

FISCAL YEAR 2023-24

ANNUAL REPORT



MOSQUITO CONTROL

2023/2024

At A Glance

14.4K

Mosquitofish distributed to residents

1441

Groups of mosquitoes tested for disease in our lab (no viruses found)

.1443
mils

Millage rate (at rolled-back rate)

50,000+

Acres treated with mosquito larvae control materials

1M+

Mosquitoes trapped

Board of Commissioners

The Collier Mosquito Control District operates under Chapter 388, Florida Statutes, governed by a five-member board of commissioners. Each member of the Board is elected at large for a four-year term. As elected officials, the Commissioners provide a direct link between government and the District's residents. These individuals are charged with setting the ad valorem millage rate, approving the annual budget, overseeing the expenditure of taxpayers' dollars, and ensuring the Executive Director and staff are fulfilling the District's mission.



John Johnson - Chair

SEAT 1
Terms of office: 2023-2027



Sandra Lee Buxton - Treasurer

SEAT 2
Terms of office: 2023-2027



**Ed Brandt - Vice
Chair/Secretary**

SEAT 3
Terms of office: 2023-2027



Bruce Buchanan

SEAT 4
Terms of office: 2021-2025



Russell Burland

SEAT 5
Terms of office: 2021-2025

William Owens

LEGAL COUNSEL TO THE DISTRICT



Patrick Linn, MS, MSHAPI



Director's Message

Growth and innovation seem to be the key words for the 2023-24 fiscal year. Our District boundaries grew, our team grew and many of the programs in our integrated pest management plan were expanded. The year was also not without disappointment, as we had to shift major components of our long-term plan due to the quickly changing construction landscape in Southwest Florida. Overall, the team did a wonderful job meeting our mission and providing great service to our community, and I offer them the utmost thanks and appreciation.

District expansion

One of the highlights of the year was the passage of HB 509, which authorized us to nearly double the size of our District on October 1, 2024. The bill passed the Florida Legislature unanimously before being signed by Governor DeSantis. This was the culmination of a multi-year effort and will allow us to continue to serve our growing community for decades to come.

Immokalee Plans

The plan to move District headquarters to a new facility in Immokalee took a tough blow when the cost estimates came in more than double what we had budgeted. Due to this, and in an effort to remain good stewards of taxpayer dollars, the Board of Commissioners made the difficult decision to abandon the Immokalee project. The District has begun the process of improving our current footprint at the Naples Airport. While this was certainly a setback to our long-term vision, the District remains dedicated to our mission of protecting the public health and comfort of our community.

Fleet Rejuvenation

This summer, we visited Cessna in Wichita, Kansas to research our options for rejuvenating our aerial fleet. The Cessna Sky Courier proved to be an exemplary option for our mosquito control needs. The Board approved our plan to eventually buy two of these airplanes, the first of which we plan to take possession of next year. Two of these planes will be able to do the work of the three planes we currently have at our disposal. As the new aircraft become operational, the two skyvans and the twin otter will eventually be sold. Modernizing and making our fleet

uniform will greatly improve the services we are able to provide to District residents.

Staff Growth

As we planned for District expansion and worked out expanding several programs, the District saw immense growth in staffing during the fiscal year. Our team grew to more than 50 employees, and nearly every department welcomed new employees. Southwest Florida is one of the fastest growing regions of the country, and we have been able to proactively prepare so that new residents are able to receive mosquito control services from the day they move into their new homes.

Research

This year also saw the exponential growth of our mosquitofish program, which was very popular as we faced an abnormally wet winter with rains that continued through the spring and summer. We also faced a unique situation with the discovery of the oropouche virus in Florida. While we did not see any locally acquired cases of the virus, our research team quickly hit the books and worked with the local Department of Health to come up with a plan should we experience an outbreak of the disease. Since this disease is primarily spread by biting midges, it served as a reminder that our duty to protect public health is ever evolving, and there may come a day when we don't only control mosquitoes.

The Year to Come

As this fiscal year ends, FY 24-25 is sure to have its own set of unique success and challenges. We will start treating more than 300 additional square miles of Collier County and welcome thousands of new residents into the District. The threat to public health from mosquitoes remains a 12-month a year battle due to our region's tropical climate and favorable habitat for mosquito breeding. We will continue to explore every option for a new facility at our current location that will be sustainable and allow us to effectively carry out our mission. I look forward to another year keeping our community safe.

Mission

The mission of the Collier Mosquito Control District (the District) is to provide valuable service to the community through suppression of both disease carrying and pestiferous mosquito populations by and through the safest and most economical means available. The District uses a variety of methods (Integrated Mosquito Management) in a manner consistent with the highest level of safety and minimal adverse impact on humans, wildlife, the environment, and non-target organisms.

Vision

Contributing to a healthy, high quality of life in southwest Florida and beyond by upholding public trust, applying sound science, utilizing best practices in mosquito control, economic responsibility, and an enduring search for solutions.

Dedication Professionalism Responsibility

The Collier Mosquito Control District is an independent special taxing district in the state of Florida. Its employees are tasked with the mission of protecting public health and comfort by and through the control of disease-carrying and nuisance mosquitoes.

Our professionals are dedicated to meeting the District's core mission of protecting public health and reducing nuisance mosquitoes while adhering to the highest level of safety and ensuring minimal impact to Southwest Florida's ecology.

Contributing to a healthy, high quality of life in southwest Florida and beyond by upholding public trust, applying sound science, using best practices in mosquito control, economic responsibility, and an enduring search for solutions.

DEPARTMENT OF OPERATIONS

Granular Reloader Enhancements

To enhance the efficiency and safety of hot reloading operations during granular larvicide missions, the District implemented several key modifications to the granular loader. The Jet-A fuel tank was upgraded to carry 100 gallons of Jet-A, increasing the capacity carried by the granular loader trailer. Modifications were also made to increase the fuel flow rate during hot refueling, reducing the time required to refuel helicopters in the field. Further, the capacity of the granular loader was increased with the addition of heavy-duty scale feet, allowing up to 2,400 pounds of material to be carried in the loader at once.

Safety was also improved with the introduction of new headsets, which enhanced communication between team members during hot reloading and refueling operations. This upgrade ensured clear and reliable communication, further reducing risks in the field. In addition to these equipment upgrades, training for all field staff was formalized and fully documented, ensuring that best practices are consistently followed during operations.

Wide-Area Larvicide Applications

The operations department continued usage of wide area larvicide applications to control mosquitoes breeding in containers of standing water around homes and businesses. Two on-call truck drivers were hired to

assist with applications. The department completed over 101 applications covering 30,000 acres using the Buffalo Turbines during the rainy season.

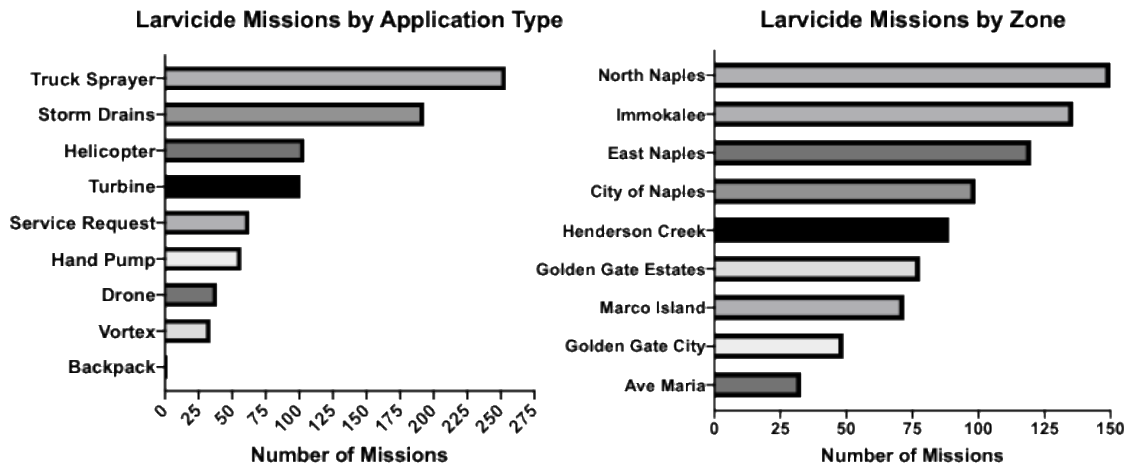
Granular Larvicide Applications

This year, the District experienced higher-than-average rainfall, which led to a significant increase in ground and aerial larvicide operations compared to the previous year. In response to anticipated salt marsh mosquito production from local mangrove swamps, the District proactively treated over 2,160 acres using 17,328 pounds of Fourstar BTI CRG. The increased rainfall throughout the year also resulted in a 635% surge in larvicide treatments within the District's freshwater swamps with 106,290 pounds of larvicide applied to 18,473 acres.

In addition, the District implemented cost-saving measures by reducing the application rate for freshwater areas from 7 lbs (\$57.75) per acre to 5 lbs (\$41.25) per acre without compromising the effectiveness of the treatments. Overall, the reduced application rate resulted in a cost savings of over \$125,000 for freshwater granular larvicide. These adjustments enabled the District to maintain larvicide efficacy while managing resources more efficiently and covering a larger area within the same budgetary confines.



Members of the Operations team pose at the annual Open House.



Larval treatments by application type and location.

Aerial Adulticide Applications

During the FY 23-24, the District experienced a notable increase in aerial adulticide applications, conducting 156 missions in response to heightened mosquito activity due to increased rainfall. This year was particularly heavy for mosquito

activity, necessitating at least five adulticide missions each month to manage mosquito densities effectively. Throughout this period, Dibrom Concentrate accounted for 54% of these missions (down from 66% in FY 22-23), treating over 1.8

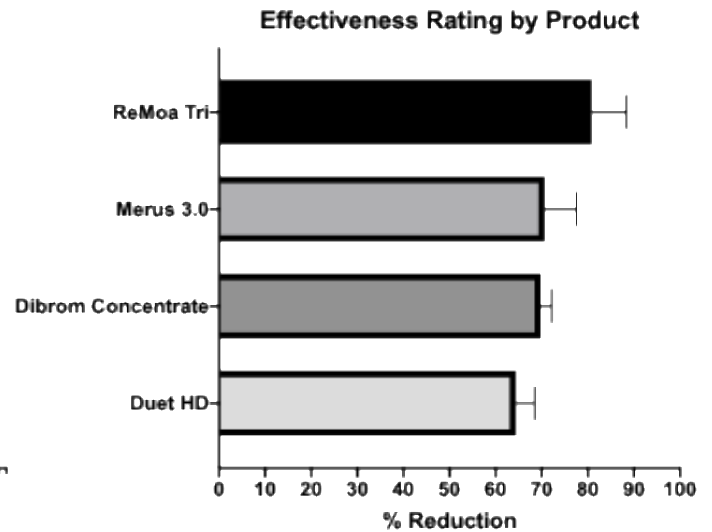
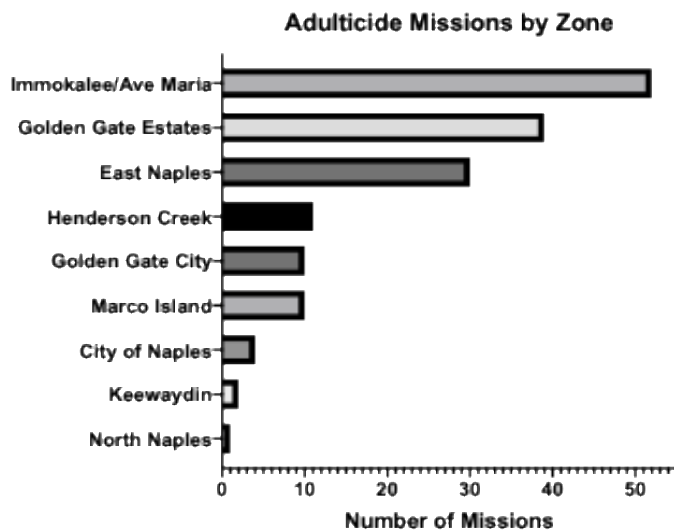
million acres with a total of 6,700 gallons of Dibrom. Duet HD was utilized in 29% of adulticide missions, covering 856,800 acres with 5,355 gallons of product.

The District's Bell 407 helicopter was fully operational this year and primarily equipped with Merus 3.0. Merus 3.0 accounted for 13% of adulticide missions, with 118,130 acres treated with 766 gallons of Merus 3.0. Additionally, the District introduced ReMoa Tri into its arsenal, which was used to treat 30,923 acres with 185 gallons of ReMoa Tri.

The increased rainfall this year led to large mosquito populations, with *Culex nigripalpus* (50%) and *Aedes taeniorhynchus* (21%) being the primary targets of treatment. The

majority of missions occurred in Ave Maria and Immokalee (33%) and Golden Gate Estates (25%), due the extensive freshwater mosquito habitat in the surrounding areas.

Despite the increased activity, the overall effectiveness of the aerial adulticide applications increased to 69%, meeting the District's standards for mission efficacy. ReMoa Tri proved to be the most effective product, achieving an average of 81% reduction in mosquito populations post-treatment. Merus 3.0 and Dibrom both demonstrated similar effectiveness rates, with a 70% reduction, while Duet HD resulted in a 64% reduction in mosquito populations. It's important to note that there is no significant difference between effectiveness ratings of the products.



Number of adult mosquito missions and their effectiveness by product.

DEPARTMENT OF RESEARCH

Arbovirus Surveillance

In FY 23-24, arbovirus activity remained a significant concern across Florida. Local transmission of dengue virus continued to spread, and the activity of endemic viruses surged, driven by heavy rainfall that left numerous Florida counties under mosquito-borne illness advisories and alerts.

Additionally, a new arbovirus, Oropouche virus, began spreading through the Caribbean, particularly in Cuba, with travel-related cases reported in Florida. This virus is transmitted by biting midges associated with hardwood forests and potentially by *Culex quinquefasciatus* mosquitoes. In response to this emerging threat, mosquito control programs across the state promptly began developing *Culicoides* response plans to effectively combat the Oropouche virus should it establish a foothold in Florida. In response to the Department of Health's request, the District began modifying traps and surveying for *Culicoides* in the event that a response needed to be initiated.

While there were several travel-related cases of mosquito-borne arbovirus in Collier County in FY 23-24, there was no local transmission of arbovirus. In FY 23-24 a total of 1441 pooled samples were tested for arbovirus surveillance. Of which, 17 pools were tested for Dengue, Chikungunya, and Zika; and 1424 pools were tested for West Nile, Eastern Equine Encephalitis, and St. Louis Encephalitis virus. No virus was detected in any mosquito pools.

Tracking the Effectiveness of Larvicide Applications

To ensure the effectiveness of our larvicide missions in reducing mosquito populations, the District initiated backchecks for larvae collection following treatments. All backchecks were conducted within seven days of each treatment to accurately assess post-treatment efficacy. Over the last fiscal year, post-treatment counts were completed for a total of 42 larvicide missions, with results indicating that no larvae were collected in treated areas. Based on these data, we can confidently conclude that our larvicide missions achieved 100% efficacy in targeting mosquito larvae and successfully maintaining reduced mosquito numbers across the District.

Insecticide Resistance Monitoring

In FY23-24, the District's research staff conducted resistance testing on 16 mosquito populations collected from various locations within the District. Each population was evaluated for resistance to technical-grade pyrethrins, sumithrin, and naled—key active ingredients in the District's adulticide formulations. Among the populations tested, five distinct mosquito species were represented, covering both nuisance and potential disease vector species. This included nuisance species such as *Aedes taeniorhynchus* and *Psorophora columbiae*, along with disease vector species *Aedes aegypti*, *Culex quinquefasciatus*, and *Culex nigripalpus*. Consistent with previous years, pyrethroid (pyrethrins and sumithrin) resistance was identified in *Aedes aegypti* and *Culex quinquefasciatus* populations.

Resistance Monitoring Cont.

Further, the first round of ground-ULV (Ultra Low Volume) trials using ReMoa Tri was completed, with results published in the *Journal of Medical Entomology*. This groundbreaking study demonstrated, for the first time, the effectiveness of ground applications of ReMoa Tri against resistant *Culex quinquefasciatus* and *Aedes aegypti* under semifield conditions. These findings offer promising insights into alternative treatment options for managing mosquito populations with known resistance, providing a valuable tool in the District's integrated mosquito management strategy.

These tests are critical for monitoring resistance trends, ensuring the efficacy of adulticides, and informing targeted mosquito control strategies to protect public health across the District.

Keewaydin Barrier Treatments

In FY 23-24, Biologist Gabby Steele, M.S., concluded a comprehensive two-year study testing the efficacy of residual barrier sprays on Keewaydin Island. The project aimed to answer two key questions: (1) Do residual barrier treatments deposit effectively on foliage, and how long do these deposits last? (2) Can residual barrier treatments reduce mosquito populations in treated areas on Keewaydin Island?

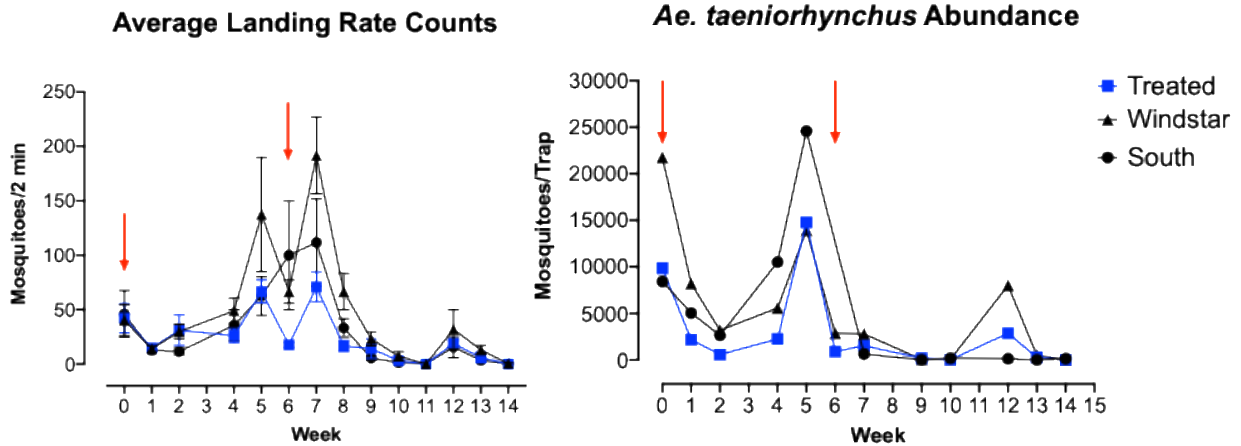
In collaboration with the Operations Department, two treatments of Wisdom TC Flowable were applied to a

residential parcel on Keewaydin Island. Weekly visits by Operations included collecting Landing Rate Counts to assess biting pressure and deploying a CDC light trap to monitor mosquito activity.

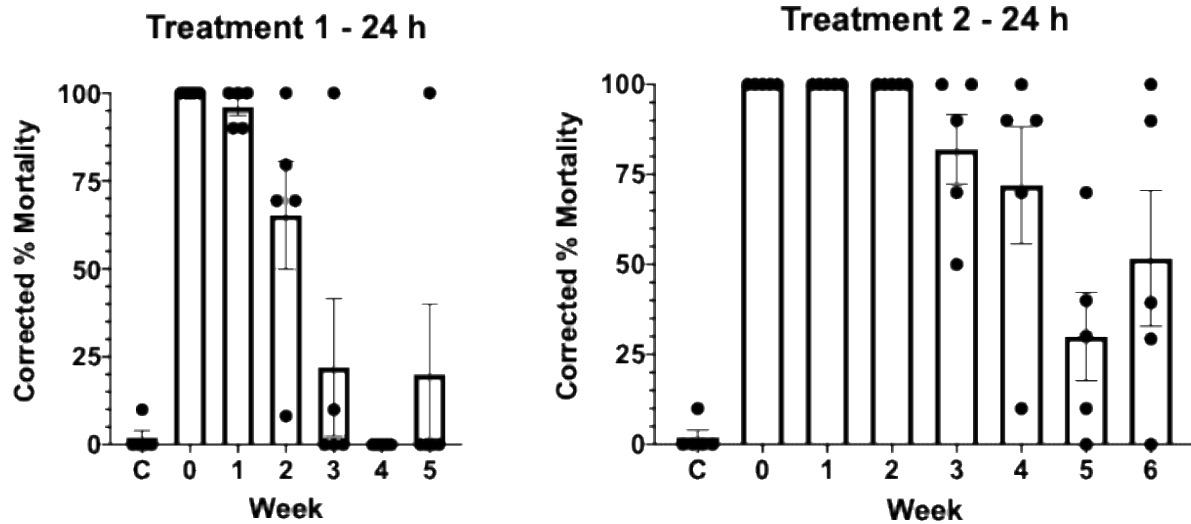
To evaluate product deposition and longevity on foliage, leaf bioassays were conducted using sea grape leaves collected weekly from the treated area, with local *Aedes taeniorhynchus* mosquitoes used in bioassays. The findings revealed that Wisdom TC Flowable remained effective for 2-3 weeks before its efficacy declined, particularly after large rain events, which washed away the product, further reducing its residual impact.

To determine the effect on mosquito populations, landing rate counts and CDC light trap data were analyzed, revealing that while Wisdom TC Flowable did deposit on foliage, it did not effectively reduce biting pressure or mosquito abundance on Keewaydin Island. This research has provided critical insights into the limitations of residual barrier treatments in environments with high rainfall and heavy mosquito populations, guiding future decisions on mosquito management strategies for the area. The research department is aiming to publish this study in the *Journal of the American Mosquito Control Association*.

Keewaydin Island Findings



Average landing rate counts following Keewaydin treatments.



Mortality rates following Keewaydin treatments.

Mosquitofish Program

In 2023, the District introduced the Mosquitofish van, featuring a large live well tank system that revolutionized mosquitofish distribution by bringing these natural predators directly to residents. This new approach has significantly enhanced the reach and impact of the program, resulting in the giveaway of a total of 14,350 mosquitofish during FY 23-24, with over 10,000 distributed since launching dedicated Mosquitofish Events.

The program's success is due in large part to Biologist Rachel Bales, who oversees the District's mosquitofish initiatives. In FY 23-24 Rachel collaborated closely with Atom Rosales, Director of Technical Development, to merge biological control strategies with digital streamlining, improving several logistical aspects of the program.

Rachel identified common challenges such as no-shows for pickup appointments, mismatches between digital forms and location data, and repeated inaccuracies in data entry.

Through weekly collaborative meetings, they refined the pickup appointment scheduling experience for residents and resolved these critical issues.

The mosquitofish program offers an easy-to-use Mosquito Fish Request Webform on the District's website. Requests are integrated into ArcGIS and routed directly to Rachel via a specialized Mosquitofish Manager WebApp. Residents receive an automated email through Calendly to select their pickup date and time,

complete with reminder text messages to minimize no-shows. Upon arrival, residents complete a Check Out Webform, which feeds data into ArcGIS, populating an interactive dashboard that tracks fish distribution metrics and spatial data on release locations. This streamlined workflow not only facilitates appointments but also ensures accurate tracking and analysis of mosquitofish distribution data. Staff can visualize and analyze this data in real-time using the Mosquitofish ArcGIS Dashboard, enabling data-driven decisions for future program development.



Commissioner Russell Burland, Rachel Bales, Atom Rosales and Hunter Martin pass out free mosquitofish at Alchemist Kava Bar and Lounge in Naples.

A New Genus to Collier County

In FY23-24, a new mosquito species and genus, *Aedeomyia squamipennis*, was identified for the first time in Collier County. This discovery was made by Hunter Martin, former Laboratory Technician, who recognized the mosquito by its distinctive speckled body, feathered femurs and unique "pearl necklace" segmented antennae. The specimen was collected from a trap in Collier Seminole State Park.

This species was first documented in Miami-Dade County in 2016 and has since expanded its range across South Florida. *Aedeomyia squamipennis* is closely associated with water lettuce habitats, suggesting that its northward movement may continue due to the abundance of suitable environments. The District will continue monitoring its spread to assess any potential implications for local mosquito control efforts.

The discovery was published in the Journal of the American Mosquito Control Association.



Aedeomyia squamipennis as seen under magnification.

FY 23-24 Publications

Martin H, Reeves L, Steele G, Rosales A, Heinig R, Lucas KJ. (2024) *Aedeomyia squamipennis*: A new genus and species record for Collier County, Florida. *J Am Mosq Control Assoc.*

Little J, Lucas KJ. (2024) The 3-Year Journey of Expanding the Boundaries of the Collier Mosquito Control District. *Wing Beats*. Fall 2024 Issue.

Lucas KJ, Heinig R, Lake L, Williams K, Parker-Crockett C, Bales RB, Decyo McDuffie. (2024) Evaluation of a novel triple-action adulticide containing a pyrethroid, macrocyclic lactone, and fatty acid against pyrethroid-resistant *Aedes aegypti* and *Culex quinquefasciatus* (Diptera: Culicidae). *J Med Entomol.*

Heinig RL, Morreale R, Reeves LE, Llyod A, Hoel D, Lucas KJ. (2023) Detection of *Aedes scapularis* in southwest Florida. *J Am Mosq Control Assoc.* 39: 281-83.

Lucas KJ, Lyon C, Rosales A. (2023) Impact of § 934.50 Fla. Stat. and 60GG-2.0075 FAC on mosquito control drone operations. *Wingbeats*. Fall 2023 Issue.

Lucas KJ, Babcock E, Bales RB. (2023). Baseline susceptibility and effectiveness of adulticides to local *Aedes taeniorhynchus* from Collier County, Florida. *J Am Mosq Control Assoc.* 39: 212-15.

**DEPARTMENT OF TECHNICAL
DEVELOPMENT**

Drone Program Overhaul

In response to new regulations and security standards, Technical Development has rebuilt and restructured its drone program to align with Florida's new requirements. As of January 2023, the department discontinued using all of DJI and all other non-compliant drones resulting in a temporary grounding of the UAS fleet.

The department then upgraded its fleet to drones that comply with the new standards, including the Skydio X2E, Skydio X10 and Inspired Flight 1200A, suitable for mapping and inspection operations. These new drones ensure data security, particularly by excluding equipment from foreign countries of concern and adhering to encryption and data storage protocols. The fleet now supports the District's surveillance and control efforts while maintaining compliance with state-mandated UAS security measures.

The District's Hyllo AG-110 treatment drone had its flight controller, cube pilot, Herelink RC and AirUnit replaced with US-made compliant versions. Drone-based treatments continued to be an integral component of the District's larviciding strategy by effectively expanding treatment frequency and coverage. This approach addresses areas that are either too small for helicopters or too large and inaccessible for truck and manual applications. Using the Hyllo AG-110 drone, calibrated for larvicide applications such as Fourstar BTI CRG, VectoMax FG, and VectoPrime FG, the District can target smaller treatment areas with precision.

This year, the District added the

PrecisionVision 40X to its fleet—a high-capacity drone capable of carrying up to 40 lbs of treatment material, enhancing the efficiency of larger applications by covering up to 14 acres within minutes. The drone fleet also includes advanced capabilities for surveillance and mapping, with drones like the Skydio X2E and Inspired Flight 1200A equipped for high-resolution photogrammetry and LiDAR mapping. These tools provide up-to-date imagery and elevation models essential for planning and adapting treatment strategies in dynamic environments. This integration of UAS technology supports the department's commitment to enhance the District's integrated mosquito management program.



Atom Rosales takes one of the District's drones for a test flight.

Drone Program Cont.

In addition, the acquisition of high-resolution imagery from NearMap has significantly improved our decision-making for both surveillance and treatment planning. NearMap is a web-based aerial imagery platform that provides frequent, high-resolution updates with ground sampling distances of 4.4–7 cm per pixel, enabling the District to access detailed images that capture even subtle landscape changes. This high-clarity imagery is refreshed each year, offering up-to-date views essential for tracking population growth and environmental changes in Collier County. Additionally, NearMap's integration with ArcGIS allows for seamless layering of current imagery over historical data, enhancing the District's capacity to monitor land use changes, plan precise treatments, and respond effectively to emerging mosquito habitats.



Joseph Bonaccorsi brings a surveillance drone in for a landing.

AG-Mission Implementation

The transition to AG-Mission has marked a pivotal improvement in the District's aerial treatment operations, streamlining everything from mission planning to data retrieval. Previously, the District relied on SprayView, which was limited in capabilities and prone to user error due to labor-intensive file management. AG-Mission has improved these processes with its user-friendly, web-based platform equipped with advanced functionality tailored to the District's needs.

At the core of AG-Mission's capabilities is its integrated web map viewer and library, allowing Operations to assign treatment missions to each aircraft remotely. The AG-NAV Guia Platinum system onboard now receives all mission data through Wi-Fi transfer, **eliminating the need for physical thumb drives.** Pilots can now receive and review their missions anywhere, download assignments in real time and execute operations more efficiently. This transition required consolidating over 5,400 mission files, including larvicide and adulticide treatments, into a single geodatabase. Technical Development meticulously converted, deduplicated and validated these files, establishing a comprehensive, reliable library of treatment polygons now accessible within AG-Mission.

Post-mission data handling has also been optimized, with aircraft data automatically uploaded to AG-Mission upon completion, updating mission statuses and providing instant access to mission analytics, such as spray coverage, acres treated and application reports.

Ag-Mission Cont.

In adopting AG-Mission, the District modernized mission planning and execution while creating a foundation for future enhancements. With ongoing efforts to consolidate additional treatment blocks and potential feature expansions through collaborations with AG-NAV, AG-Mission stands as a critical asset in the District's commitment to efficient, data-driven operations.

SmartFlow Spray Mission Tracking

Technical Development implemented a novel truck treatment tracking system integrated with ArcGIS Online, streamlining operations for Wide Area Larvicide Spraying (WALS) and Ultra-Low Volume (ULV) applications. This system addresses navigation and data accessibility challenges, providing reliable data collection and enhanced support for new drivers. Leveraging ArcGIS Field Maps and Experience Builder, technicians use mobile devices to record real-time treatment data, view treatment blocks, recent activity, and location-specific information, enabling precise tracking and recording of treatment routes. Mission-specific details, including product type and equipment used, are entered before spraying, with routes tracked throughout the mission and post-treatment details added upon completion.

ArcGIS Experience Builder serves as the management interface, offering tools for data validation, route visualization and coverage analysis via buffer tools. Interactive dashboards allow exploration of data by truck, driver, product and date range. Future goals include integrating SmartFlow spray data for real-time swath visualization, enhancing route

planning and optimizing assignments.

Flight Records Management

In collaboration with flight and aircraft maintenance teams, Technical Development launched the District's new in-house flight records system using ArcGIS Online tools. This upgrade replaces the outdated Microsoft Access database, which had become deprecated and unsupported, with a streamlined, web-based interface that offers significant usability improvements. Pilots can now enter flight records directly and flight ticket reports are generated with enhanced clarity and customization. Reports are tailored to each aircraft type, displaying only relevant fields—such as torque events and RINS for rotorcraft or multi-engine details for fixed-wing aircraft—and organized with grouped and sectioned headers for easy navigation and interpretation of key maintenance tracking data. This new platform markedly enhances the functionality, reliability and user experience for District personnel managing flight records.

LiDAR Mapping for *Aedes taeniorhynchus* Control

The District's drone-based light detection and ranging (LiDAR) mapping initiative targets *Ae. taeniorhynchus* production sites within mangrove habitats, enhancing treatment precision through detailed microtopographic analysis.

LiDAR is a remote sensing technology that uses laser pulses to measure distances, producing high-resolution, three-dimensional representations of terrain. The District's LiDAR Unit, known as a YellowScan Mapper, was acquired through a federal grant from

LiDAR Cont.

the Centers for Disease Control and Prevention's (CDC) Epidemiology and Laboratory Capacity for Prevention and Control of Emerging Infectious Diseases (ELC) grant.

Leveraging the Inspired Flight 1200A drone equipped with the YellowScan Mapper, Technical Development conducted extensive LiDAR data collection to identify habitat features associated with mosquito breeding. High-resolution digital elevation models (DEMs) derived from point-cloud classifications allow for identification of subtle topographical variations that correlate with potential breeding areas. By combining LiDAR analysis with field-validated eggshell collections, the District is refining a predictive model for habitat suitability, which informs more targeted, efficient larvicide applications. This approach

represents a proactive and data-driven strategy for optimizing treatment efficacy in complex environments such as mangrove ecosystems.

Larval Surveillance Hotspot Dashboard

The larval surveillance hotspot dashboard visualizes larval surveillance and treatment information, providing actionable insights for assessing larval control measures across the District. This dashboard allows for improved access to dip and treatment data, providing valuable insights into the effectiveness of larval control measures. Efforts to streamline data collection are ongoing, making the process more efficient for field technicians in their daily operations.



Atom Rosales discusses CMCD's drone program with Naples residents.

DEPARTMENT OF HUMAN RESOURCES

CMCD's Newest Department

The fiscal year 2023-2024 represented a pivotal moment for the Human Resources Department as it transitioned into an independent unit within the organization. This change allowed for a more targeted approach to managing personnel, recruitment and strategic HR functions, thereby strengthening the District's objectives and improving overall operational efficiency.

Roles for HR and Finance

During the period of transition surrounding the retirement of Stacy Welch, Chief Financial Officer, after 35 years of dedicated service to the Collier Mosquito Control District, significant adjustments were made to support organizational continuity.

Jessica Burnham, MBA-HRM, SHRM-SCP, Director of Human Resources,

and Mark Grazewski, Chief Financial Officer, worked collaboratively to define a clearer division of responsibilities between the Finance and Human Resources Departments.

Regular review meetings involving both teams facilitated a seamless transfer of duties as processes were evaluated and new workflows implemented, ensuring consistency and effective operational management.

This strategic refinement led to the promotion of Jesvia Alvarado to the role of Human Resources Generalist, expanding her scope of duties and responsibilities. Additionally, to address a vacancy within the Finance Department, Oksana Yudinova was hired as an Accounting Specialist I following Mark Grazewski's promotion to Chief Financial Officer.



CMCD team members celebrate their service milestones at the 2024 Tenure Awards.

Centralized Recruitment, Advertisement Management, and Onboarding Hub

The Human Resources Department oversees all aspects of recruitment, job advertisement, and the onboarding of new team members, managing, reviewing, and approving these processes to ensure efficiency and compliance. The transition to an online format, supported by the implementation of ADP modules for recruiting and onboarding, has streamlined these processes, enhanced integration and provided a more welcoming experience for new employees. This advancement has aligned the department and the district with industry standards and best practices.

To track changes in employee compensation, the Personnel Action Form (PAF) was introduced. This workflow ensures that department managers, directors, Finance, Human Resources and the Executive Director are informed of all compensation updates. The HR team records these changes in ADP Workforce Now and uploads the PAF to the employee's file for accurate documentation.

The HR Director introduced standardized interview questions for various positions and provided training for directors and managers in conducting lawful and effective interviews. This initiative aimed to uphold the best practices and maintain compliance throughout the recruitment process.

Jesvia Alvarado, HR Generalist, collaborated with department directors to develop a comprehensive and welcoming first-day onboarding experience for new employees. She

created detailed checklists for departments to ensure that essential information is thoroughly reviewed by the new employee and their supervisor. Additionally, she crafted a standard welcome message designed to ease first-day nerves and create a positive initial impression.

Establish enhanced training programs for Supervisors'/employees' professional development

A training grant was submitted to the Future Makers Coalition for The Southwest Florida Equitable Jobs Pipeline. The grant is geared toward sustaining workforce development initiatives. Initiatives such as managerial skill development, problem solving, critical thinking, leadership communication, with the focus on upskilling for employees. The grant was awarded, and training will start in fiscal year 2024/2025. The district continues to have an ongoing commitment to employee growth demonstrated through targeted training.

Health Benefits & Wellness

We reviewed and updated our benefits and compensation packages, benchmarking them against similar organizations to ensure market competitiveness. The focus on total rewards packages ensures that the district remains an attractive employer within Collier County.

The Wellness Program engaged a large portion of staff and their families, promoting healthy lifestyle choices, thereby bringing a positive impact to employees and their families' lives it also results in the long-term reduction of the districts healthcare costs.

Awards

During the FMCA Annual Meeting, Hunter Martin received the Cyrus R. Lesser Memorial Student Paper Competition award for his presentation titled "Operational Field Trials of ReMoa Tri Against Insecticide Resistant *Aedes aegypti* in Collier County, Florida". Hunter's presentation detailed field trials conducted by CMCD researchers on the effectiveness of the new treatment material ReMoa Tri on mosquitoes resistant to established treatment methods.

Dr. Keira Lucas serves was selected by outgoing FMCA president Sandra Fisher-Grainger for the FMCA Presidential Award. Dr. Lucas has provided significant contributions to the FMCA through legislative and regulatory action focused on the use of unmanned aerial systems by government agencies, special district accountability and mosquito control regulations. This award recognizes the vast impact her work has left on the entire industry in the state of Florida.

Butch May was selected for the James W. Robinson Memorial Award, which recognizes those who have contributed outstanding improvement to existing equipment or currently employed techniques used by a non-commercial mosquito control agency. Over his 25-year tenure with the District, Butch has consistently demonstrated his commitment to enhancing the efficiency and safety of

mosquito control operations, including the modification of District equipment, and managing two major hurricane recoveries and a large-scale remodel of District headquarters.

Former Director of Communications, Robin King received the FMCA Merit Award. The FMCA Merit Award is awarded to those who represent characteristics associated with responsible leadership, good citizenship and personal integrity. Robin King served as CMCD's director of communications for six years and currently serves in the same role for the Naples Airport Authority. The award recognizes Ms. King's efforts of elevating the important role of public relations and crisis communication in the mosquito control industry.



Four CMCD team members were honored at the 2023 FMCA Annual Meeting in Cape Coral.

Refining Job Descriptions to Meet Evolving Organizational Needs

The Collier Mosquito Control District (CMCD) has historically maintained a Pay and Classification Plan. Following a directive from the Board of Commissioners, Jessica Burnham, MBA-HRM, SHRM-SCP, the new Human Resources Director, conducted a comprehensive job analysis. This process included updating job descriptions and reclassifying positions as necessary. To complement these changes, it was essential to revise and align the Classification Plan, ensuring that the salary chart and pay ranges accurately reflected the new structure. A job analysis was conducted involving data collection, salary comparisons, and feedback from other organizations to align pay structures with industry standards. This process also included collecting employee credentials to ensure compliance and support future role alignment.

Using standardized forms, the team thoroughly reviewed job descriptions, responsibilities, and salaries, forming a reliable foundation for succession planning and talent acquisition. This collaborative analysis, involving the HR Director and departmental directors, reinforced the district's organizational structure and contributed to strategic growth.

During the audit and review of job descriptions, it came to our attention that qualifications such as degree(s) or certification credentials were not consistently requested or documented to ensure accuracy. To rectify this oversight and maintain compliance, we are now requesting that all employees submit their credentials to the Human Resources department for inclusion in the employee file. Moving

forward, all new hires must submit their credentials as part of the conditional offer of employment.

Ensuring that we have accurate and up-to-date records of employee qualifications is essential for several reasons, including compliance with regulatory requirements and alignment of pay ranges with job responsibilities.

The implementation of revised job descriptions and consistent credential tracking will strengthen compliance and job clarity now and for years to come.

Recruiting highlights

Successful hires for positions such as Pilot, Accounting Associate, Technical Development Specialist I, and Field Technician I contributed to the continued growth and expansion of the district.

When the Director of Research position became vacant the department and the position was analyzed, and it was decided that it would be in the best interest for the district to split the position into two different positions the Manager of Surveillance & Laboratory and the Manager of Field Validation.

New Hires

We welcomed a number of new hires to the district, and it was wonderful to see the engagement of all the employees.

Name and Job Title

Jennifer Flint- Receptionist
John Dow - Pilot
Joseph Bonaccorsi - Drone Pilot
Miguel Rua - Field Technician
Oksana Yudinova - Accounting Specialist
Olivia Konieczny - Tech Dev Specialist
Robert Mershon - Field Technician
Simon Crawford - Aircraft Maintenance Technician
Suzanne Li - Manager, Surveillance and Laboratory
Wendy Samz - Public Outreach and Education Specialist
William Reyes - Field Technician
Wyatt Corbitt - Seasonal Driver



CMCD Employees pass out HR and educational materials at the Big Bus Event in Immokalee.

Explore options for a comprehensive tracking system for (employee) training/education and associated expenses

ADP Workforce, a module that the district is already using, has a training tracking system that we were able to readily use and meet the needs of the district employees. The system's expansion will enhance tracking capabilities.

Internship program

The internship program continues to be a great success garnering many interested college students wanting to work the summer at CMCD. This year Camila Luna, Paul Julmice, and Gabriel Katz joined the team working in the Research and Technical Development Departments.

DEPARTMENT OF COMMUNICATIONS

FMCA Annual Meeting 2023

In November, more than a dozen team members attended the FMCA Annual Meeting in Cape Coral. The conference featured more than 10 presentations from CMCD over three days, and four current and former employees were honored with awards at the conference's banquet.

FMCA Tallahassee Days 2024

Dr. Keira Lucas, Jonathon Little, Decyo McDuffie and Gabriella Steele traveled to the state capitol to advocate on behalf of the District and the mosquito control industry. This trip was successful in ensuring the passage of our district expansion local bill, increasing the budget available for tier II and III mosquito control programs and amending a special districts bill to remove harmful language to mosquito control districts.

FMCA Dodd Short Courses 2024

In February, staff attended the FMCA Dodd Short Courses, making significant contributions to the program. Mark Grazewski, Chief Financial Officer, collaborated with other District leadership to provide a short course designed for administrative departments of mosquito control programs. Dr. Rebecca Heinig, Director of Research, conducted courses focused on the practical applications of Excel and ArcGIS in mosquito control. Additionally, Andrea McKinney led a course on best practices in Outreach Education.

AMCA Annual Meeting 2024

In March, numerous staff members from the District attended the American Mosquito Control Association Annual Meeting in Dallas, Texas. The team was formally invited to participate in various conference symposia where they presented on several important topics.

These included the expansion of the District boundaries, landing rate counts, drone regulation compliance and 3D printing. Andrea McKinney also coordinated AMCA's education day. This participation underscored the District's active role and contributions to the broader field of mosquito control.



Jonathon Little, Dr. Keira Lucas, Decyo McDuffie and Gabriella Steele stand in front of the Florida Senate chambers before meeting with Senate President Kathleen Passidomo



Wendy Samz and Andrea McKinney pose in front of their station at the annual open house.

Public Outreach

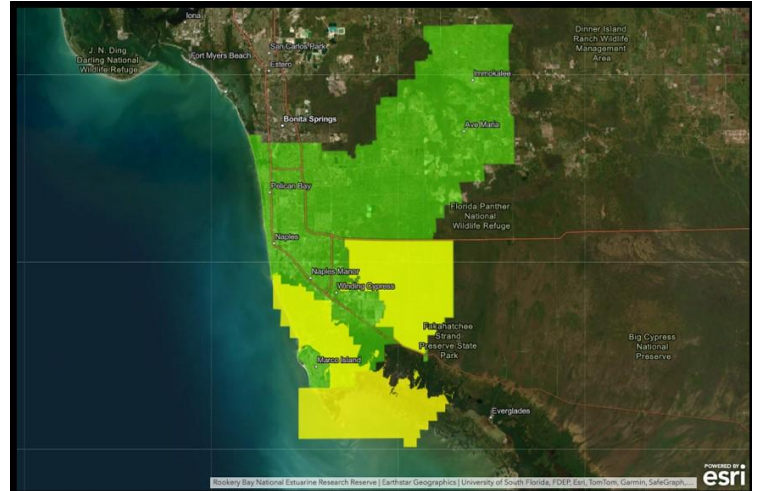
The communications department sent 4 press releases and CMCD was featured in 47 print and television news stories in the fiscal year. In addition to media coverage, CMCD participated in 38 outreach events and more than 4,600 learned about mosquito control in their classrooms through our education program.

In April, CMCD hosted its annual open house, attended by more than 450 members of our community. The event featured displays from our various departments and interactive exhibits from community partners.

In addition to formal outreach events, CMCD hosted dozens of tours for interested residents to learn more about mosquito control and how we work to keep our community safe and comfortable.

District Expansion Efforts

Led by Patrick Linn, Dr. Lucas and the Department of Communications, CMCD took on a massive public relations and lobby campaign to expand district boundaries. In March, HB 509 was passed unanimously by the Florida legislature and the bill was later signed by Governor Ron DeSantis. This paved the way for CMCD to nearly double the size of the district beginning on October 1, 2024.



Map reflecting CMCD's new District boundaries following expansion



Rachel Bales discusses CMCD's mosquitofish program at the annual open house.

**DEPARTMENTS OF AVIATION AND
AIRCRAFT MAINTENANCE**

Trainings

Three pilots completed training during FY 23-24. Derrick Klein completed his airplane ratings and attended MD500 refresher training.

Mike Berkitsch attended MD500 refresher training.

Scott Hendricks continues to work on his commercial helicopter rating and has successfully soloed.

Fly-In

This spring, we attended the Lee County Mosquito Control event and the Manatee County Fly-in to tour their new facilities and collaborate with other districts for best practice.

Cessna Visit

In May, Patrick Linn, Kevin Dunleavy, Scott Hendricks and Jim Delie visited Textron in Wichita, KS to research the Cessna Sky Courier. During this visit they toured the facilities, flew a Sky Courier and spoke with Cessna's special mission personnel to discuss the feasibility of adding a Sky Courier to the CMCD fleet. We look forward to this addition to enhance safety and improve efficiency.



Jon Morris conducts spill cleanup training at the 2024 hangar safety meeting.



CMCD's fixed-wing fleet on display at the annual open house.

Aircraft Repairs and Maintenance

One skyvan and one MD500 engine faces major issues this year, which led to some challenges. Both are back in service, and these types of issues serve to reinforce the need for fleet refreshment.

Replaced engine indicating instruments in skyvan N642M with new and updated units to enhance reliability and safety.



A CMCD Bell 407 helicopter flies over Naples.

**DEPARTMENTS OF FACILITIES AND
INFORMATION TECHNOLOGY**

Hurricane Season

In preparation for hurricane season, the team worked diligently to secure and prepare the facilities for two hurricanes, ensuring the safety of staff and the preservation of critical equipment. Following one of these storms, the department promptly addressed minor water damage, restoring affected areas and maintaining a safe and functional work environment.

Building Upgrades

A significant project this year involved building a secondary containment screen on the exterior door of the laboratory. This added layer of protection enhances the safety and security of the lab environment, preventing the unintentional release of mosquitoes.

To support the District's growing team, the Facilities Department built a new HR office, providing additional office space for the expanding staff. The department also improved storage capacity by constructing a dividing wall in the garage, creating extra space for essential equipment and supplies.

Supporting Operations

The team further focused on enhancing field operations with new tools. They mounted a larvicide spreader on the District's new Argo, enabling the Operations team to treat challenging, hard-to-reach areas more efficiently. Additionally, they constructed a new helicopter trailer to replace an old, rust-damaged model, ensuring secure and reliable transport

for aerial equipment.

Vehicle Maintenance

Vehicle maintenance remained a priority, with the team ensuring that all District vehicles were kept in optimal working condition to support daily operations. The department also outfitted nine field technician trucks with front-end units for applying larvicide, building four of these units in-house to maximize cost efficiency.

Through these projects and improvements, the Facilities Maintenance Department continues to bolster the District's mission by maintaining resilient infrastructure and reliable equipment, prepared to meet operational demands—even in the face of extreme weather events.

Information Technology

In FY 23-24 the IT department worked to enhance CMCD's infrastructure. This included replacing satellite phones with radios for disaster communication, investigating new tower weather sensors, implementing new cybersecurity and data protection systems to improve the ability to recover from cybersecurity attacks and upgrading hardware and technology for all departments.

In addition to these upgrades, the IT department improved CMCD's cybersecurity defenses by implementing dual factor authentication for Office 365 and investigating the feasibility of single sign-on. No appropriate options were found for single sign-on.

**DEPARTMENTS OF FINANCE AND
ADMINISTRATION**

Department Changes

Long-time CFO Stacy Welch retired after 35 years with CMCD, and she was replaced by Mark Grazewski in alignment with the department's succession plan.

Financial Outlook

CMCD continues to operate with a balanced project and maintains a sufficient amount of money in reserves. CMCD also received high interest on funds held earmarked for capital outlay due to delays in major projects. CMCD also received payments from the Ave Maria Development District for services provided to Ave Maria residents. These payments are expected to cease moving forward when boundaries expand to include Ave Maria.

Millage Rate

The millage rate for FY 2023-24 was .1443 mils, which represents the rolled-back rate. The rolled-back rate represents the rate required to collect the same amount of revenue as the year before. Under Florida law, anything above the rolled-back rate is considered a tax increase.

Reserves

CMCD's reserve balances has continued to grow year over year. These increases are in preparation for planned projects such as new facilities and rejuvenating the aerial fleet. Reserve balances are expected to begin to decrease in the coming years as these projects begin. Even with the cancellation of the Immokalee project, new capital outlay spending and construction will be required at the current Naples Airport facility.



CMCD said farewell to CFO Stacy Welch following her retirement after 35 years. Congrats, Stacy!

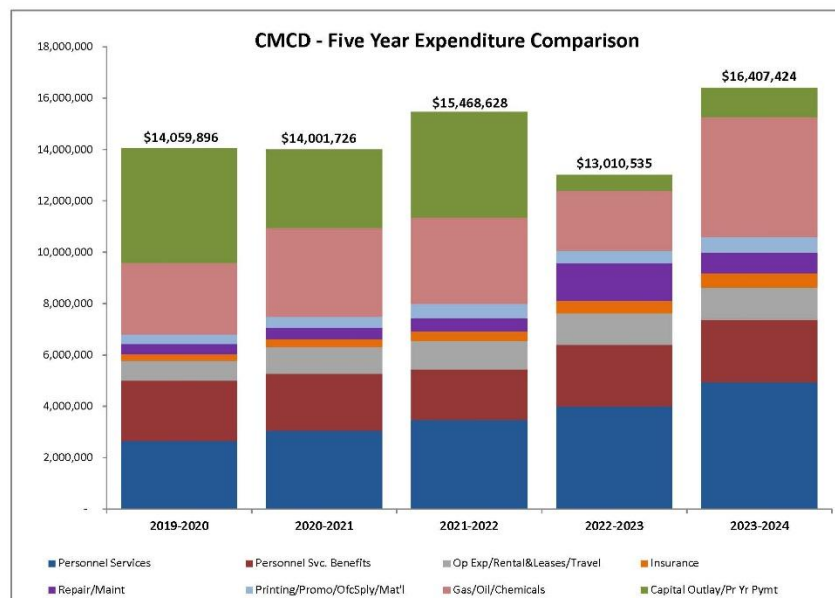
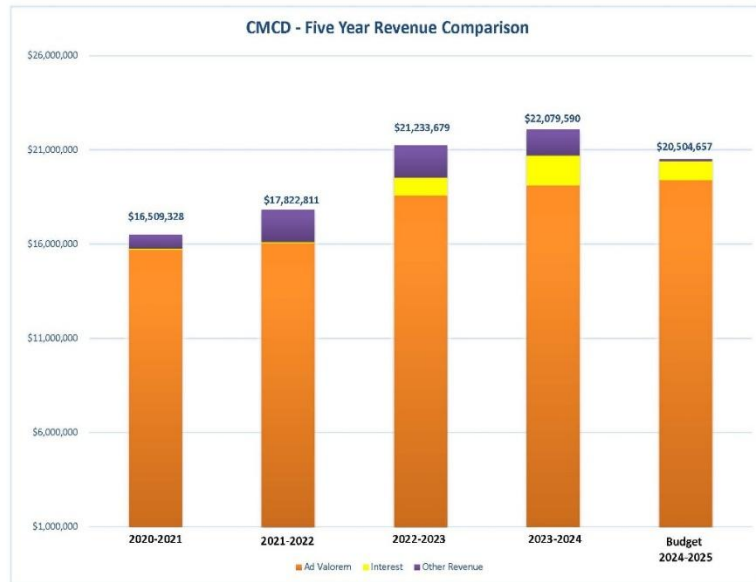
Expenditures

Expenditures continue to increase as CMCD grows with the Collier County community. We welcomed a lot of new employees during the fiscal year, and their salaries and benefits led to an increase in personnel-related expenditures.

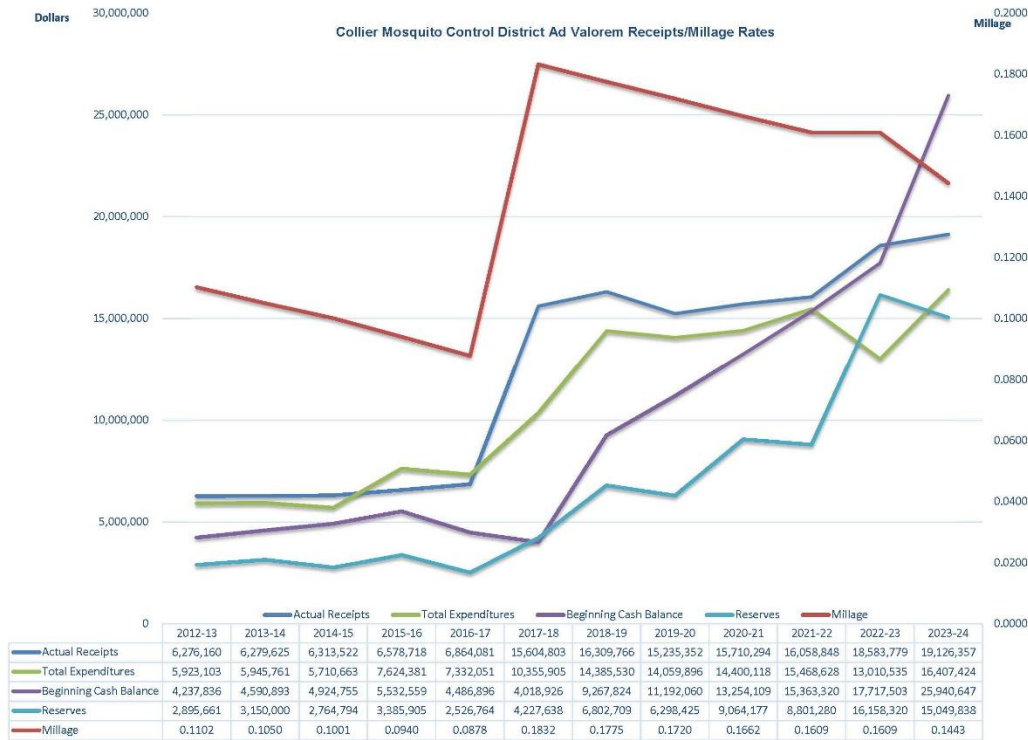
We also experienced a heavy mosquito season with unseasonable rains in the winter months. This led to an increase in costs for treatment materials in order to keep up with the need for treatments.

**TOTAL REVENUE
\$22,079,590**

Total revenue for FY2023-24 was \$22,079,590 which included revenue from the Ave Maria Stewardship Community District for contractual mosquito control activities. Fiscal year expenditures were \$16,407,424.



The exact amount of expenditures, revenues, and fund balance will be verified by the auditors and released in early 2025 as part of the annual audit, and subsequent Financial Statements, which will be available on the District’s website (cmcd.org).



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Five Year Comparison of Reserves



Annual Report 2023-24

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