

## Technology Workshop Minutes

Florida Keys Mosquito Control District  
Marathon Office  
503 107<sup>TH</sup> St.  
Marathon, FL 33050

November 9, 2021 1:00PM

The Board of Commissioners of the Florida Keys Mosquito Control District held a Technology Workshop on Tuesday, November 9, 2021.

**Present Were:** Phillip Goodman, Chairman; Dr. Stanley Zuba, Vice-Chair, Brandon Pinder, Secretary-Treasurer; Jill Cranney, Commissioner; Tom McDonald, Commissioner; Andrea Leal, Executive Director; Dale Coburn, Board Attorney. \*Jill Cranney arrived at 1:15 pm

**Employees Present:** Mikki Coss, Director of Operations; Joshua Kogut, Director of Aerial Operations; Bruce Holden, Director of Finance; Chad Huff, PEIO; Michael Behrend, Director of Human Resources; Chrissy Bloxom, Executive Assistant; Deanna Darias, Executive Assistant; Catherine Pruszynski, Research Surveillance Biologist; Tony Nunez, Chief Technology Officer

**GUESTS PRESENT:** None

**APPROVAL OF AGENDA:** *Chairman Goodman passed and unanimously approved the agenda.*

Chairman Goodman stated the purpose of this workshop is to discuss the available and upcoming technologies for the advancement of mosquito control operations.

### **DISCUSSION:**

Andrea Leal, Executive Director, advised the Board that the upcoming technology in this field is an exciting part of her role as the Director. Director Leal explained she will review how these new technologies fit into our strategic plan and the workshop will focus on automated traps, UAV use for Mosquito Control in Florida, and emerging technologies for *Aedes aegypti* Control. The priority areas of the plan include Pesticide Resistance, Domestic Mosquito Control Practices, Reduce Carbon Footprint, Public Awareness of Mosquito Control Practices, Operational Safety Practices, Use of Technology to Maximize Resources, Employee Retention, and Health Initiatives, and Capital Projects. Director Leal reviewed the goals we have completed in recent years; including the use of trail cameras, GPS points, UAV operations, and Inspector Training for UAV operations. The District has future goals which include Remote Tidal Indicators, Efficiency of UAV program, BG Auto Counters, and a mapping system for the fog trucks which we are continuing to work on.

Catherine Pruszynski, Research Surveillance Biologist presented an overview of the District's use of Automated Trapping. Ms. Pruszynski discussed the 266 locations where the Field Inspectors are required to do landing rate counts daily throughout the Keys and that this is the historical method for measuring relative mosquito abundance in a specific area in order for the District to proceed with mosquito abatement activities. In 2013, the District requested bids for remote traps following specific requirements; Biogents and OnVector Technology presented the best option for the District. Ms. Pruszynski explained the technical details of how the Remote Traps work in the field and how the data is transmitted back to the District. Ms. Pruszynski conducted 2 studies from June through September of 2020. The first study determined that the BG Counters are averaging an accuracy rate of 92% and showed no significant difference between the accuracy of the three counters studied. The second study compared the BG Counter to Human Landing Rate Counts which did show slight variation between Landing Rate Counts and the BG Counter counts. Ms. Pruszynski recommends evaluating Landing Rate Counts and BG Counter collection at

each location over time, which will establish new metrics and when to adulticide. She then explained the pros and cons of the BG Counters to the Board Members; pros included allowing inspectors more time for inspecting and treating, the data is consistent and reliable, providing weekend data, easily accessible information, and the BG Counters are approved by FDACS as an acceptable surveillance tool. Cons were the BG Counters have a high initial cost and a yearly web service fee, the removal and storage during a tropical event, technology updates, and troubleshooting. Ms. Pruszynski's presentation ended with an instructional video of how to set up the BG Counter in the field.

Chairman Goodman asked the Board if they had any questions. Director Leal advised the setup of the BG Counters is more involved than our current traps, however, once in the field and running, the maintenance is very minimal and may only need maintenance every 6 months. Bruce Holden, Director of Finance, reviewed the cost-benefit analysis of the BG Counters over a five-year span and explained we would have our payback in 4.5 years. Chairman Goodman inquired about the lifespan of the traps; Director Leal stated more studies need to be done on the traps before we can determine the lifespan. Ms. Pruszynski explained the age of the current traps in the field is 1.5 years and they are holding up well. Director Leal advised the Board that the District is taking all of these factors into their implementation of utilizing and purchasing additional traps and will continue gathering additional data. Chairman Goodman questioned how the Labor savings was calculated in the analysis, and Mr. Holden advised they took each inspector's current hourly rate and total minutes per day they spend doing landing rate counts. Chairman Goodman feels this is a very promising venture. Director Leal advised the Board of the District's upcoming plan to add an additional 20 BG Counters to our current inventory and that training for the inspectors will be implemented in the upcoming year. Once we have 10 traps in each of the 3 locations throughout the Keys, we will be able to collect additional data to continue our studies on the efficiencies of the automated traps. Chairman Goodman stated that having 30 traps should be manageable if we have to remove them from the field due to a tropical storm. Commissioner McDonald addressed his concerns with salt air corrosion in the area and how the BG Counters will withstand the elements. Chairman Zuba asked if the BG Counters are being used in any other environments comparable to the Florida Keys. Director Leal stated they are using them in Collier County and the Florida Panhandle. Ms. Pruszynski advised they are also being used in California and the Middle East and she has been satisfied with the response from the manufacturer with any issues she has encountered thus far and their willingness to fix any problems. Director Leal is confident with the advancements the manufacturer has made in the last few years and believes they will continue to improve the product for future use. Chairman Goodman asked about a previous discussion that took place regarding adding a rain gauge to the counter, and Ms. Pruszynski explained the manufacturer does not have a high demand for this feature and it will not be available at this time. Director Leal explained we are working closely with Clark and they have a tiered plan for purchasing the traps which would reduce the cost of the web hosting and if we purchase 25 traps from them we will be locked in at the current trap cost until 2024. Commissioner McDonald asked who was responsible for the annual maintenance and Director Leal stated she wasn't exactly sure which company does the maintenance. Commissioner Pinder asked if the District had looked into self-hosting to reduce the monthly cost of the web hosting, he stated this would be a long-term saving worth looking into. Commissioner Goodman asked if using Clark's web hosting was required; Director Leal will look into that option. Commissioner Pinder also asked if the traps are easily serviceable in the field, and Ms. Pruszynski explained yes they are very manageable and you can also verify the trap is working from monitoring the trap online which results in less trips into the field.

Director Leal then introduced Josh Kogut, Director of Aerial Operations to present the Florida Mosquito Control UAS Operations Report. Mr. Kogut explained that over the past few months the District has been researching the current operations of UAS in our industry and has reached out to all 61 Florida Mosquito Districts using a standard survey. Out of 61 Districts, only 3 are actively using UAS for product application or surveillance, 5 Districts are doing research for future use. Mr. Kogut discussed what Districts were using a dedicated staff or department for UAV operations and found most have a dedicated staff and do not use pilots to operate the drones as this could put the pilot's license at risk per the FAA. Mr. Kogut reviewed acreage amounts the 3 Districts utilized the UAS equipment for in the last year and compared the amount treated compared to the cost. He reviewed the current limiting factors using UAS drone operations for mosquito control; the main obstacle being the line of sight regulation from the FAA

and Airspace restrictions. Battery life is also a concern as the current batteries last an average of 20 minutes per flight if carrying any weight, which slows down the efficiency of the operation and the lithium batteries are extremely costly. Mr. Kogut compared the cost between Lee and Collier Counties for the UAS equipment and labor cost. Lee County invested in a Lidar Mapping Radar Unit for their UAS operations at the cost of \$400,000 which maps the earth and can remove objects and show you the topography elevations of an area; this allows them to see where standing water might be in a densely wooded area. They can also connect this unit to their helicopter.

Mr. Kogut explained that in Lee County they originally were using Field Inspectors to operate the drone but found that it was not feasible to have an inspector stop doing their job to operate the drone, as inspecting is a priority, this triggered them to hire 2 full-time UAS operators and a supervisor for the UAS department. Mr. Kogut compared the types of equipment both counties have been using for their UAS operations and the quotes we received for similar equipment. Our District is looking at using UAS operations due to power lines and cell towers, this is a much safer alternative to using the helicopter in these dangerous areas, they are also beneficial in densely populated areas where buildings are getting taller and more resorts are being built in the keys. Mr. Kogut is assessing which PTA's are appropriate for our District and the evaluating factors are safety, line of sight, size and shape, and overall efficiency. Commissioner McDonald commented that he met with the commissioner of Lee County and stated they have a positive approach to the UAS operations and asked if this presentation was available online. Director Leal responded that we will email the Board Members copies of each presentation and they will be included in the minutes. Director Leal said this technology is improving and restrictions are easing up, the District's plan is to assess all of our treatment areas and find out which areas are the most concerning for safety. Once the District can identify the areas that would benefit from the UAS operations we can bring in the experts and get their recommendations. Mr. Kogut and Mikki Coss, Director of Operations will be meeting with Bill Reynolds in January to look further into the District's options for the UAS Operations.

Director Leal advised the Board to keep in mind that as we move forward implementing the UAS Operations, the District may need to add dedicated employees to run the program, hopefully, if we continue with the Automated Traps that can free up some inspectors time and they can be cross-trained in the UAS Operations. Commissioner Goodman agreed with Director Leal, he inquired if increasing drone operations would decrease the need for aircraft in the District. Mr. Kogut did not agree that in the next few years a drone can replace an aircraft due to the acreage the aircraft can cover compared to the drones, he is hopeful in the next 10 years the technology will be more advanced but not at this time. Commissioner Goodman stated it would also depend on how many areas we decide can be utilized by the drones. Mr. Kogut shared that the FAA isn't likely to remove the Line of Sight restriction or that the District will be able to obtain a waiver to operate the drone without have the Line of Sight. The District is going to keep an open mind on the UAS program and work diligently to do what is best for the District in the future. Commissioner Goodman agrees with the District's approach to assessing more information and taking one step at a time, he inquired about the Lidar Mapping Radar Unit and if you need to purchase one for each aircraft. Director Leal explained that you would only purchase one and it is something you could use annually to detect any topography changes in the environment.

Director Leal then briefed the Board on the emerging technologies for *Aedes aegypti* control including the GMO Male releases, *Wolbachia*-infected male releases and Irradiated male releases. The GMO male releases will be completed for 2021 by the end of November and we will continue population monitoring for the next 8-12 weeks. Oxitec applied for an extension in Florida through 2024 and also added California as a potential release area. We are waiting on the EPA to approve that extension. The District is hoping to continue our studies in the area on population suppression, mating, and the distance the GMO mosquitos are traveling. Director Leal would like to move forward with a population suppression trial. Commissioner McDonald asked when the information from the Oxitec studies will be released, Director Leal anticipates publications on the study to take a few years as the EPA needs to review the information before it can be published. The District is waiting for EPA approval on the *Wolbachia*-infected males, Director Leal has been in contact with MosquitoMate and is patiently waiting for answers and is hopeful to have full registration for *Wolbachia* infected *Aedes aegypti*. We would then be able to release them in hot spot areas where we see high *Aedes aegypti* numbers. The District is hoping to get the product

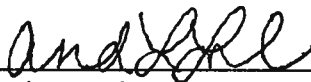
registration and it was put in the budget for this fiscal year. Commissioner Goodman watched a program that detailed the *Wolbachia* infected male releases with Verily in California and noticed the amount of technology needed to work with these trials and the large insectary, he asked if the District would absorb these high costs to participate in the trial. Director Leal stated for the initial year where we do hotspot releases we will bring in adult mosquitos for release, she has been working closely with MosquitoMate and is hopeful they might build a factory in Florida in the upcoming years after more trials are conducted and the data is reviewed. The District will need to assess the logistics of the program to see if it will be a good fit for us. Commissioner Goodman asked if Director Leal foresees a problem with possibly running hotspot trials with the *Wolbachia*-Infected Males and the extended trials with Oxitec in the upcoming year. Director Leal does not anticipate any problems with participating in both trials as the manpower is minimal as Oxitec has a team stationed here taking on much of the workload. Commissioner Zuba asked if they will be an associated cost with the registration or would it be pro-bono; Director Leal anticipates there will be a cost but is unsure of what that will be at this time. Commissioner McDonald commented all of our projects are geared toward disease-carrying mosquitos and asked if we have any upcoming projects for nuisance mosquitos. Director Leal stated people are focused on disease vectors; also nuisance mosquitos have a place in our Eco-system and she does not anticipate companies focusing on killing nuisance mosquitos but that the larviciding technology will continue to grow in the future.

Director Leal then discussed the work being done with Irradiated Male releases in Lee & Anastasia Counties and their partnership with the USDA on this program and the results thus far have been promising. One downside of this program is the high startup cost for the X-ray Machine, Insectary, and labor cost; Director Leal has been in contact with a number of companies for alternative options to lower the cost to participate in this program. Commissioner Goodman commented that the sterile insect technologies are promising and it seems to be a buyers' market and in the future, we can decide which one is best for the District. Director Leal advised it will come down to cost and logistics to see which programs will be the most effective in the future. Commissioner Goodman asked if we will be expanding the Field Camera program, Director Leal stated we have plans to purchase more however we need to be cautious how many we put in the field if we need to remove them due to a storm but we are expanding the program.

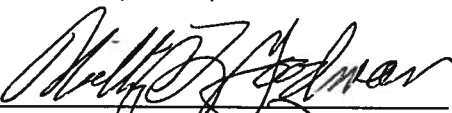
Chairman Goodman commended Director Leal for putting together a great Technology Workshop. Director Leal commended the team for assisting with the plan.

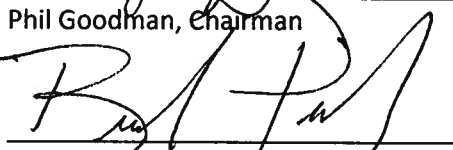
**ADJOURN:** There being no further business to come before the Board, the workshop was adjourned.

Respectfully submitted,

  
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Andrea Leal  
Executive Director

Board of Commissioners  
Florida Keys Mosquito Control District

  
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Phil Goodman, Chairman

  
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Brandon Pinder, Secretary-Treasurer

For additional information, please refer to [www.keysmosquito.org](http://www.keysmosquito.org).