Mosquito BEACONS Year (2022 – 2023)

Meeting 2 Minutes

Date time: October 4th, 2-3pm.

Location: Zoom

Meeting ID: 968 5904 9601

Members Present (23):

Yoosook Lee	University of Florida	Victor del Amo	UTHealth Houston
Elmer Gray	University of Georgia	Chris Evans	South Carolina Department of Health and Environmental Control
Dan Killingsworth	Environmental Security Pest and Lawn	Sandra Fisher-Grainger	Hernando County Mosquito Control President-Elect, FMCA
Lindsay Campbell	University of Florida	N Kyle Godbey	Forsyth County Health Department, NC
Xiaodi Wang	University of Florida	Ryan Harrison	Forsyth County Department of Public Health
Valerie Nguyen	University of Florida	Rebecca Heinig	Collier Mosquito Control District
Raíza Alvarado	Puerto Rico Vector Control Unit	Julieanne Miranda	Puerto Rico Vector Control Unit
Roberto Barrera	CDC, Puerto Rico	Rosmarie Kelly	Georgia Department of Public Health
Jessica Ber	Florida Department of Agriculture and Consumer Services	Cristhian Sánchez	Puerto Rico Vector Control Unit
Ryan Carney	University of South Florida	Miranda Tressler	Volusia County Mosquito Control
Sriram Chellappan	University of South Florida	Kara Tyler-Julian	Lee County Mosquito Control
Nina Dacko	Tarrant County Public Health (Soon to be moved to Harris County)	Johnny Uelmen	University of South Florida

Note takers: Xiaodi Wang, Valerie Nguyen

Meeting Minutes:

Project update

- USDA – [Rapid Response to Extreme Weather Events Across Food and Agricultural Systems (A1712)](#) Resources to prevent mosquito and mosquito borne disease
    - 14 days to complete
    - Fairly new to PD, not sure if they will support mosquito control projects

- o Puerto Rico Vector Control Unit submitted their letter of intent to support their larvicide application to prevent Dengue outbreak in Puerto Rico after Fiona Hurricane.
  - o Other regions impacted by Hurricane may want to solicit funding to support their program.
- [Crop protection and Pest Management Program](#)
  - o [Update from PD] Southern IPM Center (SIPMC, sponsor of the Mosquito BEACONS Working group) is one of the Regional Coordination Program supported under CPPM program. SPIMC suggested for the Mosquito BEACONS Working Group to try Applied Research and Development Program Area (ARDP).
  - o There is one tick program (related to cattle) funded by ARDP program in 2022 cycle ([funded ARDP projects in 2022](#))
- Invasive Mosquito Capacity Survey
  - o We will open now to Puerto Rico and Texas
  - o Completing a manuscript summarizing Year 1 survey from 7 states and waiting for CDC clearance for submission.
- December 2022 Workshop
  - o Hotel contract signed. PD will contact participants for travel logistics.
- Conference attendance
  - o Friends of the IPM Award 2022 ceremony will be at FMCA in Palm Court, FL
  - o Mosquito BEACONS booth will be set up at FMCA and AMCA.
  - o Elmer will share Georgia Mosquito Control Association Meeting information.
- Updates shared by members
  - o 2 human West Nile cases in Volusia County
  - o 1 confirmed death by West Nile in North Carolina this season

Introductions of new members

- Julieanna Miranda – Puerto Rico Vector Control Unit
- Sandra Fisher-Grainger – Fernando Co. Mosquito Control, President Elect for FMCA
- Sriram Chellappan - USF
- Miranda Tressler – Volusia County Mosquito Control Manager
- Johnny Ulemen – USF, VBD Modeling
- Victor del Amo – UTHealth Houston
- Cristian Sanchez – Puerto Rico Vector Control Unit

Breakout room discussions

- Background: Three key research and extension topics are discussed in two breakout rooms in light of the survey results from Year 1 activity.

Research Topic	Rank	Total Score	Total Count
Novel or improved surveillance methodologies	1	88	12
Interspecific interactions, community dynamics	2	87	12

	Rank	Total Score	Total Count
Population dynamics and genetics, including support for traceback utilizing archived mosquito collections to identify movement patterns, points of entry, or time periods of entry	3	85	12

Extension Topics	Rank	Total Score	Total Count
Social media as a tool for disseminating information	1	78	11
Webinars / virtual training opportunities	2	76	11
Invasive species symposium at State mosquito control associations annual meetings	3	74	11

- Potential research collaboration introduction
  - PI: Ryan Carney (USF, ryancarney@usf.edu)
  - Topic: Leveraging Citizen Science & AI for the Next Gen Surveillance for Invasive Mosquitos
    - Funded by NSF grant and in its 4th year
    - Introduced the 2021 CAMPAIGN (mosquitoAI.org). As an example, users helped to find two *Aedes scapularis* specimens in Texas
    - Introduced the Global Mosquito Observation Dashboard - Mosquitodashboard.org (GIS Dashboard)
      - Citizen scientists' observation of mosquitoes
      - Platforms include Mosquito Alert, iNaturalist, and GLOBE Observer's Mosquito Habitat Mapper and Land Cover
      - Details can also be found from their published research paper
        - Carney, R.M.; Mapes, C.; Low, R.D.; Long, A.; Bowser, A.; Durieux, D.; Rivera, K.; Dekramanjian, B.; Bartumeus, F.; Guerrero, D.; et al. Integrating Global Citizen Science Platforms to Enable Next-Generation Surveillance of Invasive and Vector Mosquitoes. Insects 2022, 13, 675. https://doi.org/10.3390/insects13080675
    - Introduced MosquitoID.org – AI ID Tools
      - Free artificial intelligence apps to fill global surveillance gaps
      - ID includes adult species, adult gonotrophic stage, larva species and larva anatomy, and will include larva instar and larva sex.
      - Currently engaging in *Anopheles stephensi* surveillance project
    - Introduced MosquitosInAfrica.org – iNatrualist project
      - **Ryan invited *Anopheles* identification experts to join the platform to give feedback to users' identification.**
    - Introduced the DYCAST risk model (DYCAST.org)
    - Introduced smart trap for AI-enabled mosquito surveillance
  - Q&A
    - Image credits of mosquitoes taken by users can be found on the website.

- Attractants used for smart trap can be various and adaptable: standard BG, experiments with fish condition water, goat smelling compounds.
- About 500 mosquitos can be handled per unit time for each trap. Sticky traps need to be replaced. It can be potentially scaled in the future.
- Q&A continued in Breakout room #1

Breakout Room 1:

- Q1: How fast could the accuracy of the algorithm be improved?
  - A1 (Sriram and Ryan): About 80-90% in a week with the input of 1,000 specimens and 4 or 5 pictures per specimen. In the case of *Aedes scapularis*, the Miami-Dade provided a handful of specimens but multiple pictures, which made the team improve the confidence to 100%.
- Q2: How did your group bridge the knowledge gap (e.g., models, image, AI) between you and citizens so that people can see benefits out of it and would want to use this tool?
  - A2 (Sriram and Ryan): Sriram's initial idea of the project was inspired by the conversation with the local mosquito control people. Local mosquito control people are very excited about this project. They have the need and have helped with validation. Citizens feel motivated when they know that what they do would be possibly used for research. They are excited about their contribution on the data.
- Q3: What kind of research questions (related to BEACONS and this platform) could be done when we move forward?
  - A3 (Ryan): 1 - The list of species. We need to get ready the system (e.g., know what species need imagines), so we can test the trap etc. 2 - Take environmental data. (e.g., get the timestamp for each mosquito)
  - **Ryan invited people to let them know if there are any species, tools, features, things on the dashboard…that people would like to see them develop in the future.**
- Johnny introduced himself…. Hope to see the list of species grow beyond mosquitoes, specifically other arthropods, like ticks, fleas, flies.
- Victor introduced himself…. Culex are smart. It is difficult to develop one strategy and control all. He would like to explore collaboration opportunities. He plans to look for important genes and sees how important those are in combating mosquito populations.
- Lindsay brought up an idea: set up smart traps in coastal/other areas so that people can traceback/validate the potential route/introduction of invasive species and it could also be used for population structure analysis.

Breakout Room 2:

- Extension needs: Social Media tools, Webinar/Online trainings, Invasive Mosquito Meetings
- Webinar/Online Trainings
  - Jessica from FDACS presented results of webinars with great response rates. Mosquito control programs learned a lot, and they provided guest speakers.
  - Julieanne from PRVCU expressed needs for educational materials in Spanish
    - Youtube videos with captions in Spanish is acceptable form of material.
  - Platform of choice for webinar:
    - Julieanne used Zoom, Teams, Youtube, Facebook Live for online training.

- GotoTraining was used for the FDACS Webinar
- Issue with youtube training is that there is not a way to credit people who attend the seminars.
  - State CEU program needs to be considered when choosing the platform.
  - Potentially use Survey123 or a google form

Elmer shared that there would be a meeting in Savannah on Jan 9 which would have several talks about invasive species (Detailed info provided in the next page).

Meeting adjourned at 3:00pm.

48th MAMCA Annual Conference
In Conjunction with GMCA and FMCA Fly-In
Savannah, Georgia
January 9-13, 2023

48th Annual Conference of the Mid-Atlantic Mosquito Control Association
January 9-13, 2023

2023 Annual Conference Agenda

Conference Agenda will be available closer to the meeting dates

The meeting will be held at the Chatham County Mosquito Control facility. It will be a joint meeting of the Georgia Mosquito Control Association and the Mid-Atlantic Mosquito Control Association on January 9-11. Latest agenda attached.

Three confirmed presentations include: Dr. Stan Cope, "Invasive Species: What Are They and Why Should We Care", Dr. Dan Suitor, "On Demand Access to Port of Savannah Property to Monitor for Invasive Ants", and Dr. Ben Allen, "Light From BEACONS, Lessons Learned". I also believe that Bobby Moulis will be speaking about Chatham County Mosquito Control's surveillance efforts around the Savannah port. Hopefully we can learn some things about the Savannah port environment.