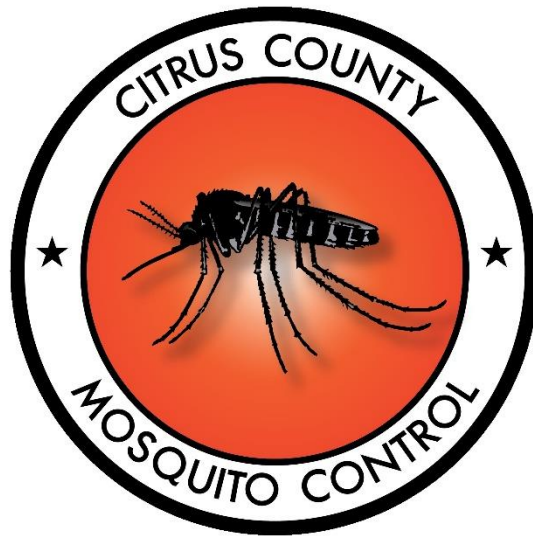


Citrus County Mosquito Control District



Strategic Plan

"Status Report"

Commissioners

Joe Adams

Arthur "AJ" Green

Stephanie Adams

Mission

Our Mission at Citrus County Mosquito Control District is to promote the health, safety, and welfare of Citrus County residents and visitors through a program of Integrated Mosquito Management (IMM) practices to control populations of mosquitoes that may become a nuisance or a threat to public health.

About Citrus County Mosquito Control District

Citrus County Mosquito Control District has shifted its focus over the past two decades to becoming a proactive mosquito control that targets mosquitos in the larval stage before they can fly, blood feed, and potentially spread diseases. While our focus has shifted to more of a larvicide based program, we still use a well-rounded Integrated Mosquito Management plan to control our target.

This approach has allowed us to reduce the use of broad spectrum adulticides while utilizing more biorational mosquito control products and biological control agents such as the gambusia minnow. This approach to mosquito control also reduces the number of acres requiring treatment to control the mosquito population by focusing our control efforts to the bodies of water to which the larvae are confined.

Our Integrated Mosquito Management approach also includes source reduction and public education as additional means of controlling the mosquito population while reducing the need for more aggressive control products or techniques.

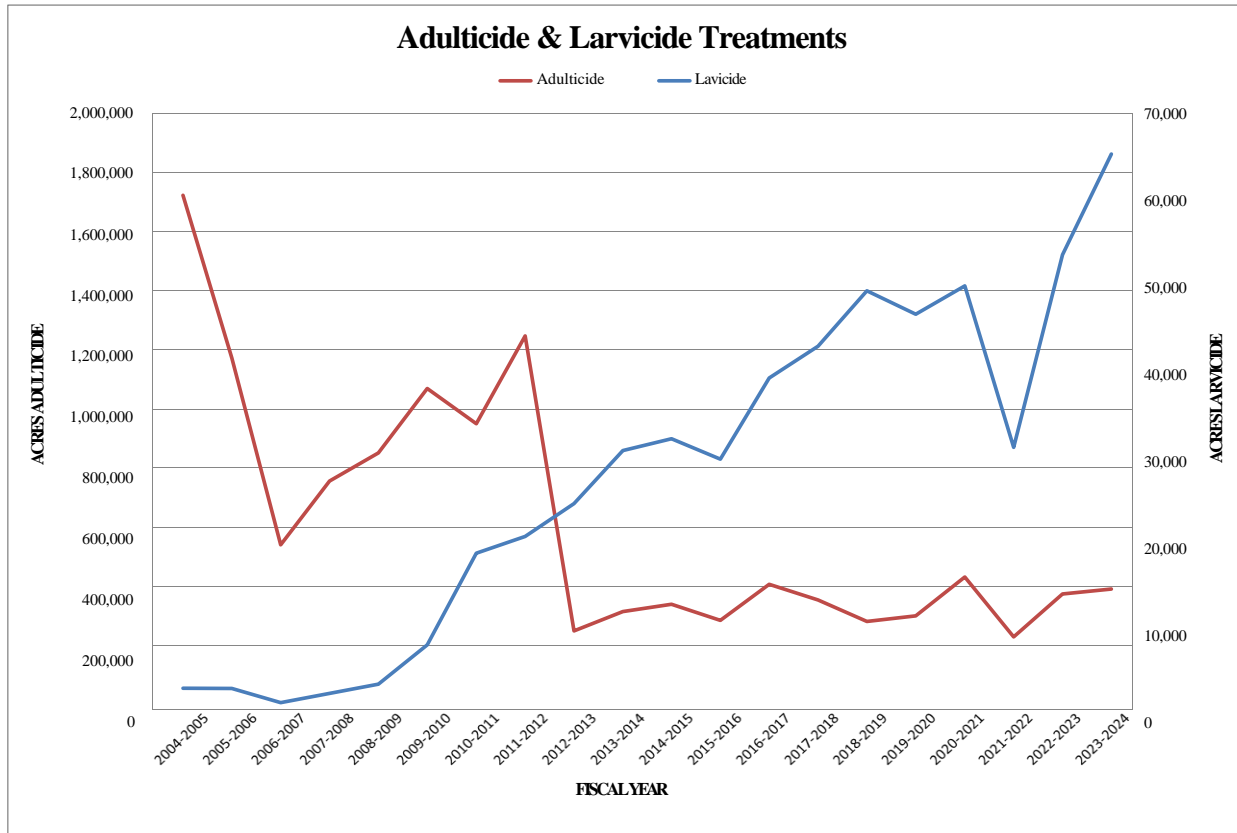
While our focus is on larval mosquito control there is still a need to utilize adult control products and techniques to subdue populations that emerge as adult mosquitos. Through mosquito surveillance, we monitor adult mosquito populations year-round, as well as mosquito-borne disease activity. Based on this data we can make informed targeted treatments that are effective while minimizing negative impacts on the environment.

While Citrus County Mosquito Control District is limited to the confines of the county lines, we recognize that mosquito-borne disease are not. Understanding this and maintaining our proactive approach to protecting the residents of Citrus County, we have included the surrounding counties in training events hosted at the District to not only ensure that our staff is well trained in preserving public health through the control of mosquitos but the mosquito control professionals that surround Citrus County as well.

This proactive approach to mosquito control to prevent the spread of mosquito-borne disease requires constant maintenance, refinement, and evolution to maintain control as weather patterns, geological makeup, population density, and technology changes.

Goals

- 1) Provide effective and efficient mosquito control while limiting negative impacts on the environment.
 - a. Measurements
 - i. Acres treated (adulticide vs. Larvicide) continue to support CCMCD's proactive approach to mosquito control by larvicide acres treated per year trending up and adulticide acres treated per year trending down.



ii. Bottle Bioassay results yield greater than 75% mortality at diagnostic time.

CDC Bottle Bioassay: Results Greater than 75% at the Diagnostic Time			
Site	Insecticide	Date tested	% mortality diagnostic time
Bellvilla SP	PERMANONE	12-Jun	95.5%
Bellvilla SP	DUET	12-Jun	97.3%
Floral Oaks SP	DUET	9-May	100.0%
Floral Oaks SP	DUET	12-Jun	97.8%
Floral Oaks SP	PERMANONE	13-Jun	100.0%
Nature Coast Lodge SP	Malathion	26-Jun	75%
Nature Coast Lodge SP	DELTAGUARD	27-Jun	81.8%
Nature Coast Lodge SP	PERMANONE	26-Jun	100.0%
Nature Coast Lodge SP	DUET	26-Jun	100.0%
Royal Oaks SP	DUET	2-May	98.9%
School House Island (Ae. taeniorhynchus)	PERMANONE	3-Jul	87.2%
School House Island (Ae. taeniorhynchus)	DUET	3-Jul	95.0%
State Park SP	DUET	25-Apr	94.9%
State Park SP	DUET	23-May	97.7%
State Park Perk Pond	DUET	20-Dec	100.0%
State Park SP	Prallethrin	16-May	85.7%
State Park Perk Pond	Sumithrin	13-Dec	93.2%
State Park Perk Pond	Permethrin	14-Dec	100.0%
Xanadu Path (Ae. taeniorhynchus)	Sumithrin	25-Jun	80.0%

SP = Sewer Plant

Legend	
	Formulated product
	Active ingredient

Insecticide resistance testing conducted by USDA-CMAVE						
Mosquito	Collection Location	Date Collected	Permethrin		Malathion	
			LD50	Resistance Ratio	LD50	Resistance Ratio
Culex quinquefasciatus	CMAVE Lab susceptible	-	1.14	1	4.72	1
Culex (from egg rafts)	State Park Sewer Plant	11-Apr-24	6.67	5.9	25.52	5.4
Culex (from egg rafts)	Thunderbird Sewer Plant	11-Apr-24	22.95	20.2	33.34	7.1
Culex (from egg rafts)	Lake Rousseau RV Sewer Plant	11-Apr-24	27.73	24.4	82.24	17.4
Culex quinquefasciatus	Palm Terrace Sewer Plant	8-May-24	15.15	13.3	22.06	4.7
Culex quinquefasciatus	Lecanto Hills Sewer Plant	16-May-24	30.08	26.4	20.67	4.4
Culex quinquefasciatus	Rooster Crow Sewer Plant	21-May-24	20.72	18.2	36.78	7.8
Culex quinquefasciatus	Bellvilla Sewer Plant	4-Jun-24	32.41	28.4	Not tested	
Culex quinquefasciatus	Floral Oaks Sewer Plant	16-Jul-24	19.88	17.4	Not tested	
Culex quinquefasciatus	Nature Coast Landing Sewer Plant	24-Jul-24	20.55	18	41.88	8.9
Ae. taeniorhynchus	CMAVE Lab susceptible	-	0.346	1	Not tested	
Ae. taeniorhynchus	State Park (Indian Mounds)	12-Jul-24	0.184	Not resistant	Not tested	
Ae. taeniorhynchus	CMAVE Lab susceptible	-	0.207	1	1.06	1
Ae. taeniorhynchus	Fort Island Trail (Dixie Shores)	30-Jul-24	0.174	0.84	56.37	52.97932

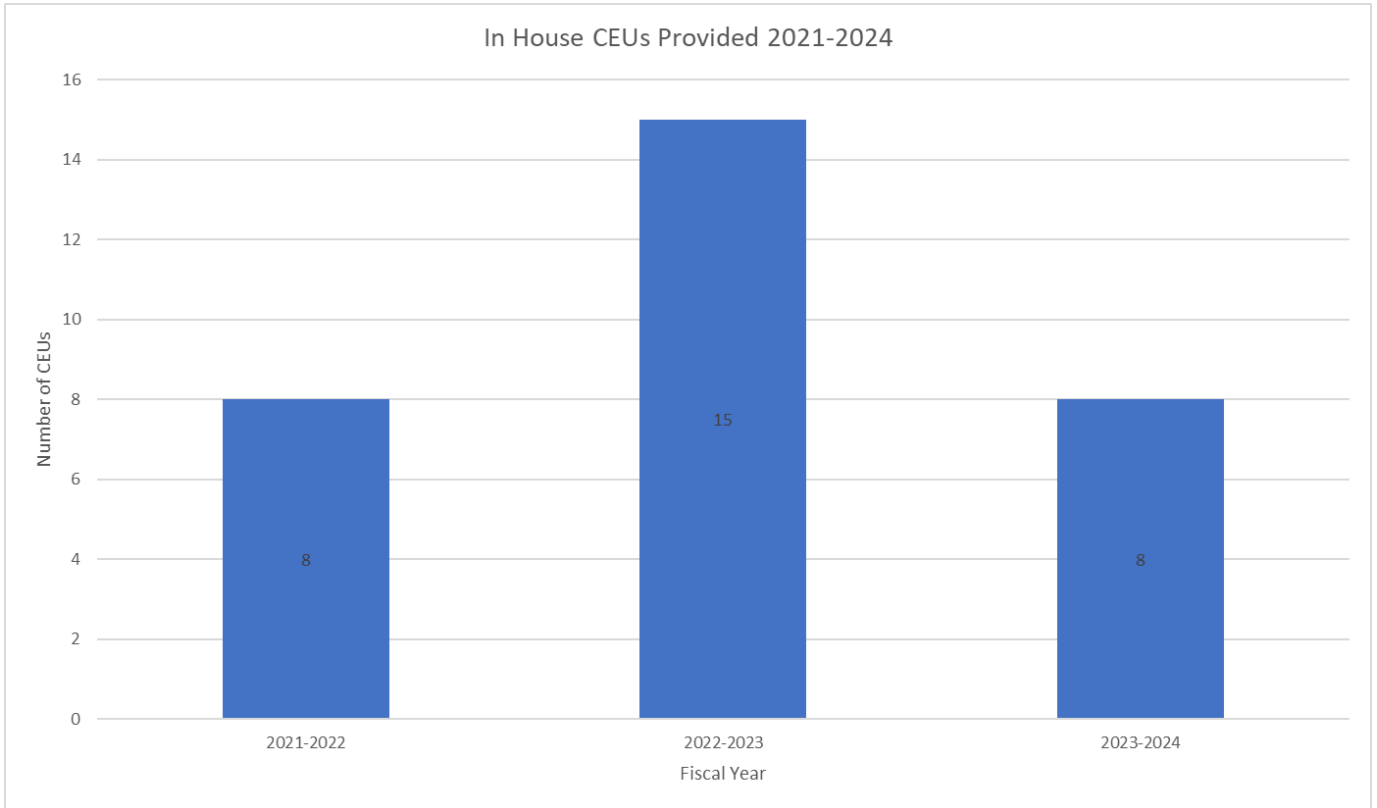
iii. Post treatment inspections yield **92%** lower mosquito population than initial inspection.

Pre Treatment Inspection						Post Treatment Inspection						Larvae % change
Pos Dips	Dips	L/D	T Larvae	P/D	L/R	Pos Dips	Dips	L/D	T Larvae	P/D	L/R	
3	12	0.67	8	0	0	0	10	0	0	0	0	-100
5	12	0.75	9	0	0	0	20	0	0	0	0	-100
6	12	0.83	10	0	0	0	12	0	0	0	0	-100
6	10	0.80	8	0	0	4	12	0.42	5	0	5	-48
3	10	0.40	4	2	0	0	15	0	0	0	2	-100
6	12	0.67	8	0	0	0	15	0	0	0	0	-100
3	10	0.50	5	0	0	0	10	0	0	0	0	-100
3	10	0.30	3	0	0	0	10	0	0	0	0	-100
5	10	1.00	10	0	0	0	10	0	0	0	0	-100
5	10	1.00	10	0	0	0	10	0	0	0	0	-100
2	10	0.30	3	0	0	0	10	0	0	0	0	-100
3	10	0.50	5	0	0	0	10	0	0	0	0	-100
3	5	4.00	20	0	0	0	10	0	0	0	0	-100
2	10	0.50	5	0	0	0	12	0	0	0	0	-100
3	8	0.38	3	0	0	0	10	0	0	0	0	-100
3	10	0.80	8	0	0	0	10	0	0	0	0	-100
2	10	0.30	3	0	0	0	10	0	0	0	0	-100
2	10	1.20	12	0	2	0	10	0	0	0	0	-100
3	10	0.60	6	0	0	0	10	0	0	0	0	-100
6	6	3.33	20	0	0	0	10	0	0	0	0	-100
6	6	33.33	200	0	0	0	12	0	0	0	0	-100
10	16	1.50	24	0	2	0	12	0	0	0	10	-100
2	2	4.00	8	2	0	0	10	0	0	0	0	-100
2	10	1.00	10	0	30	3	10	1.2	12	0	6	20
1	10	0.10	1	0	0	0	10	0	0	0	3	-100
1	11	0.64	7	0	0	0	11	0	0	0	0	-100
2	14	0.29	4	0	4	0	9	0	0	0	0	-100
15	20	1.75	35	0	0	0	18	0	0	0	0	-100
15	20	2.00	40	0	0	12	20	0.65	13	0	2	-68
2	2	18.00	36	0	0	4	4	1.25	5	0	0	-93
10	24	0.54	13	0	1	0	13	0	0	0	0	-100
3	12	0.50	6	0	2	0	11	0	0	0	0	-100
4	10	3.00	30	0	0	0	10	0	0	0	0	-100
5	15	0.47	7	0	0	0	10	0	0	0	0	-100
12	20	1.00	20	0	2	0	15	0	0	0	0	-100
8	8	1.25	10	0	0	0	10	0	0	0	0	-100
50	100	1.00	100	0	1	0	10	0	0	0	0	-100
5	15	0.67	10	2	0	0	12	0	0	0	0	-100
8	12	2.00	24	0	0	0	12	0	0	0	0	-100
7	13	1.15	15	0	0	0	12	0	0	0	0	-100
5	5	5.00	25	0	0	0	13	0	0	0	0	-100
4	5	2.40	12	0	0	0	12	0	0	0	0	-100
6	10	2.20	22	0	0	5	10	0.5	5	0	0	-77
8	10	3.50	35	0	0	1	14	0.07	1	0	0	-98
6	14	1.29	18	0	6	0	14	0	0	0	1	-100
4	13	0.69	9	0	0	0	14	0	0	0	0	-100
5	13	0.62	8	0	0	0	14	0	0	0	0	-100
4	13	0.62	8	0	0	0	21	0	0	0	0	-100
6	13	2.15	28	0	0	0	13	0	0	0	0	-100
10	15	1.33	20	0	0	0	12	0	0	0	0	-100
10	20	0.75	15	0	0	0	12	0	0	0	0	-100
5	10	1.00	10	0	0	0	10	0	0	0	0	-100
7	16	0.63	10	0	6	0	15	0	0	0	1	-100
7	12	1.75	21	0	3	1	15	0.07	1	0	0	-96
8	10	3.20	32	0	0	0	15	0	0	0	0	-100
6	12	1.17	14	0	0	0	12	0	0	0	0	-100
8	13	0.77	10	0	0	0	13	0	0	0	0	-100
9	15	0.67	10	0	0	0	20	0	0	0	0	-100
7	15	1.80	27	0	0	0	15	0	0	0	0	-100
8	20	0.50	10	1	2	0	13	0	0	0	0	-100
7	13	1.15	15	0	0	6	14	0.64	9	0	0	-45
13	35	0.43	15	0	0	0	19	0	0	0	0	-100
7	7	14.29	100	0	0	0	16	0	0	0	0	-100
5	5	20.00	100	0	0	0	10	0	0	0	0	-100
7	15	1.00	15	0	3	0	10	0	0	0	2	-100
5	12	0.67	8	0	2	0	10	0	0	0	2	-100
7	12	1.25	15	0	2	0	12	0	0	0	3	-100
8	10	1.50	15	0	8	2	15	0.2	3	0	0	-87
10	10	2.30	23	0	2	0	10	0	0	0	1	-100
25	45	0.67	30	0	0	2	45	0.07	3	0.02	0	-90
10	30	0.67	20	0	0	4	45	0.18	8	0	0	-73
30	35	1.14	40	0	0	3	40	0.1	4	0	0	-91
60	75	1.60	120	0	0	3	45	0.11	5	0	0	-93
20	45	0.47	21	1	0	30	40	1.12	45	0	0	140
15	25	2.40	60	12	1	0	15	0	0	0	0	-100
12	16	3.00	48	4	2	4	18	0.33	6	0.06	0	-89
8	10	3.20	32	3	2	0	16	0	0	0	0	-100
5	8	4.38	35	0	6	0	10	0	0	0	0	-100
7	9	1.11	10	0	7	0	8	0	0	0	0	-100
7	9	3.33	30	0	7	0	7	0	0	0	0	-100
55	55	1.82	100	4	0	10	45	0.31	14	0	0	-83
25	35	14.29	500	4	15	4	30	0.17	5	0	8	-99
40	60	0.75	45	0	0	6	45	0.17	8	0	0	-77
65	65	2.31	150	0	0	70	100	1	100	0	1	-57
												-92%

2) Utilize a collaborative approach to limit threat of mosquito-borne disease.

a. Measurements

i. CEU's offered to Mosquito Control Professionals through in house training exceeds 4 per year.



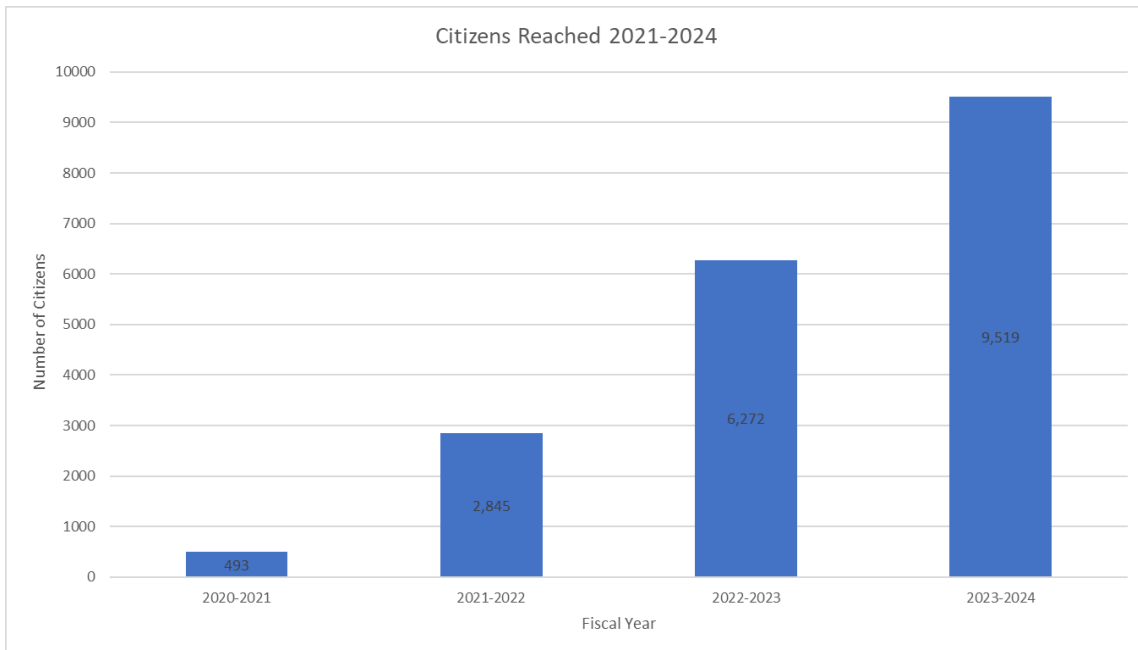
ii. Locally acquired human infection rate per mosquito-borne pathogen lower than state average. (Infection rate/100,000 residents)

2023 Arbovirus	Florida		Citrus County	
	Cases	Cases/100K	Cases	Cases/100K
WNV	12	0.05222864	0	0
SLE	0	0	0	0
EEE	2	0.008704773	0	0
DENV	176	0.766020047	0	0
CHIKV	0	0	0	0
Zika	0	0	0	0
Malaria	7	0.030466706	0	0

3) Improve community awareness about the importance of mosquito control, the threat of mosquito-borne diseases, and the districts IMM approach to mosquito control.

a. Measurements

i. Number of residents reach through public outreach events exceeds 10-year average.

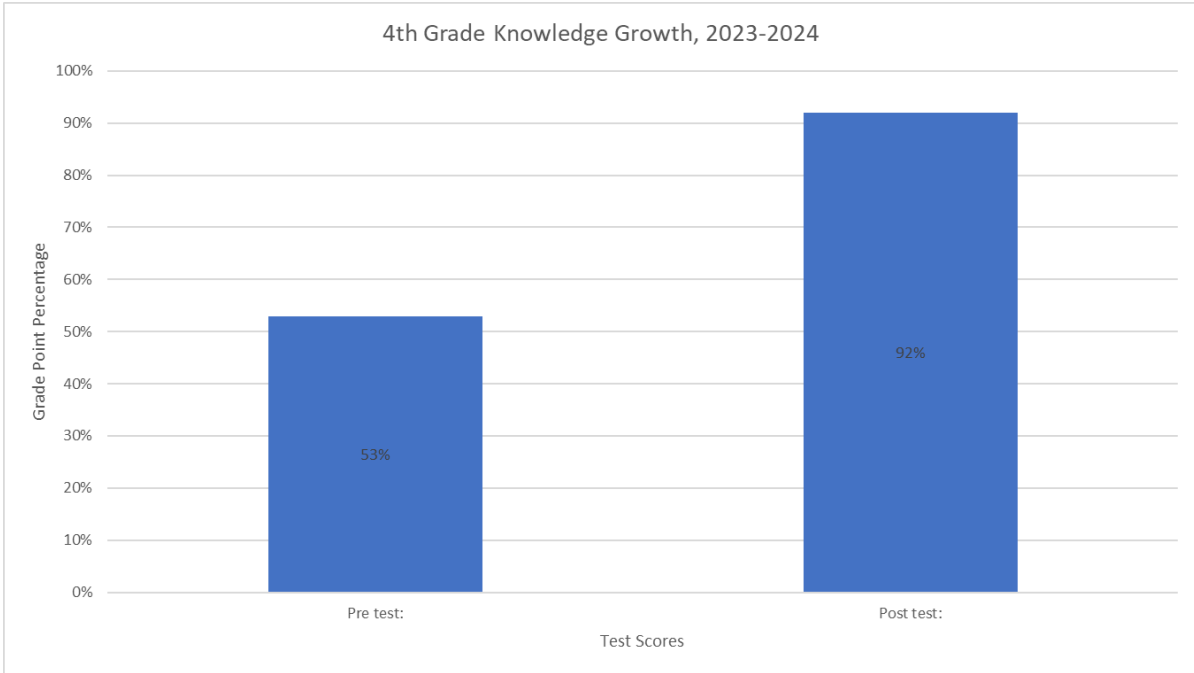


ii. Diversity of audience exceeds 5 audience types per year.

Diversity of Audience Types 2024:

1. Senior Programs
2. K-8th Students
3. Environmental Groups
4. Hobbyist Groups
5. Professional Development Groups
6. Online/Social Media

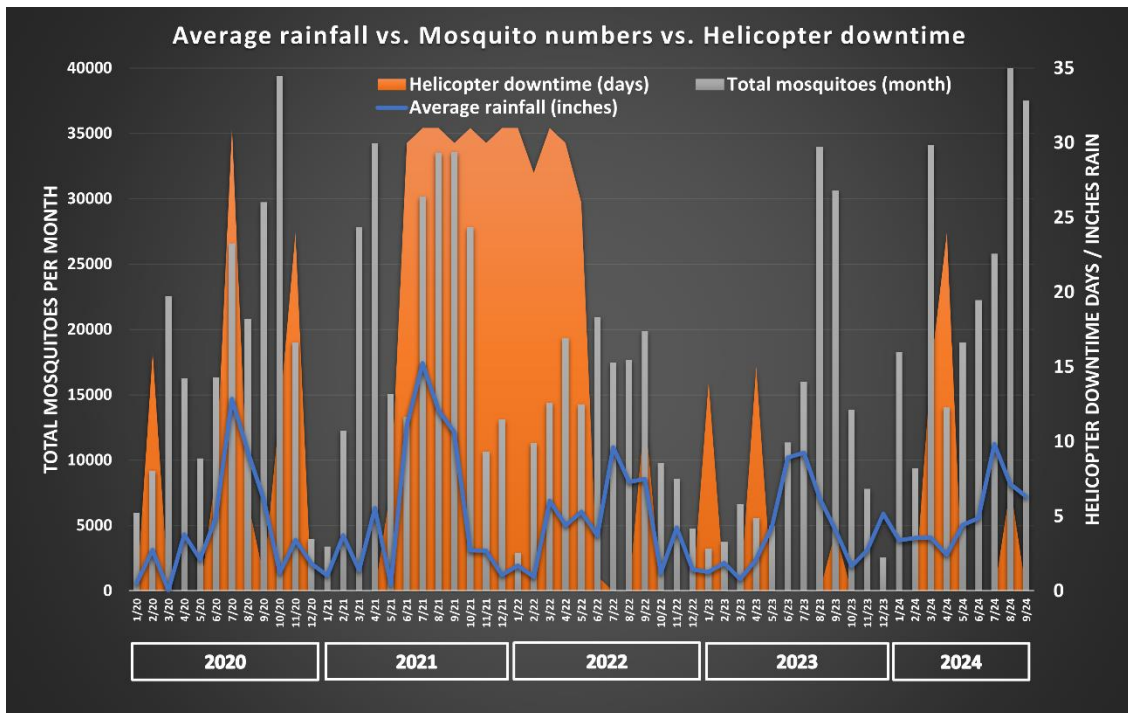
- iii. Pre and post test results show elevated understanding of mosquito control post interaction.



4) Improve/maintain infrastructure and equipment.

a. Measurements

- i. Less than 4 weeks per year without aerial treatment capabilities



5) Maintain highly trained personnel.

a. Measurements

- i. Staff average CEU's are greater than minimum required by FDACS to maintain licenses.

Public Health					
License #	Expiration date	Yrs since renewal	Category CEU'S	Core CEU'S	Total CEU's
PH10514	3/28/2027	1.58	17	7	24
Unlicensed		0.00	0	0	0
PH338833	5/15/2027	1.46	23	5	28
PH354467	7/8/2028	0.33	0	0	0
PH0334	4/30/2028	0.50	4	4	8
PH0373	2/29/2028	0.67	0	0	0
PH10758	2/20/2026	2.67	18	12	30
PH10509	1/14/2027	1.75	49	4.5	53.5
PH304245	11/6/2024	4.00	49	14	63
PH309237	4/7/2025	3.58	74	7	81
PH0400	5/31/2028	1.42	0	0	0
PH10240	11/12/2028	0.00	0	0	0
PH247627	7/8/2028	0.33	3	0	3
PH263993	9/14/2025	3.08	24	20	44
PH274056	7/12/2026	2.33	20	5	25
PH331534	9/16/2026	2.17	14	9	23
PH10530	7/6/2027	1.33	12	6	18
PH10654	12/3/2024	3.92	40.5	10	50.5
PH304242	11/6/2024	4.00	34	9	43
PH281987	2/22/2027	1.67	9	5	14
PH338012	4/19/2027	1.50	27	9	36
PH10283	2/5/2025	3.75	11	2	13
PH343453	9/28/2027	1.08	39.5	7	46.5
PH332921	10/26/2026	2.00	24	10	34
PH313183	7/6/2025	3.33	22	7	29
PH341187	8/15/2027	1.25	7	1	8
PH266986	1/11/2026	2.83	36	17	53
		Average Yrs since renewal	Average CEU's per employee	Average CEU's per year	Times minimum requirement
		1.95	26.94	13.85	3.46

- ii. Average experience level greater than 3 years.

10/30/24 27 employees Average 7.53 years experience

- iii. Greater than 85% of staff having a current Public Health Pest Control License

Date	Total Employees	Licensed	Unlicensed	% Licensed
10/30/2024	27	26	1	96.30

Objectives

This five-year plan contains objectives that allow the district to continue to proactively control mosquito populations and the diseases that they spread over the next five years through the goals list above. This is a planning document and items listed within may be subject to board approval.

2023-2024

Complete construction of Public Education Specialist Office

Completed – March 2024

Offer CEU/Training opportunities to mosquito control staff

9/11/24 FDACS Adult ID Workshop 3 CEU's

4/9/24 Clarke Workshop 5 CEU's

Complete resistance testing for a variety of mosquito species at multiple locations

Completed – Please see results in “Goals” section

Provide requested specimens to UF Florida Mosquito Entomology Laboratory for larvicide resistance testing

Completed – Results Pending

Provide specimens to USDA for genetic resistance testing

Completed - Please see results in “Goals” section

Select contractor for laboratory remodel and commence construction, if feasible

No Proposals in response to RFP (2 Attempts)

Consult with Homosassa Wildlife Park to reestablish aerial treatment in coordination with Department of Health

In Progress

Select and hire contractor to paint office building and shop, if approved

In Progress

Fill helicopter pilot position

Completed – 5/14/24

Purchase two additional trucks

Purchase Approved 5/9/24

Received 1- 10/21/24

Delivery 1 – Pending

Replace Jon boat

Completed – 5/9/24

Update Policy and Procedures Manual

Completed – 7/11/24

Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.

Attended Hosted by Pasco County MC 2/13/24

2024-2025

Replace ATV's

Replace Tahoe and F250

Replace Airboat

Purchase and setup educational trailer

Upgrade compound gates and signage

Relocate fuel tanks and equipment storage shed

Demolish old garage, cottage, and pole barn

Construct new pole barn for outdoor educational events

Increase aerial adulticide application efficacy

Develop interlocal agreements with surrounding counties for emergency situations

Explore Drones as a useful tool

Complete resistance testing for a variety of mosquito species at multiple locations

Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur

2025-2026

Conduct Salary analysis (post state \$15/hr. minimum wage implementation)

Replace seven 2014 trucks

Complete overhaul of compound fencing

Complete resistance testing for an array of mosquito species at multiple locations

Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur

Collaborate with community partners to create a pollinator garden near beehives

2026-2027

Consider feasibility of onsite fish hatchery

Complete resistance testing for an array of mosquito species at multiple locations

Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur

2027-2028

Replace N352MC (Formally N7JR) with larger Aircraft (Example: Bell 505, 407)

Complete resistance testing for an array of mosquito species at multiple locations

Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur

DISTRICT OVERVIEW

The District’s strengths, weaknesses, potential opportunities, or threats/concerns (SWOT) may affect the District’s abilities to provide services and/or require changes or modifications to services.

The following items could have an impact on the future success of the District:

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • Well trained and experienced personnel • All staff are licensed • Aerial capabilities • Up to date equipment • Good working relationship with community partners • Good rapport with residents • Fiscally responsible • Public education • Tire Amnesty • Long history of surveillance data • Short response time to service requests • Inhouse CEU opportunities • Proactive approach to Mosquito control • Centralized District location • Focused solely on Mosquito control • Regional resource for training 	<ul style="list-style-type: none"> • Unfamiliar with new management at Citrus DOH • Success with aerial adulticide effectiveness • Inability to use aerial assets on Homosassa Wildlife Park • Limited Mosquito Control capabilities of surrounding counties • Restricted access or “Courtesy No spray” impeding efforts • Equipment failures
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • Improve Laboratory capabilities • Grant procurement • Conduct research • Mobile education trailer • Fish hatchery • Collaboration with other mosquito controls • Improve compound security • Interlocal agreement 	<ul style="list-style-type: none"> • Limited treatment of Wildlife Park (likely disease introduction point) • Growth around District headquarters crowding facility • Product resistance • Sentinel Chicken husbandry • Travel related disease introduction • Hurricanes/tropical weather events

	Associated Goal	Assessment Date	Budget	Assessment Method
2023-2024				
Complete construction of Public Education Specialist Office.	3	4/1/2024	\$ 20,000.00	Y/N
Offer CEU/Training opportunities to mosquito control staff.	1,2	9/30/2024	\$ 500.00	Y/N
Complete resistance testing for an array of mosquito species at multiple locations.	1	9/30/2024	Incorporated	Y/N
Provide requested specimens to FMEL for larvicide resistance testing.	1,2	9/30/2024	\$ 500.00	Y/N
Provide specimens to UF for genetic resistance testing.	1,2	9/30/2024	\$ 500.00	Y/N
Select contractor for laboratory remodel and commence construction, if feasible.	1,4	9/30/2024	\$ 200,000.00	Y/N
Reestablish aerial treatment option with Homosassa Wildlife Park.	1,2	9/30/2024	Incorporated	Y/N
Select and hire contractor to paint office building and shop, if feasible.	4	9/30/2024	\$ 50,000.00	Y/N
Hire second Helicopter pilot	4	6/1/2024	\$ 80,000.00	Y/N
Purchase two additional trucks.	1,4	9/30/2024	\$ 60,000.00	Y/N
Replace Jon boat.	4	9/30/2024	\$ 4,000.00	Y/N
Update Policy and Procedures Manual	4	9/30/2024	Incorporated	Y/N
Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.	2	4/1/2024	Incorporated	Y/N
2024-2025				
Replace ATV's	4	9/30/2025	\$ 75,000.00	Y/N
Replace Tahoe and F250	4	9/30/2025	\$ 70,000.00	Y/N
Replace Airboat	4	9/30/2025	\$ 85,000.00	Y/N
Purchase and setup educational trailer	3,4	9/30/2025	\$ 20,000.00	Y/N
Upgrade compound gates	4	9/30/2025	\$ 30,000.00	Y/N
Relocate fuel tanks and equipment storage shed.	4	9/30/2025	\$ 3,000.00	Y/N
Demolish garage, cottage and pole barn.	4	9/30/2025	\$ 60,000.00	Y/N
Construct new pole barn for outdoor educational events.	4	9/30/2025	\$ 25,000.00	Y/N
Optimize aerial adulticide application efficacy	1	9/30/2025	Incorporated	Repeatable 85% efficacy
Create interlocal agreement with surrounding counties	2	9/30/2025	Incorporated	Y/N for Levy, Marion, Sumter, Hernando
Explore Drones as a useful tool.	4	9/30/2025	Incorporated	Y/N More acres treated per hour than average MC Tech, feasible
Complete resistance testing for an array of mosquito species at multiple locations.	1	9/30/2025	Incorporated	Y/N
Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.	2	9/30/2025	Incorporated	Y/N
2025-2026				
Conduct Salary analysis (post state \$15/hr minimum wage implementation)	4	9/30/2026	\$ 15,000.00	Y/N
Replace seven 2014 trucks	4	9/30/2026	\$ 175,000.00	Y/N
Complete overhaul of compound fencing.	4	9/30/2026	\$ 20,000.00	Y/N
Complete resistance testing for an array of mosquito species at multiple locations.	1	9/30/2026	Incorporated	Y/N
Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.	2	9/30/2026	Incorporated	Y/N
Collaborate with community partners to create a pollinator garden near beehives	3,4	9/30/2026	\$ 1,500.00	Y/N
2026-2027				
Consider feasibility of onsite fish hatchery.	1,4	9/30/2027	\$ 400,000.00	Y/N
Complete resistance testing for an array of mosquito species at multiple locations.	1	9/30/2027	Incorporated	Y/N
Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.	2	9/30/2027	Incorporated	Y/N
2027-2028				
Replace N71R with larger Aircraft(Example: Bell 505, 407)	1,4	9/30/2028	\$3,500,000.00	Feasible, Y/N
Complete resistance testing for an array of mosquito species at multiple locations.	1	9/30/2028	Incorporated	Y/N
Attend/host regional roundtable to discuss mosquito control issues faced over the last year or likely to occur.	2	9/30/2028	Incorporated	Y/N