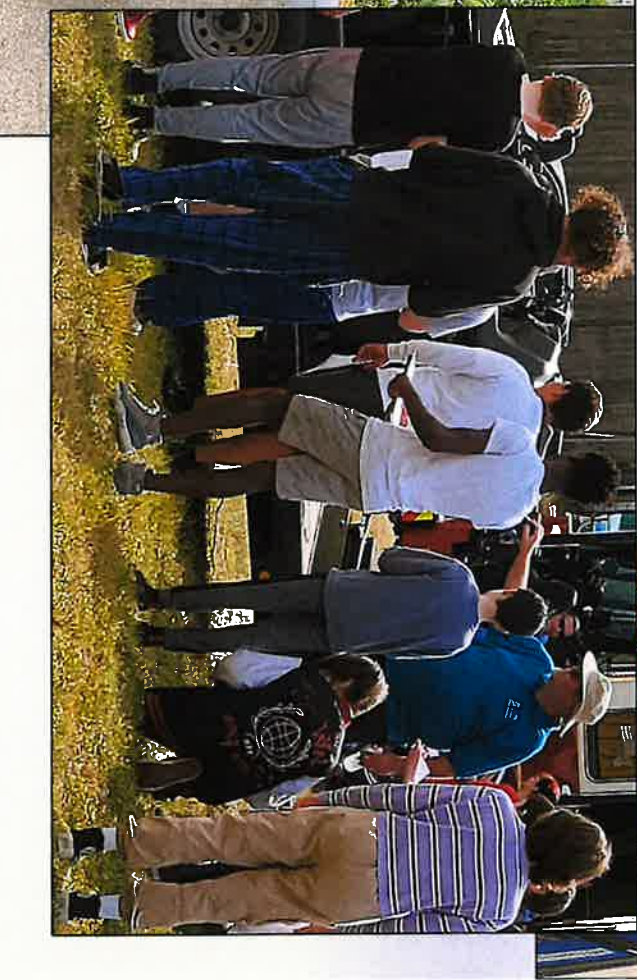
Employee Opportunities and Development



- Department working closely with Human Resources to create three new career ladders and update multiple job positions over last few years
- 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...



Educational Outreach and Career Day Events





Open House Events: Local Health Department and Military Visits



Professional Mosquito Control Participation





**Thank
You!**