



ANNUAL

REPORT

2020

2020 Numbers

4,000

MOSQUITOFISH DISTRIBUTED

800

MOSQUITO POOLS TESTED
FOR WEST NILE VIRUS

1,683

STUDENTS REACHED
(IN-PERSON BEFORE
COVID-19 RESTRICTIONS)

.172

MILLAGE RATE

27,970

ACRES LARVICIDED

5,013

GALLONS OF
ADULTICIDE APPLIED

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Chair's Message



As this year's Chair of the Board of the Commissioners for the Collier Mosquito Control District, it fills me with pride to report that our ongoing collective commitment to excellence has led to another successful Mission. The Collier Mosquito Control District Board of Commissioners is composed of five members, each serving four-year terms. The Board's traditionally non-partisan effort in an ever more fragmented world continues to demonstrate success and promise for a bright future for public health.

It would be an understatement to say that 2020 was a year like no other. A worldwide pandemic, the most contentious national elections in our history, record unemployment, wildfires, hurricanes, civil unrest – the list goes on. The circumstances of 2020 tested the mettle of us all, including the staff of CMCD. I continue to marvel at the response to adversity that was

As an integral part of the community since 1950, the District continues to evolve and deliver on its mandate to protect public health and comfort.

demonstrated throughout the year by our dedicated team of professionals. A complex and logistically challenging list of goals has stayed on target throughout the year, including but not limited to:

1. Initiating facilities replacement that have far outlived their designed economic life
2. Launching an aircraft fleet overhaul/upgrade
3. Advancing our Drone Program
4. Continuing to advance the scope of Integrated Pest Management as recognized by industry professionals
5. Cultivating a strong public trust through education at all levels
6. Devising new methods to ensure a fiscally responsible and transparent stewardship of ad valorem taxpayer dollars

As an integral part of the community since 1950, the District continues to evolve and deliver on its mandate to

protect public health and comfort. As Chair of the Collier Mosquito Control District Board of Commissioners, I am keenly aware of the importance of the community's continued confidence in our mandate to protect public health and comfort.

Rest assured that given the District's resourcefulness and tireless approach during the year 2020, that confidence shall continue to be reinforced.

On behalf of the Collier Mosquito Control District Commission, I offer our sincerest thanks and appreciation to the dedicated staff of CMCD for their compassionate and determined efforts in helping to provide the citizens and visitors of southwest Florida with the healthiest, safest and highest quality of life.

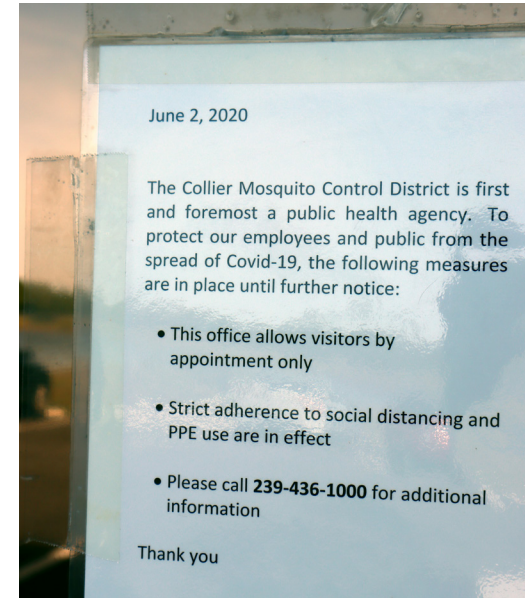
*John Johnson, Chair
CMCD Board of Commissioners*

Director's Message



During a year defined by crises affecting virtually every soul on the planet, the team effort and successful accomplishment of the Mission at CMCD has been inspiring. The term complex is apt in describing this year's logistical challenges alone. Any potential negative impacts on administration and operations posed by COVID-19 were vanquished in part by the creative talents of our IT, Research, and Operations teams.

Much of the day-to-day activities at the District became remote and staggered as of late March 2020. The nature of field operations is naturally socially distanced, and thus was less impacted. Our Research department made use of asynchronous attendance, careful scheduling, and remote work. Communications essentially became a remote only – yet very busy – effort. Drone operations continued without interruption thanks to its outdoor nature.



A statement taped to the locked front door of the Administration building summed up the District's COVID-19 policy.

Two aspects of CMCD's operation were inflexible regarding on-site work this year: Flight and Aircraft Maintenance. Despite the great care taken to protect on-site employees from exposure to the virus, the District did have to contend with periodic staffing interruptions for quarantine.

By the beginning of the rainy season, the District also contended with a burgeoning West Nile Virus outbreak in the area. Our Research team was stretched thin testing *Culex* mosquitoes collected from the field, while our Technicians and Pilots provided both ground and air support for control.

The year 2020 was also a significant one for our physical facilities. A complete demolition of the 30-year-old ramp took place, along with a soil remediation project. The cleanup was successful thanks to the great work by our Facilities Manager, the firm of Owen, Ames,

Kimbal, and the relative scarcity of on-site employees.

Timing of both the demolition and installation of a new ramp required all involved to effectively communicate. Any missteps would have resulted in loss of access to essential equipment. The impact of the project on Operations was ultimately negligible. Outdoor ramp space opposite our current location at the airport provided a temporary base of flight operations during the height of a muddy project.

Perhaps somewhat obscured by the clouds of 2020, the big picture aspects of the District's direction deserve elucidation. Collaborative efforts between the Board of Commissioners and District staff have proven fruitful despite the challenges of remote work, technical complications, and an unpredictable environment.

During late 2019, the District took momentous action on its plan for aerial fleet revitalization. An agreement with Ikhana Aircraft for the purchase of a Twin Otter X2 was executed, and the project made excellent progress in 2020. Delivery of the "re-lifed" Twin Otter X2 is expected by mid-2021.

The accomplishment of a contract with Ikhana Aircraft, a detailed Master Plan, and a refreshed ramp are each significant when considered solely on their individual merits. The accomplishment of these projects – all at the same time – during a global pandemic is nothing short of remarkable; proof of the strength of spirit in all who do the District's work.

A heartfelt thanks to our community, Commissioners, and all the employees for supporting the District's Mission and Vision.

*Patrick P. Linn, MS, MSHAPI
Executive Director*

2020

IN

REVIEW

The COVID-19 global pandemic changed our world in 2020. The words “unprecedented” and “challenging” became two of the most commonly used adjectives to describe the daily protocols of social distancing, hand washing, and mask wearing.

However, “perseverance” and “flexibility” best described the District’s employees as they adapted to meet the Mission without interruption.



- OPERATIONS -

Between the ramp replacement project and the ongoing challenges presented by COVID-19, the Operations and Field Technician crews adapted to quickly changing conditions. Led by Operations Director Nate Phillips and Field Technician Supervisor Richie Ryan, the technicians continued responding to service requests (following six-foot distancing protocol), place and collect traps, and diligently distribute larvicides as West Nile virus was detected among area mosquitoes.

LARVICIDING

Larvicide usage remained similar to last year. Pre-treatment of the District’s

salt marsh regions continued with more than 4,000 acres treated with nearly 34,000 lbs. of granular Fourstar BTI CRG. The District also continued the usage of the organic material, Vectomax FG, for targeting freshwater mosquito species in the inland areas of the District, treating more than 5,000 acres with the larvicide.

From late-night larviciding in residential areas using the District’s Buffalo Turbine to continuously applying larvicide to flooded ditches and swales, the District’s field technicians greatly contributed to the control of West Nile virus.

ADULTICIDING

Adulticide usage remained similar to

previous years. Spring populations of *Aedes taeniorhynchus* remained stable, with adulticide missions within the Henderson Creek, Bayshore, East Naples and North Naples areas. Because West Nile virus was actively circulating in Collier’s freshwater mosquito species, Operations crews were busy in the Eastern portions of the county – including Eastern Golden Gate Estates, Ave Maria, and Immokalee. At the end of the season, the year-by-year usage of granular larvicide versus adulticide demonstrated trends depicting a decrease in adulticide usage.

The Research and Operations Departments developed plans to optimize FieldSeeker to track larval

The months-long soil remediation and ramp replacement project required the relocation of aerial assets to ensure uninterrupted access to the aircraft.



abundance and post-larvicide application efficacy. With this data, trends in larval numbers and adult populations can be assessed to accurately determine the efficacy of the larviciding program.

- TECHNICAL DEVELOPMENT -

The District continued to expand its Unmanned Aircraft Systems (UAS or “drone”) program by adding staff and equipment during the year.

Andrew Weiss, Technical Development Specialist, joined Director of Technical Development Peter Brake, and quickly became engrossed in training for the AgNav, SkyTracker, and FieldSeeker systems along with numerous other programs used by the District’s drones.

Using the drones to more extensively map the District’s areas

was easily accomplished despite the COVID-19 restrictions. It led to the successful granular larviciding of more than 10,000 acres via the District’s helicopters.

The purchase of a new Quantum Systems Trinity UAS expanded the District’s mapping capabilities with its 90-minute flight time, greatly enhancing the efficiency of recording the changes in the District’s geography.

Other notable accomplishments included:

- Demonstrating drone functions during outreach efforts
- Using NDVI technology to assess plant health which assisted the UF/IFAS office in determining the viability of an aquatic weed program within the District
- Adapting the Mavic drone to drop small briquettes of larvicide in isolated, hard-to-access areas
- Surveillance of an eagle’s nest near the Naples Airport Authority runways

- AIRCRAFT MAINTENANCE -

The District’s ramp replacement project surrounding the hangar required that the aircraft be relocated to a site at the Naples Airport for two months in the spring. This ensured uninterrupted accessibility for the crew and pilots for continued maintenance and flight operations. This temporary relocation and the ongoing COVID-19 restrictions (i.e., social distancing, mask wearing, etc.) provided the greatest challenges for the staff.

The old Shorts Brothers Skyvan hull was sold, relinquishing a sizable amount of workspace in the hangar once it was transported away. Affectionately known as “The Hulk,” it provided many years’ worth of parts for the District’s other three Skyvan fixed-wings. That space will be very welcome when the Ikhana Twin Otter arrives in 2021.

N221TG, one of the Hughes MD-500 helicopters, received





a new AG-NAV application guidance system to replace the ADAPCO Wingman II system.

- FLIGHT DEPARTMENT -



As was the case with the Maintenance crew, the Flight Department met the challenges of the ramp replacement plus COVID-19 by adapting quickly.

The hangar ramp was completely crumbled and removed, then replaced by new concrete and a taxiway, though now a much smaller footprint. The aircraft had to be operated remotely for months: the Skyvans from an open ramp adjacent to the Sheriff's Aviation Unit, and the helicopters from a hangar on the General Aviation ramp.

Beyond physical placement of the aircraft, provisions had to be made for storage of ancillary equipment, including pesticides for the Skyvans and tools for maintenance work. In the spring (the start of treatment season), the fleet was operated from those remote locations. Maintenance work also took place in the District's hangar, though the aircraft inside were effectively marooned until the new ramp was completed.

COVID-19 presented additional changes. Working remotely is not an option for all who work in the hangar, and even though quarantine situations required the temporary absence of various personnel during the year, the treatment missions' successes were never affected. The only impact from the protocols to the Flight Department was a delay in trainings toward achieving new ratings.

David Ruffell joined the Department as a pilot in November. His experience in piloting Twin Otters (for Skydiving) will be of great benefit when the District's new ship arrives in 2021. He quickly became familiar with the District's Skyvans to fly adulticiding missions.

The District's Derrick Klein joined the Flight Department full time from his previous Field Technician position, and embarked on gaining his commercial helicopter rating. The District prefers its pilots are dual rated, for both fixed- and rotary-wing. Finding dual-rated pilots is far from the norm, so the District conducts in-house training. In addition to being an experienced helicopter pilot, Mike Berkitsch is also an instructor, and he earned his fixed-wing ratings to fly treatment missions from the Skyvans for the first time during the year. Pilot Beth

Hamner, with two seasons of Skyvan flying, continued her work toward commercial helicopter rating.

- RESEARCH -

COVID-19 did not spare the Research Department's full functionality. With staggered laboratory attendance, canceled experiments and field trials, and a halt in hiring interns/seasonal employees, the Research Department focused solely on operational requirements.

In order to abide by social distancing protocols, Research staff created a schedule for laboratory attendance (no more than two masked employees in the laboratory at a time), fleet vehicles were assigned to individuals for the entirety of the summer (no sharing), and a method for the public's "contactless pickup" of mosquitofish was developed.

The staff brushed up on aseptic technique, and additional protocols for sanitizing shared equipment and workspaces were put in place to prevent the possibility of COVID-19 transmission between employees. Collaborative experiments with Clarke to test new control materials (Natular SC)

using the District's Buffalo Turbine were canceled since visitors were discouraged from being on campus. Research staff continued to trap and perform disease testing in limited capacity, increasing efforts and enlisting assistance from other departments' staff at the first sign of mosquito-borne disease transmission.

The insecticide resistance monitoring program commenced; however, large-scale projects, field efficacy trials, and experiments for yearly comparative analysis were put on hold.

The threat of COVID-19 transmission also led to the cancellation of several industry conferences where our Research team planned to present the District's operational and research findings. The American Mosquito Control Association (AMCA) was the first to cancel the annual meeting scheduled in March 2020.

Not all of COVID-19's impacts were negative for the Research Department. The team quickly adapted to social distancing requirements, working individually, and prioritizing projects. Communication between staff improved with the use of virtual meeting platforms. Virtual webinars, workshops and conferences increased in popularity,





allowing the Research Department to engage in continuing education as well as present our District’s operational and research projects. Opportunities for new “distant” collaborations with other researchers arose, as did the need for producing web-based data visualization platforms for off-site employees.

ARBOVIRUS AND DISEASE VECTOR SURVEILLANCE

Without the support from the usual seasonal research assistants and student interns, maintaining disease vector and arbovirus surveillance proved challenging. Student Intern Sara Grant (now Product Inventory and Efficiency Specialist), provided the Research team with valuable assistance in mosquito trapping and arbovirus testing. The District collected CDC light traps from 10 sites once or twice each week, BG-Sentinels traps from four sites every other week, and gravid traps from six sites once per week.

Much of southwest and south Florida was placed under a “Mosquito-borne Illness Alert” due to arbovirus transmission. Importations of arboviruses into Collier County from abroad was limited with only one case of travel-associated Dengue virus in humans. However, Dengue virus remained on the Research Department’s radar, as human cases and positive mosquito pools continued to rise in neighboring Monroe and Miami-Dade counties. The Research Department continued surveillance by trapping *Aedes* mosquitoes using BG-Sentinel traps.

In response to the Dengue outbreak, three new BG-Sentinel trap sites were added to high tourist-traffic areas, collecting and testing mosquitoes from those sites for arboviruses once per week. In total, 45 mosquito pools were tested by real-time PCR or RAMP assay. No virus was detected in any pools tested.

	2019-2020 CMCD Staff Trainings
OCT	Florida Government Finance Officers Association Fraud & Cyber Security Aviation Training
NOV	Florida Mosquito Control Association Annual Conference
JAN	2020 FMCA Fly-In
FEB	FMCA Dodd Short Courses Chemical Spill Training AMCA Annual Conference
JULY	Remote Employee Engagement Florida Public HR 1st Annual
AUG	Florida HR Black Hat 2020 Special Districts Program
SEPT	Panhandle Mosquito Control

The State of Florida did not identify importations of Zika and Chikungunya viruses during the year. However, there was heightened West Nile virus activity with 47 human cases and 36 asymptomatic positive blood donors in the state. Collier County experienced one equine case and six locally acquired human cases of West Nile virus. Despite reduced staff and challenges to increase trap localities due to COVID-19 protocols, the Research Department tested just under 800 mosquito pools containing *Culex quinquefasciatus* and *Culex nigripalpus* for West Nile virus using both RAMP and real-time PCR assays. Twenty-five mosquito pools tested in-house indicated the presence of West Nile virus, the majority of which were collected in Immokalee, Ave Maria, and Golden Gate Estates.

With virus actively circulating in Collier’s mosquitoes, the District looked to its Mosquito-Borne Disease Response Plan to intensify and expand adult and larval mosquito control. Further, to protect the health of field staff, the District temporarily suspended human landing rate counts. Trap counts and West Nile virus positive mosquito pools became the primary drivers of the District’s aerial adulticide applications.

The Research Department maintained its 27 permanent BG-Counter sites from last year, allowing the District to accumulate two years of data tracking local mosquito population numbers, including during the off-season when populations are too low to justify active trapping. Research Entomologist Dr. Rebecca Heinig also began collecting mosquitoes from a subset of BG-Counters roughly once per month to confirm the automated trap counts, determine which species are attracted to BG-Counters, and survey species composition in areas where the District has little traditional trap coverage.

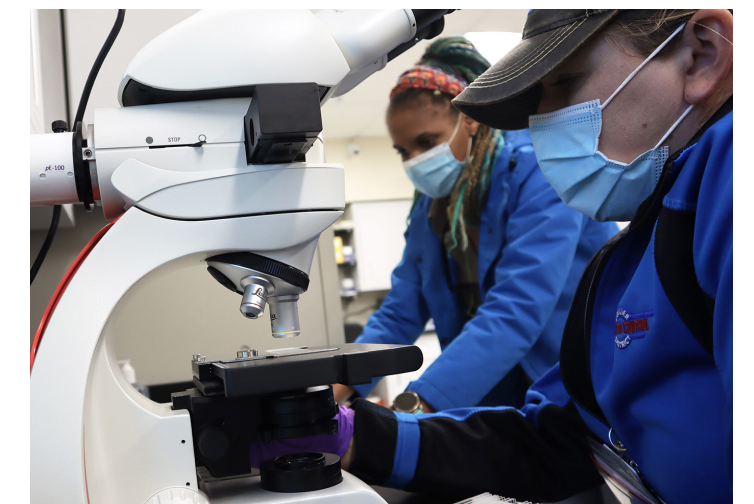
MOSQUITOFISH PROGRAM

The District’s mosquitofish program continued, but new social distancing protocols required the development of a “contactless curbside pickup” for residents to obtain mosquitofish from the District’ campus.

District Biologist Rachel Bales collaborated with the Communications Department to keep the public notified of weekly pick-up schedules and protocols. Those efforts ensured distribution of more than 4,000 fish to 64 households during the year. Residents commonly reported placement of the fish in small ponds, flooded yards, ditches, fountains, retention ponds, animal water troughs, rain barrels and unused pools. When surveyed, most residents responded that they learned of the mosquitofish program through the District’s social media and by word-of-mouth.

IDENTIFICATION OF MANSONIA HABITAT

Collier County’s inland areas continued to experience high



numbers of *Mansonia* mosquitoes. The majority of aerial adulticiding missions planned in the Ave Maria and Immokalee areas primarily targeted these highly aggressive biters.

Biologist Rachel Bales continued to utilize CDC-light and emergence traps

for gathering a second year of data regarding presence and emergence of mosquito species from areas containing habitat in those areas riddled with aquatic weeds. Research and Technical Development collaborated to expand mapped areas containing potential *Mansonia* habitat in Ave Maria,

Immokalee, and Eastern Golden Gate Estates.

Bales developed a Capture-Mark-Recapture method to determine flight range of the District's *Mansonia* species. Using CDC-light traps and fluorescent dye, she captured and marked adult mosquitoes. Marked mosquitoes were released back into the environment and recaptured in a series of CDC-light traps a known distance from the release point. Identifying the flight range of

these species provided the Operations Department with information to better prioritize which areas required treatment. The data will further enhance the efficiency of larvicide treatment missions, and the possible mechanical removal of aquatic weeds within a critical distance of District residents.

INSECTICIDE RESISTANCE MONITORING PROGRAM

The Research Department staff continued to engage (in limited capacity)

A collaborative research project with the Naples Botanical Gardens identified pyrethroid resistance in Culex mosquitoes.

Staff	Collaborative Research Projects
Rachel Bales	Florida Gulf Coast University, Dr. Nora Demers Supplied mosquitofish to Dr. Demers and her team. Their research examined the physiological, morphological and molecular changes in mosquitofish upon exposure to endocrine disrupting chemicals.
Rachel Bales	Seacrest Country Day School Supplied mosquitofish to assist with the development of the school's Gambusia breeding program to sustainably restock campus ponds.
Dr. Rebecca Heinig	University of Florida, Estelle Martin Arbovirus diversity in <i>Culex</i> mosquitoes.
All Staff	USDA-ARS Center for Medical, Agricultural, and Veterinary Entomology The operational significance of genetic resistance to pyrethroid
All Staff	USDA-ARS Provided <i>Culex quinquefasciatus</i> for a Florida-wide study on pyrethroid resistance in that species
All Staff	Dr. Eva Buckner, an Assistant Professor at the University of Florida - Florida Medical Entomology Laboratory Provided <i>Aedes aegypti</i> mosquitoes for studies associated with pyrethroid resistance attributed to metabolic resistance
Dr. Keira Lucas Alexandria Watkins	Collaborated with 10 other scientists from four different countries to determine if socioeconomic factors drive <i>Aedes mosquito</i> vectors and their arboviral diseases. The findings, published in the journal One Health, demonstrated that while 50-60 percent of studies found greater presence or prevalence of disease or vectors in areas with lower socioeconomic status, approximately half of the remaining studies found either positive or null associations.



in its insecticide resistance monitoring program. Director of Research Dr. Keira Lucas and other District personnel published the results of pyrethroid resistance identification in Collier's *Culex quinquefasciatus* mosquitoes in the Journal of the American Mosquito Control Association. The study focused on identifying the underlying pathways contributing to pyrethroid resistance in this important disease vector species.

The study identified that metabolic-resistance, attributed to insecticide detoxification enzyme activity, plays an active role in the pyrethroid-resistance status of Collier County's *Culex quinquefasciatus* populations. Understanding the modes of action contributing to resistance assists the Operations Department in making informed decisions on which active ingredients and associated synergisms would be most effective against different species of mosquitoes.

Laboratory Technician Alexandria Watkins continued a collaborative project with the Naples Botanical Garden, surveying bromeliad-inhabiting mosquito species. She found *Culex quinquefasciatus*, *Culex nigripalpus*, and *Aedes albopictus* were the most common species inhabiting the Gardens' bromeliads, with *Culex quinquefasciatus* accounting for nearly 75 percent of all specimens collected. Insecticide resistance testing was performed on the Garden's *Culex quinquefasciatus*. Similar to the study published earlier in the year, pyrethroid resistance attributed to metabolic processes was identified in those mosquitoes. Watkins left the District during the year to pursue other opportunities, and Dr. Lucas began to compile the findings for publication.

FIELDSEEKER AND ARCGIS DASHBOARDS

The Operations and Research Departments continued using FieldSeeker to track and record the vast majority of

surveillance and treatment planning activities and data. Dr. Heinig continued to optimize and fine tune FieldSeeker to suit District needs.

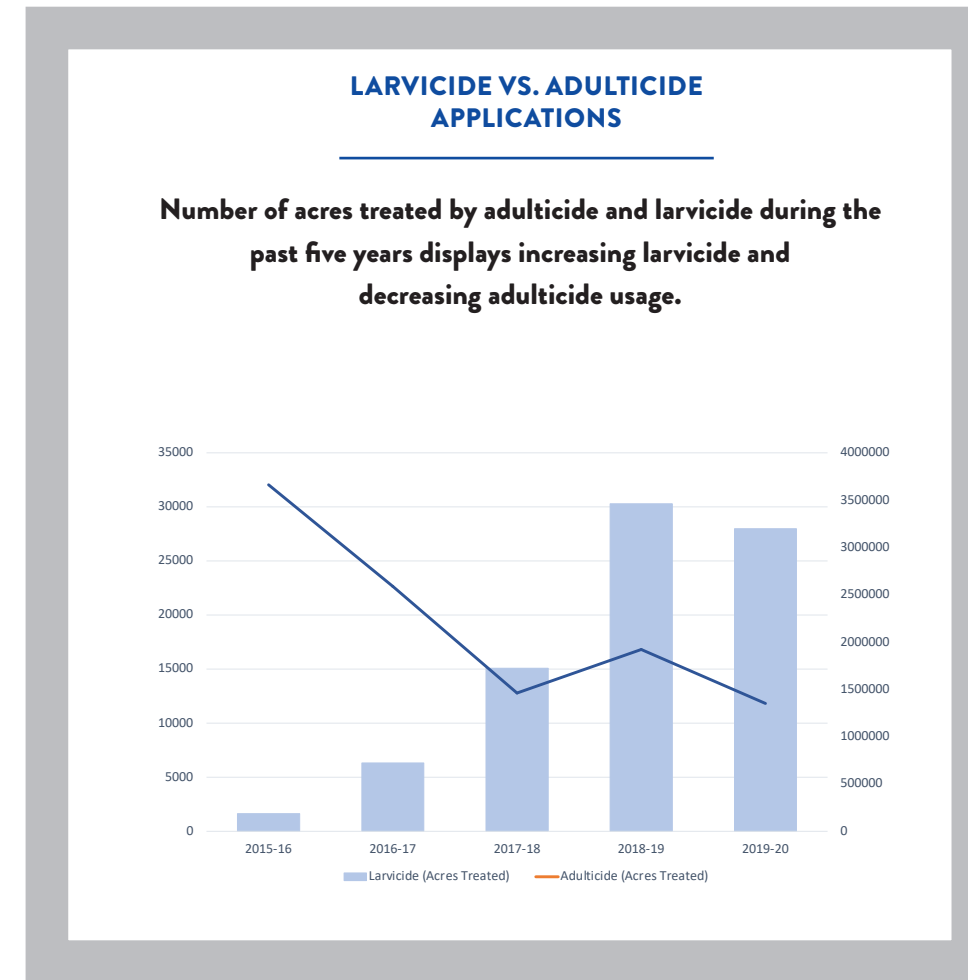
To make the FieldSeeker data more readily accessible, she developed a number of ArcGIS dashboards that allow simple, intuitive visualization of the District's various data streams. One dashboard displays service requests on a District map and updates automatically. It allows Operations leadership to track the status of service requests in real time, efficiently distribute personnel and workloads based on spatial distribution of requests, and identify potential hot spots with high numbers of nuisance reports. It provided the Communications Department another tool in answering the public's inquiries.

A second dashboard filtered a map of District-wide landing rate counts by date. It helped Operations identify areas requiring treatment, then assess treatment efficacy with only a few mouse clicks.

Dr. Heinig also worked with the Communications Department and Frontier Precision to develop a new service request form allowing users to enter their information into the District's website portal. The form automatically shared the data with technicians in the field and enhanced the efficiency of the service request pipeline.

SERVICE TO MOSQUITO CONTROL INDUSTRY

The Research Department continued to engage in leadership roles within industry organizations. In August, Dr. Heinig served as interim executive director for the Florida Mosquito Control Association (FMCA), where she managed the organization's website and membership renewals prior to the appointment of FMCA Director Karen Crawford in October. Further,

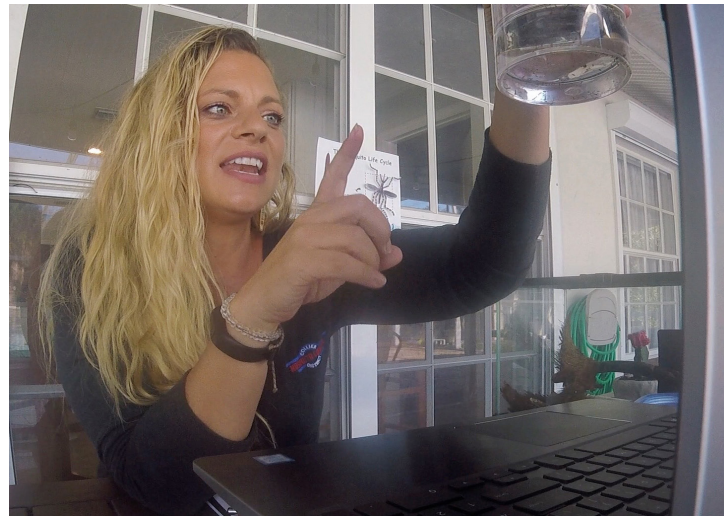


Heinig served on the FMCA Dodd Committee in June and was appointed chair of the committee in November. As chair, she worked with the committee to redesign the Dodd Short Courses as a virtual event to provide continuing education opportunities to mosquito control personnel. Heinig also assisted the American Mosquito Control Association (AMCA) Science and Technology Committee to write a literature review for the AMCA Board of Directors on a contentious new trapping approach.

This year, Heinig also taught a short course at Dodd entitled "Excel for Mosquito Surveillance." The course included approximately 20 students, where she led the students through building a surveillance workbook that included a variety of functions and tools to streamline data collection and analysis. She was invited to present a webinar on the same topic to the AMCA Young Professionals group and discussed tips and tricks in managing data in Excel.

Dr. Lucas was appointed Assistant Editor for the Journal of the Florida Mosquito Control Association and Subject Editor for Pesticide Efficacy/Evaluation for the Journal of the American Mosquito Control Association. As a journal editor, Lucas organized the peer review process for research/operational articles and made the final decision to accept or reject publication in the journal. She also continued to chair the AMCA Science and Technology Committee's Sterile Insect Technique (SIT) Subcommittee. In this role, Lucas facilitated discussion among SIT stakeholders and provided information to the Science and Technology Committee, as well as the AMCA Board of Directors, regarding matters concerning SIT.

With COVID-19 resulting in the cancellation of in-person conferences, webinars and virtual workshops have provided industry personnel with valuable training and opportunities to share experiences. Dr. Lucas was invited to present several virtual webinars and workshop courses. She presented at the



Valent Biosciences WALs Virtual Summit and highlighted the District's success in targeting container breeding mosquitoes using VectoBac® WDG from our PV13 drone. Lucas also participated in the Science Solutions - Working Together to protect Rookery Bay Webinar Series and discussed how the District's method for targeting mosquitoes have changed through the years. She also presented two workshop courses focusing on pyrethroid resistance and advances in mosquito control.

- COMMUNICATIONS -

Communicating with the District's public required creative thinking and the adoption of online platforms to reach people. From classrooms to residents logged in for HOA meetings, speaking to a screen became the norm, and in-person media interviews were often conducted via Zoom calls.

The latter weeks of 2019 were typical of the Department's activities, including participation in the Naples Christmas Parade that garnered a "Most Original" award for the District's entry. A continual demand for on-campus tours, bookings for classroom presentations, and requests for media interviews filled the staff's calendars. With the onset of COVID-19 early in 2020, community event cancellations began arriving daily.

The District's education program expanded to include lessons for middle and high school students, but Collier County's schools restricted visitors to classrooms as part of their COVID-19 response early in 2020. Public Outreach Specialist Andrea McKinney quickly adapted her lesson plans to virtually present information to students. Before the restrictions her in-person lessons reached 1,683 students. Later in the year, as

summer camps held outdoor programs, McKinney provided presentations to hundreds of summer campers...while socially distanced.

Social media continued to serve a vital role in reaching the District's public. Broadcasting "contactless" mosquitofish pick-up dates in coordination with the Research Department ensured residents were apprised of the schedules. When mosquito pools began indicating the presence of West Nile virus, social media posts provided the latest information, urging residents to protect themselves.

As part of the District's Integrated Pest Management program, communicating to protect public health quickly became a priority when West Nile virus was detected in mosquito pools. In the interest of ongoing transparency, the District issued information to area media and elected officials regarding the location of the positive mosquito pools. The response was fast and positive, with media broadcasts occurring throughout the summer providing the latest West Nile data along with tips to #FightTheBite. The coverage of West Nile virus, treatment missions, tips to protect oneself, and other District news garnered more than 45 media hits for the year.

Director of Communications Robin King presented "From beekeepers to elected officials: Relationships that help influence and educate your community" at the Florida Mosquito Control Association (FMCA) annual meeting. She also presented a "Best practices in customer service" during the Dodd Short Courses, and "Influencing public opinion with social media" during the FMCA Fly-In. King was tapped to serve as the South Atlantic region representative on the American Mosquito Control Association (AMCA) Public

Relations Committee. She and Dr. Keira Lucas collaborated to produce an FAQ resource for AMCA members regarding sterile insect techniques, which was posted to the national organization's website. King also served as Co-Chair on the FMCA Dodd Short Course committee.

The process of receiving the public's service requests through the District's website improved with a new form, as noted in the Research Department report. Developed and beta-tested in-house, it streamlined the data entry directly from residents to Operations.

Information was added to the District's public notification system to more accurately describe the nature of the treatments, again in the interest of transparency. Notices expanded to include drones and trucks as delivery methods, a specification of whether the treatment was for adult mosquitoes or larvae, and the nature of material being applied (e.g., liquid larvicide, granules, etc.). The name of the material remained in the body of the description.

- ADMINISTRATION -

In the face of a global pandemic, the District's IT personnel worked with Administration staff to create and implement the ability for all department personnel to work remotely. This included technology allowing remote main-line phone access, and hosting virtual board and staff meetings. The staff was also successful in the first remote health insurance renewal.

The team created a COVID-19 Strategy Guide which included social distancing measures, sanitation protocols, recommendations for limited in-person interactions as well





as many other measures to keep District staff and visitors safe during the pandemic.

The District continued participation in a self-funded consortium consisting of Florida public entities. This provides cost advantages via volume pricing and reduces administration costs. United Health Care remains the preferred provider organization (PPO).

For the fifth consecutive year, employees and their dependents over the age of 18 were encouraged to participate in a healthy living program. It was the second year the District used Go365, a wellness program through Humana Healthcare. The program incorporates a biometric screening, a health assessment, as well as an interactive wellness website/smart phone application. Those who participate earn health insurance premium discounts as well as other rewards

The sick and annual leave reserve equates to the long-term liability at fiscal year-end, and the reserve for self-insurance account affords the district the ability to choose insurance with higher deductibles, thus lower premiums.

During the year, the employee count increased from 39 to 41 full-time employees, a 5 percent increase in staffing. Three full-time employees began their tenure with the District. One employee retired, and two employees chose to pursue other opportunities.

Each employee continues to contribute 3 percent of their earnings to the Florida Retirement System (FRS). In accordance with Florida Statutes, the District also contributes a monthly percentage, based on employee gross wages to the FRS. This percentage is established by the Florida Legislature yearly. In support of the District's retirees' future health benefits, the Board of Commissioners made a \$500,000 contribution to the District's Internal Revenue Code Section 115 Retiree Benefit Trust to help fund the future liability.

Administration, in collaboration with other departments, provided the essential financial support for the total reconstruction of the District's ramp. The department navigated the process for (and receipt of) an award of an HMGP FEMA grant to help fund a new generator for the hangar building.

IT and Admin staff also established a disaster recovery location in Immokalee which allows for full operational capacity within one hour of a disaster.

Administrative staff began using the Sage Fixed Assets accounting software on Oct. 1, 2019.

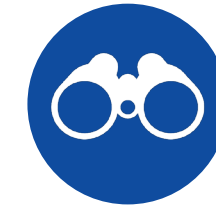
Mindful planning and budgeting by supervisory staff and Commissioners have afforded the District the opportunity to purchase an Ikhana Twin Otter X2 fixed-wing aircraft. Expectations are that aircraft delivery will take place in the spring of 2021.

The year was also defined by kicking off Master Planning activities. Leadership at the District remains focused on providing valuable service to the community today while planning carefully for future generations.

The District budgets for and purchases control materials based on average usage over time. Carryover of adult and larval control materials for use during the 2021 season is valued at \$2,772,449, representing an increase in chemical expenditures of \$286,872, or 10 percent. Mosquito control product inventory consists of four different adulticides and 10 types of larvicides. Larvicide usage has increased substantially over the past three fiscal years

During FY 2019-2020, the District was financially audited by Grau & Associates for the second year as part of a five-year contract, with a clause for yearly renewal thereafter.

The District continues to employ the services of Bond, Schoeneck, and King, with Bill Owens serving as District Counsel.

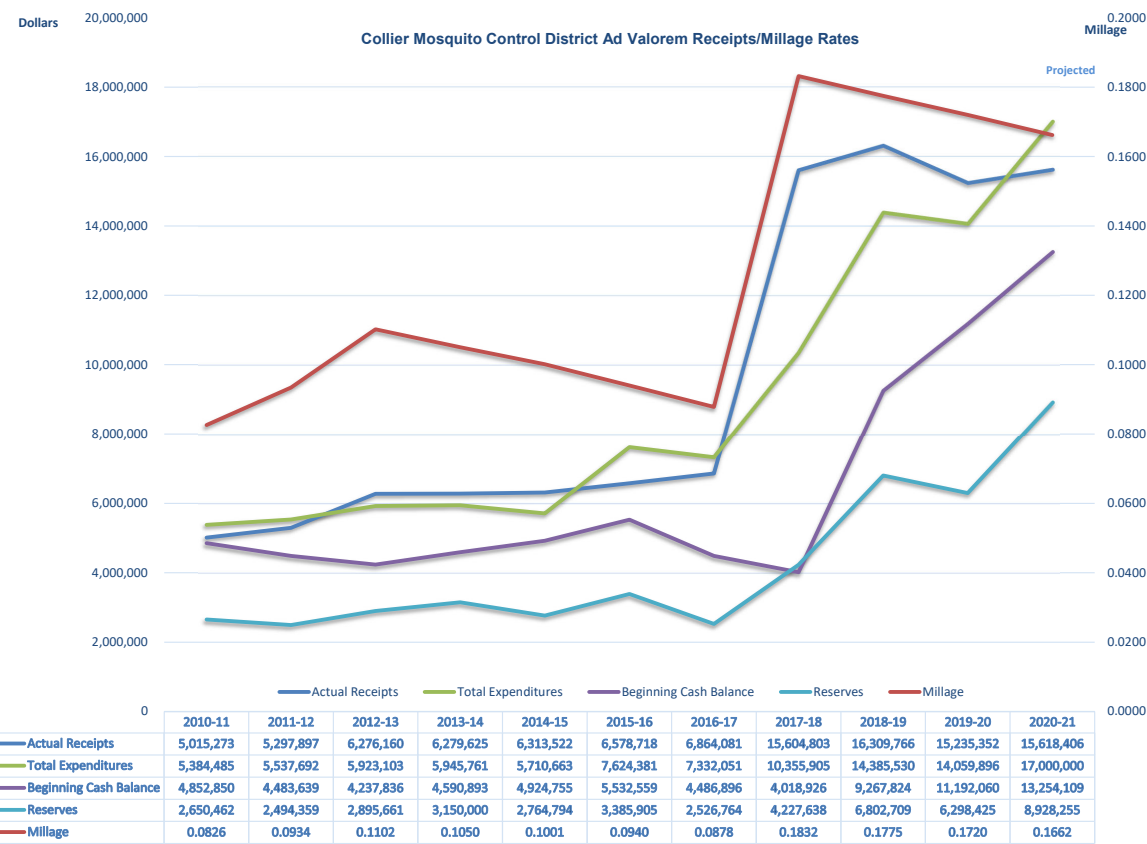


LOOKING AHEAD

Projected expenses and plans for FY 2020-21 include:

- Purchase of a "re-lived" Ikhana Twin Otter X2
- Negotiate and execute leases for the current Naples headquarters as well as for land at the Immokalee Airport for future District expansion needs
- Begin design and build phase for new District structures at the Naples and Immokalee airports, based on future expansion needs for the District
- Continue ongoing efforts to protect the District against future disaster events
- Continuous training of staff to enhance the capabilities of the District
- Expand the capabilities of the UAS department to include increasing missions utilizing drones
- Ready the Ikhana Twin Otter X2 for treatment missions
- Continue evaluation of alternative control materials

Financials



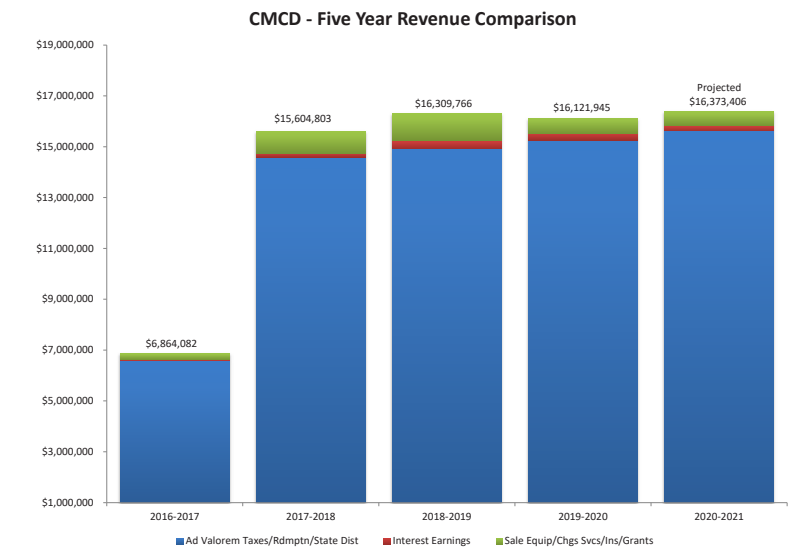
AD VALOREM RECEIPTS/MILLAGE CHART

The FY 2019-20 budget was adopted in September 2019 using a millage rate of 0.1720 mills, which was at the rolled-back rate. This rate will essentially generate the prior year's tax revenue, less certain exceptions. The millage rate produces \$17.20 per \$100,000 of taxable property value. All statutory requirements were met as defined by the Florida Department of Revenue, Property Tax Oversight Department, utilizing the Truth in Millage process (TRIM).

This diagram depicts the millage rate and the District's cash flow trends over time. The tax base in Collier County increased by \$5.5 billion for FY 2020-21. The District maintains sufficient reserves for future capital outlay, as shown; these funds are critical to achieve the long-term projects that began in FY 2017-18. The sick and annual leave reserve equates to the long-term liability at fiscal year-end, and the reserve for self-insurance account affords the district the ability to choose insurance with higher deductibles, thus lower premiums.

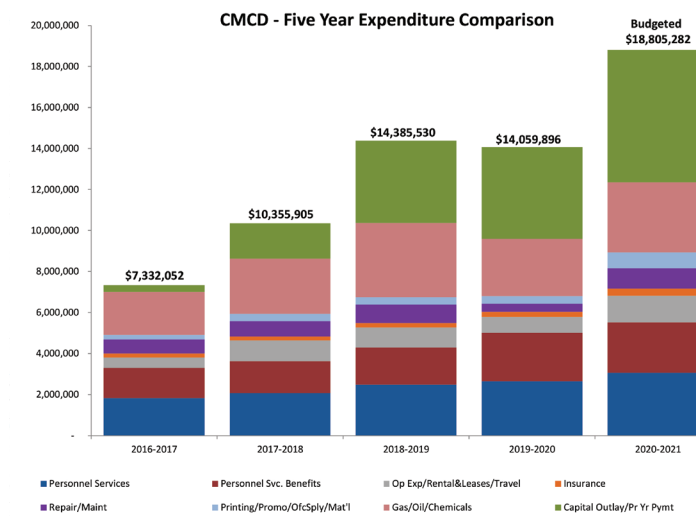
REVENUES*

Total revenue for the FY 19-20 was \$16,121,945 which included \$328,262 from aerial treatments outside of the District's boundaries. Fiscal year expenditures were \$14,059,896, a 2.3 percent decrease from the prior fiscal year. This chart shows the prior four years of revenue and projected income for FY 2020-21. Revenue has remained virtually unchanged over the past three years, after an increase in FY 2016-17 which has allowed for the reconstruction of the ramp in 2019-2020 as well as replace and restore some of the aerial assets. Long-term plans include District expansion and expanding the operational footprint in Immokalee to better serve those residents.



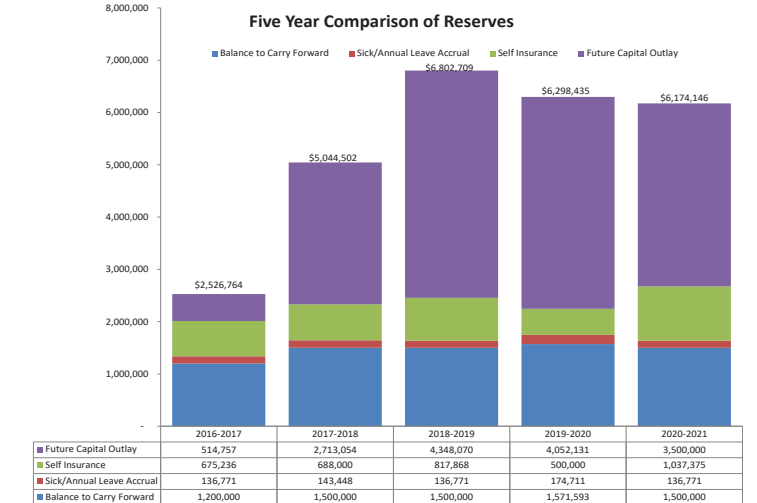
EXPENDITURES*

The District saw a 33.7 percent increase in expenditures primarily due to capital outlay projects and increased larvicide activity as described above in the Administration section of this document.



RESERVES*

The District concluded fiscal year (FY) 2019-20 with an ending cash balance of \$13,254,109. The budget is balanced, and the District maintains satisfactory reserves, as well as funds which are readily accessible for FY 2020-21.



* The exact amount of expenditures, revenues, and fund balance will be verified by the auditors and released in early 2021 as part of the annual audit, and subsequent Financial Statements.

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.

Board of Commissioners



JOHN JOHNSON
Chair



SANDRA LEE BUXTON
Vice Chair/Secretary



DAVID H. FARMER
Treasurer



MICHAEL V. REAGAN



JACQUELYN THOMPSON-FRESENIUS

The Commissioners are elected officials, providing a direct link between local government and residents. In their role, they:

- plan strategically for the future, in cooperation with the District Executive Director
- establish policies that guide the District
- select, employ, supervise and evaluate the District Executive Director
- advocate for the District locally and nationally
- adopt an annual budget and establish the appropriate millage rate
- fulfill the duties and responsibilities as set forth in Chapter 388, Florida Statutes



Staff

Jesvia Alvarado Daniel Anez Rachel Bales Nacho Barranco
 Mike Berkitsch Ken Bouck Peter Brake Jonathan Cleaves
 Jim Delie Kevin Dunleavy Joe Gallegos Sara Grant
 Mark Grazewski Beth Hamner Rebecca Heinig
 Jose Hidalgo Bob House Robin King Derrick Klein
 Chris Laidlaw-Bell Patrick Linn Keira Lucas Wayne Luettich
 Butch May Mike McDonald Andrea McKinney Jon Morris
 Patrick Perri Nate Phillips Noe Pineda Mark Prince
 Jorge Puente Dave Ruffell Richie Ryan Jorge Santiago
 Greg Schiegner Jen Stein Mark Trombley Jack Voth
 McCoy Ward Andrew Weiss Haley Welch Stacy Welch

RETIREMENT



Pilot Dennis Jones retired after 34 years of dedicated service to the District. A former Blackhawk pilot, he flew all of the District's fixed-wing and rotor aircraft, and he admittedly was especially fond of the DC-3's.



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