

FLORIDA COORDINATING COUNCIL ON MOSQUITO CONTROL

MEETING MINUTES

MAY 5, 2020

Held via Go-To-Meeting due to COVID-19

MEETING OBJECTIVES

- ✦ To provide subcommittee reports.
- ✦ To provide Agency updates.
- ✦ To receive briefings and updates on current and pending issues: Zika, Dengue, Chikungunya, West Nile Virus, Keystone, and, genetically modified mosquitoes.
- ✦ To consider public comment.
- ✦ To consider Councilmember's comments and issues.
- ✦ To identify needed next steps, assignments, and agenda items for the next meeting.

COUNCIL MEMBERS PRESENT:

COUNCIL MEMBERS MISSING:

Amy Brown, Chair	Carina Blackmore
James Clauson	Ed Lowe
David Cook	
Randy Dominy	FDACS STAFF PRESENT:
Rick Gleeson	Kelly Friend, AES Division Director
Matthew Hodge <i>for Gregg Walker</i>	Courtney Frazier, AES Asst. Division Director
Ed Irby	Lisa L. Brown, FCCMC Coordinator
Mark Latham	Jessica Ber
Ken Linthicum	Marah Clark
Heath Rauschenberger	Caitlin Gill
Jorge Rey	Frieda Lamberg
Keith Singleton	Bruce Nicely
Mark Yanno	Ashley Pierre-Saint

SUBCOMMITTEE MEMBERS PRESENT:

Ricardo Zambrano, Chair	Subcommittee on Imperiled Species
Michael Hudon	Subcommittee on Imperiled Species
Dan Kline, Chair	Research Selection Subcommittee
Aaron Lloyd	Research Selection Subcommittee
Ruide Xue	Research Selection Subcommittee

MEMBERS OF THE PUBLIC PRESENT:

Aimee Cabrera	Christos	John Glenn Morris
Anthony Ellis	Deborah Burr	Nate P
Benjamin Allen	Eavristo Miqueli	Randy Wishard
CB	Isik	Robert Maginnis
Calvin Hancock	Joseph Faella	Scott Schermerhorn
Caroline Efstathion	Kiera Lucas	Susan Gosselin
Chalmers	Matthew E. Mello	
Russell Cheatham	Matthew Hodge	



CALL TO ORDER

Amy Brown, Chair, opened the meeting at approximately 10:01 a.m., and called roll of Council members. A quorum was present.

She reminded those calling in to MUTE their audio devices, and to email Lisa Brown so that she can get the attendee names correct.

APPROVAL OF AGENDA AND PRIOR MEETING MINUTES

Chair Brown called for approval of the meeting agenda. Councilmember Dominy offered the motion to approve the meeting agenda, which was seconded by Councilmember Rey. Upon a call to vote, the motion was unanimously passed, and the agenda was accepted.

Chair Brown next asked if anyone had questions, comments, or revisions to the January 2020 Meeting Minutes. Councilmember Cook moved to accept the minutes, which was seconded by Councilmember Yanno. Upon a call to vote, the January 2020 Minutes were unanimously approved.

AGENCY UPDATE:

Organizational Updates - COVID-19: All Department services are still open for business though the buildings are closed to the public. A majority of FDACS staff is working remotely due to COVID-19. The FDACS laboratories are still staffed and working, but in shifts to maintain social distancing. The Bureau of Scientific Evaluation and Technical Assistance (BSETA) was one of the first to work remote due to its location between the labs. BSETA's conference room is being used for laboratory staff offices to also allow for social distancing. BSETA's Mosquito Control Outreach personnel are still available via telephone, email, or video chat.

The Bureau of Inspection and Incident Response (BIIR) staff is still working and responding to complaints. The Bureau of Licensing and Enforcement (BLE) has waived some late fees and renewals of some licenses pursuant to the Commissioner's Executive Orders which are found at www.FDACS.gov. Questions about the late fees and renewals should be directed to BLE at 850-617-7997. This order does not include Chapter 388 of the Florida Statutes.

There were no questions nor any discussion.

Legislative/Rulemaking/Budget Update: The funding request was \$2.6 million. There is \$387,389 for IFAS-FMEL (they asked for a reduced amount this fiscal year). There is \$500,000 for Research projects. The budget was approved by Senate and House, however due to COVID-19 the Governor has not yet been presented the budget, so there is still no certainty.

Marah Clark then gave a brief update on Chapter 5E-13 rulemaking. Due to COVID-19, rulemaking has been at a standstill. BSETA still intends to open several sections of 5E-13 and hopes to have some preliminary workshops scheduled for later this year once social distancing and stay at home restrictions have been eased. The proposed rulemaking includes cleaning up language, updating matching fund requirements, director qualifications, and moving away from paper-based reporting.

ACTION ITEMS FROM JANUARY 2020 MEETING

Prior Funded Research Information Update: Marah Clark advised that she and Caitlin Gill have been working on compiling prior funded research on the FDACS website. There have been some questions about confidentiality and propriety of the research, which she has been working on resolving. After some discussions, it was reiterated that she would work on compiling abstracts (with summary and conclusion) with researcher contact information for the funded projects, with the intent of getting the information available on the website by the September meeting. It was suggested that an abstract for posting on the website be a requirement in the funding contracts going forward.

Funding travel post-contract for researchers to present findings: Amy Brown and Marah Clark met with the department's finance and accounting staff. Unfortunately, it has been confirmed that the department cannot pay for travel after the end of the state fiscal year which is the end of the research contract. The FMCA Annual Meeting is after the final extension date of the fiscal year. Those with a 2-year contract should request travel money as part of the contract and to present a brief overview of the project and preliminary findings to FMCA at its meeting. Additionally, all researchers could be encouraged to present to FCCMC either in person or via webinar if travel costs are prohibitive. Future recipients should include travel costs to present at FCCMC in their proposal costs.

SUBCOMMITTEE REPORTS

- **Managed Marshes:** Due to COVID-19, the subcommittee has not met since October 2019. Doug Carlson hopes to meet prior to the next FCCMC meeting, either by webinar or in person. (*See Attachment 1*)
- **Research Selection:** Dr. Dan Kline advised that the subcommittee is in the middle of the reviewing process, with approximately \$338,000 to award after deducting the second year of the 2-year funded 2019 projects.
Marah Clark stated that sixteen proposals were received from five different state universities (UF, UCF, USF, FAMU, FIU) ranging from approximately \$61,000 to \$140,000 for single year projects and up to \$194,000 for a 2-year project. She noted that there has been an increase in funding requests for the proposals over the past several years.
In response to a question from Committee Member Linthicum, Dr. Kline let the Council know that the preliminary reviews/scoring had been done and the proposals are being reviewed. He is confident that they will meet the May 30 deadline.
- **Imperiled Species:** No report, however, Ricardo Zambrano gave a Power Point presentation on captive breeding of the Miami Blue and Schaus Swallowtail butterflies. (*See Attachment 2*)

ISSUE BRIEFINGS AND UPDATES

Keystone Virus Update: Due to a time conflict, Dr. J. Glenn Morris gave his Keystone Virus update out of order. (*See Attachment 3*) In response to a question from Council Member Gleeson, Dr. Morris said that at this time it is unknown if COVID-19 could be transmitted via mosquito. In response to a question from Council Member Irby, Dr. Morris said he is not sure if mosquitoes have been screened for coronaviruses. Council Member Rey confirmed that there has been nothing to suggest that coronaviruses are mosquito-borne so is not familiar with any studies that have looked at that type of transmission.

[The Council took a brief break and resumed after about 10 minutes.]

Arboviral Update: Marah Clark gave a brief arboviral update. Due to COVID-19 testing the Florida Department of Health (FDOH) has temporarily suspended mosquito-borne disease testing of sentinel chickens and mosquito pools. Prior to the suspension, the 2020 reports were:

- ✓ West Nile Virus: 0 human cases, 0 equine cases, 34 sentinel chickens in 9 counties.
- ✓ St. Louis Encephalitis: None.
- ✓ Eastern Equine Encephalitis: 0 human, 12 sentinel chickens, 3 horses, 1 mosquito pool in 6 counties.
- ✓ Dengue Fever: 21 travel-associated; 1 locally acquired
- ✓ Chikungunya Fever: 0 travel-associated; 0 locally acquired
- ✓ Zika Fever: 0 travel-associated; 0 locally acquired
- ✓ Mosquito-borne illness advisory: Monroe County
- ✓ Mosquito-borne illness alert: Miami-Dade County

Benjamin Allen asked if there are any alternatives for getting West Nile Virus testing done since FDOH has suspended testing. Ms. Clark responded that while Lee County has some testing capabilities, it is not able to extend that testing to the entire state. FDACS Bronson Animal Disease Diagnostic Laboratory (BADDL) is working on getting its testing capabilities for Zika, Dengue, and Chikungunya completed. It is not just lab capacity, but the availability of testing supplies/reagents which are similar to those needed for COVID-19. Ms. Clark has been in contact with FDOH to find out when any mosquito testing will resume. She assured the group that should there be a suspected human case the FDOH would give it the needed attention.

Note: The Florida Department of Health's Florida Arbovirus Surveillance reports may be viewed at <http://www.floridahealth.gov/diseases-and-conditions/mosquito-borne-diseases/surveillance.html>

Applied Research Program Update: Council Member Rey gave an update on the past year's personnel changes at the University of Florida / IFAS Florida Medical Entomology Laboratory (FMEL) under FCCMC funding. One position has been converted to a permanent, tenure-track position paid for by the University of Florida (UF). FMEL was able to make some offers prior to a hiring freeze due to COVID-19. The new people are:

- ✦ **Dr. Eric Caragata**, who is currently at John Hopkins University doing his post-doctoral work. He received his Ph.D. in Vector Biology from the University of Queensland. Dr. Caragata's interests include mosquito associated micro-organism and pathogen interactions on how they affect biology and pathogen transmission. He will be an Assistant Professor, tenure track, starting August 16th. [UF funding]
- ✦ **Dr. Bryan Giordano**, who is currently at FMEL doing his post-doctoral work. He received his Ph.D. from Brock University (Ontario). One of his major interests is mosquito surveillance. He will be a Research Assistant Scientist, non-tenure accruing, starting July 1 in the applied program. [AMRP funded]
- ✦ **Dr. Yoosook Lee**, who is currently at the University of California–Davis doing her post-doctoral work. Dr. Lee received her Ph.D. from UCLA. She is interested in interdisciplinary approaches to pool mosquito biology. Dr. Lee will be an Assistant Professor, tenure track, starting August 16. She will be Dr. Rey's replacement upon his retirement. [UF funding]

Dr. Rey advised he has applied to FDACS for some of the left-over salary funds from vacant positions for FMEL to use to set up Dr. Giordano's laboratory. FDACS is working on that request at this time.

In response to Chair Brown asking for clarification on the new hires, Dr. Rey joked that FMEL doesn't get people with easy names!

Request for Proposal Revisions: Chair Brown then called upon Marah Clark to discuss handling of revisions to the Request For Proposal (RFP) document sent to the research institutions as part of the FCCMC mosquito research grants. The document has not been revised in at least 5 years. Matters she hopes to revise include but are not limited to:

- ✓ update the document structure;
- ✓ make how to submit a proposal clearer and more predominant;
- ✓ make the FCCMC priority ranking easier to view;
- ✓ clarifying/changing the name of the Research Selection Committee to Subcommittee to be in line with the other two subcommittees;
- ✓ include the requirement for an abstract for the website; and,
- ✓ a general update to have consistent language throughout the document;

After a brief discussion, it was decided that Ms. Clark will work with FDACS staff to provide the Council with a working draft in track-changes at the next meeting for discussion and finalization prior to its use in 2021.

COUNCILMEMBER COMMENTS, ISSUES AND OTHER MATTERS

Oxitec Update: Chair Brown wanted to let the Council know that Oxitec has received approval from the Environmental Protection Agency for its federal Experimental Use Permit

(EUP) for its genetically engineered mosquitos for Monroe County, Florida, and Harris County, Texas. The EPA permit requires that Oxitec also get EUP approval from the Florida and Texas before it can begin any field trials.

FDACS has received Oxitec's state EUP application. It should be on the Pesticide Registration Evaluation Committee's June 4th Agenda. I hope to have more information for you at our next meeting.

GENERAL PUBLIC COMMENTS

There were no public comments.

FUTURE MEETINGS

The location for the September meeting was discussed. Chair Brown reminded the group that Councilmember Clauson had planned to host the May meeting at Beach Mosquito Control in Panama City Beach and is willing to do so in September. The dates considered were September 1st, 8th (the day after Labor Day) and, 15th. Discussions related to the possible unavailability of hotel rooms for those travelling for a September 8th meeting, assuming travel would be advisable at that time. Due to COVID-19, it was suggested that the later in September the better.

Chair Brown called for a motion to hold next meeting on September 15 at Beach Mosquito Control. Councilmember Dominy so moved, which was seconded by Councilmembers Irby and Singleton. Upon a call to vote, the motion was unanimously passed.

Locations for the January 2021 meeting were briefly discussed, with a reminder that Dr. Xue offered to host at Anastasia Mosquito Control, and the prior suggestion of the University of Florida's (UF) Honey Bee Research and Extension Laboratory. Gainesville, at locations other than UF were proposed also it is centrally located. Councilmember Rey offered to check to see if the Honey Bee Lab would be available if UF opens the campus in for the fall semester. It was decided to wait until the September meeting to decide on the date and location to allow for updates on COVID-19, and some research to availability in Gainesville.

REVIEW OF ACTION ITEMS

- Question by Councilmember Rey on the possibility of increase Mosquito Control presence on Council?
- Post abstract and contact information of research projects funded on FDACS website.
- Question by Councilmember Irby on the regulation of pest control company advertising for mosquito control.
- Revision to the Request for Proposals sent to public institutions each year.
- Oxitec Update.

ADJOURNMENT

With no further business to discuss, Chair Brown then called for a motion to adjourn, which was made by Councilmember Irby and seconded by Councilmember Singleton. Upon a call to vote, it was approved unanimously.

The meeting was adjourned at 12:32 pm.

ATTACHMENTS

- 01 Subcommittee on Managed Marshes report
- 02 Schaus Swallowtail Update (.ppt)
- 03 Keystone Virus Update (.ppt)

FCCMC MISSION STATEMENT

The mission of the Florida Coordinating Council on Mosquito Control is to provide assistance and recommendations to the Commissioner of Agriculture and the Florida Legislature in all matters related to public health pest control in the State of Florida. Areas of interest and concern would include providing guidance to, and enhancing communication between, the Department of Agriculture and Consumer Services and other appropriate agencies and interests; providing guidance to mosquito control programs and other arthropod control-related agencies to reduce duplication of efforts; maximizing efficient use of existing resources; implementing best management practices and available technology; evaluating arthropod control methods that both protect the public health and the State's natural environment; and to set priorities for research funded through Department grants.

TO: FLORIDA COORDINATING COUNCIL ON MOSQUITO CONTROL

**REPORT FROM: DOUG CARLSON, CHAIRMAN - SUBCOMMITTEE ON
MANAGED MARSHES (SOMM)**

April 27, 2020

MOST RECENT SOMM MEETING. As reported at the January 2020 FCCMC meeting, the most recent SOMM meeting was held on Oct. 23, 2019 at the Indian River Mosquito Control District office in Vero Beach. This meeting primarily focused on the Florida Fish and Wildlife Conservation Commission's Wildlife Management Areas – T.J. Goodwin and Broadmoor which are located in northern Indian River and southern Brevard Counties.

NEXT SOMM MEETING. Some preliminary arrangements were being made in late January and February for our first SOMM meeting in 2020 when the COVID-19 pandemic hit. Therefore making plans for our next meeting are on hold for the foreseeable future.

Schaus' Swallowtail and Other Conservation Updates



Scott Tedford, FLDEP
Daniels' Lab, UF, Florida Museum



Photo Credit: Geena Hill

diversity

Improving Standards for At-Risk Butterfly Translocations

Joel C. Daniels^{1,2,*}, Cole Naudeneyer³ and Erik Rounquist⁴



Cooperative Recovery Initiative at National Wildlife Refuge Means Hope for Miami Blue Butterfly

One of Nine Projects Receiving Funding for Species Recovery on 12 Refuges across 12 States

The monarch butterfly may get more publicity, but the Miami blue is even more imperiled and one of North America's most critically endangered insects. The U.S. Fish and Wildlife Service is working to change that. This small, brightly colored non-migratory butterfly can only be found in a handful of populations on remote islands within the Key West National Wildlife Refuge and Great White Heron National Wildlife Refuge in Florida. Staff will be working to establish populations over a much larger geographic range in south Florida. The Miami blue project will enable experts to learn about captive breeding and reintroduction so a stable population can be established across the Florida Keys and eventually in the Everglades.



Miami blue butterfly. Photo: Kelly McCarty, USFWS

Since 2013, the Service has funded six projects for nearly \$27 million through the CRI. The Miami blue project is one of nine projects on 12 national wildlife refuges across 12 states, which are receiving more than \$3.14 million in fiscal year 2017 through the Cooperative Recovery Initiative (CRI) to help recover threatened or endangered species on or near national wildlife refuges. Besides the butterfly, other species to benefit from CRI funding include oaks, Parnassian tiger beetles, masked bobwhite quail and specklebelled snipe.



Photo Credit: Geena Hill





Photo Credit: Kristen Grace



Miami Blue Releases

Year	Number of Organisms Shipped for Release
2018	3458
2019	6781
2020*	557



- 2019: Evaluating release methods: larval, adult, pupal.
- 2019: Created pupal release tubes- tubes were placed on ground with pupae within.
- 2020: Redesign, pupal release "spaceships" New "spaceships" are designed to reduce predation of pupae in the field and allow for natural eclosion.







THE TINY and TOUGH miami blue butterfly

Coloring Book

Illustrated by Samson Wehman Epstein
Written by Genia M. Hill
Sarah Steele Calverly

Miami Blue Butterflies

The Daniels Lab

At-risk butterfly conservation

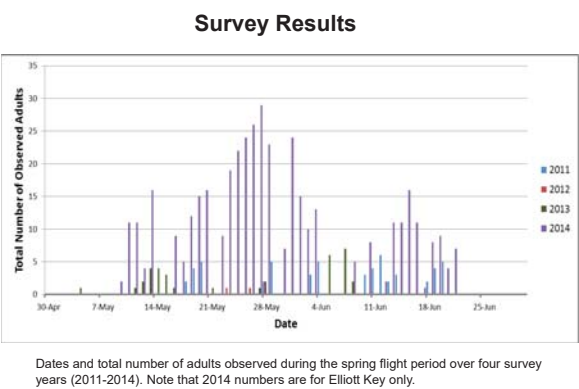
Pollinator ecology and conservation

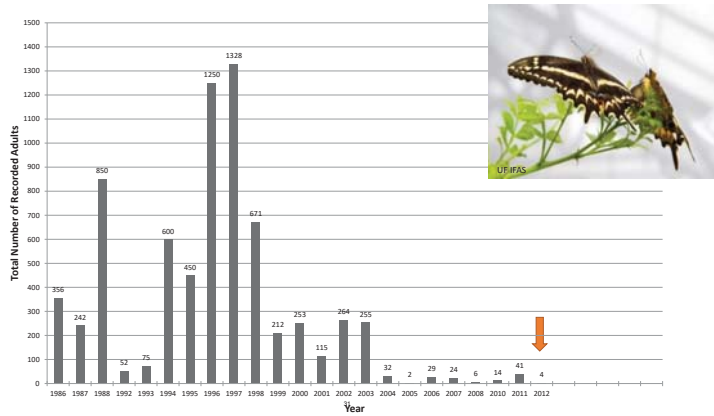
People

The Daniels Lab at the McGuire Center for Lepidoptera and Biodiversity

The Daniels Lab is focused on conserving and understanding the ecology of pollinating insects across the southeast and beyond. Our research efforts are directed towards the conservation of particularly vulnerable butterfly species in their natural habitats and the broader pollinator community in urban and suburban environments. We are also committed to engaging and educating the public with a variety of outreach programs.

<https://www.floridamuseum.ufl.edu/daniels-lab/>





Schaus' Captive Breeding 2019/2020

Date of Generation	Pupae Produced
April/May 2019	99
June 2019	13
July and October/November 2019	59
January/February 2020	48
Total	219



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Bilateral Gynandromorph



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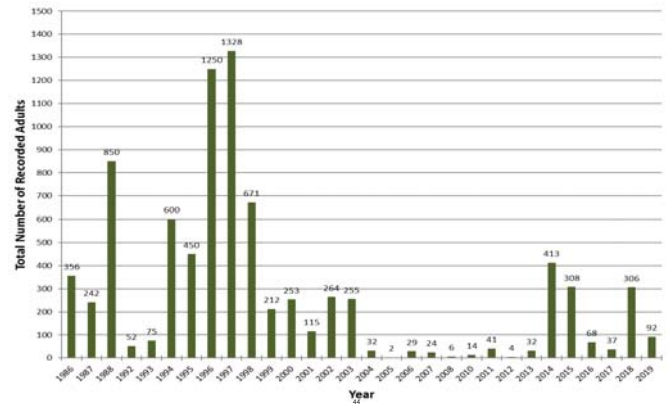
Matt Standridge is shown in this video from 2019 on Elliott Key, Biscayne Bay National Park. We had caught a female and were trying to encourage her to lay eggs in situ on Elliott to bring back for captive breeding. In this video, he carefully holds the female Schaus to feed her in the field. He will unroll her proboscis and hold it to a cotton ball saturated in Gatorade. After she has fed, she will be released in a flight cage over a torchwood plant. After two days she was released in the same location she was captured.



Organism Reintroductions

- Laboratory Breeding > 2000 viable organisms
- 2014
 - 354 individuals released on Elliott Key, BNP
- 2015
 - 578 individuals released
 - 271 on Elliott Key, BNP
 - 30 on Adams Key, BNP
 - 277 on northern Key Largo
- 2016
 - 51 on Elliott Key, BNP
- 2018
 - 220 on northern Key Largo (Pennekamp, CLNWR)
- 2019
 - 71 on Elliott Key, BNP

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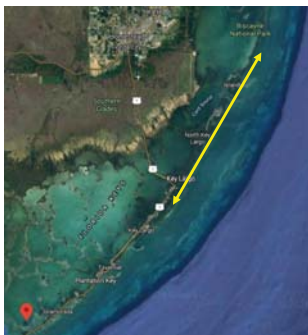
Future Directions

- Continue annual population assessments
- Continue organism reintroductions targeting Lignumvitae Key (as per draft recovery plan)
- Establish new self-sustaining populations and expand geographic range
- Continue to collect samples for genetic analysis and conduct population structure analysis
- Evaluate potential threats
- Continue to evaluate/monitor importance of second generation to population
- Continue to evaluate importance of minor habitat disturbance benefits
- New funding updates

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Upcoming Project: Conservation and Population Genetics of Schaus' Swallowtail Butterfly



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Primary Objectives

- Increase genetic diversity of captive colony
- Understand genetic connectivity of Schaus' in Florida
- Understand past losses of genetic diversity (population bottleneck events)

Upcoming Project: Conservation and Population Genetics of Schaus' Swallowtail Butterfly



Methods

- Incorporate eggs and larvae from entire FL range into colony
- Collect genetic samples after natural death of organisms
- Sequence DNA and conduct genetic analyses

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Digitization and Sampling of Specimens at the McGuire Center



- Photograph and digitize all Schaus' and Bahamian swallowtail specimens
- Compare genetic samples time and space in order to understand possible losses of genetic diversity



Funding and Support



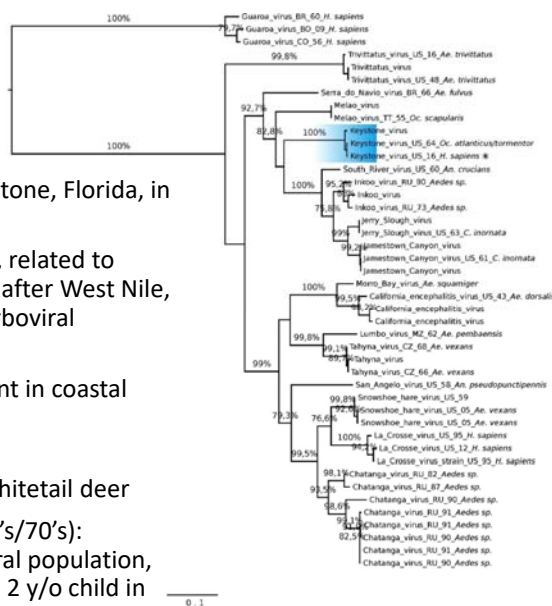
@JCDanielsLab

Keystone Virus in Florida Mosquitoes

Maha ElBadry, PhD
J. Glenn Morris, Jr., MD, MPH&TM
UF Emerging Pathogens Institute

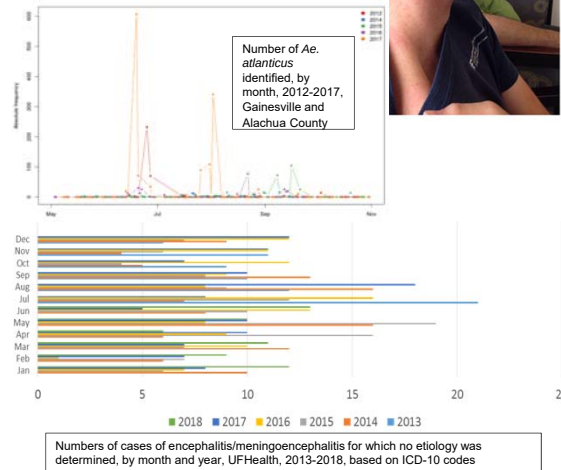
Keystone Virus

- First isolated from mosquitoes in Keystone, Florida, in 1964
- California-serogroup orthobunyavirus, related to *LaCrosse*, *Jamestown Canyon* viruses (after West Nile, 2nd and 3rd most common causes of arboviral neuroinvasive disease in U.S.)
- In studies from the 1960's/70's, present in coastal areas from the Chesapeake to Texas
 - Vector: *Aedes atlanticus*
 - Reservoirs: squirrels, raccoons, whitetail deer
- Clinical presentation in humans (1960's/70's): antibodies present in 19-21% of general population, with serologic evidence of infection in 2 y/o child in Sarasota with neuroinvasive disease



Keystone virus: Update

- First isolation of virus from humans in 2016
 - 16 y/o attending summer band camp in Alachua County, seen in clinic with fever and rash
- Subsequent studies: 30% of random blood samples at UF Shands have neutralizing antibodies to Keystone
- ? cause of neuroinvasive disease (of which there are an average of 117 cases/year at UF Shands for which no etiology is identified)



The Questions:

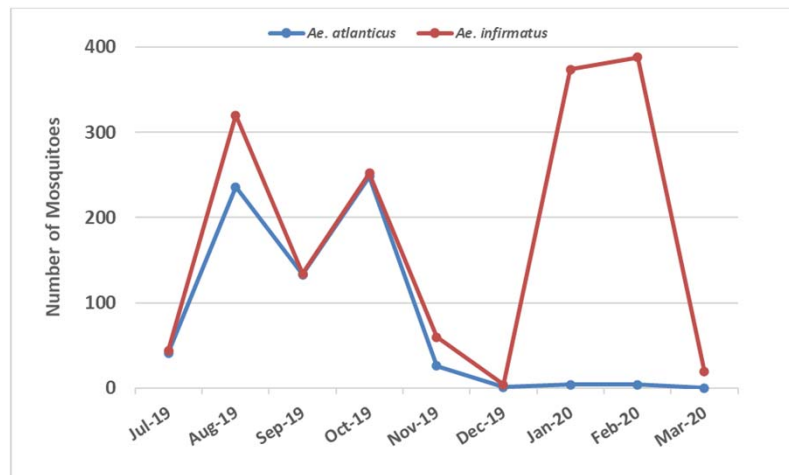
Is Keystone virus (KEYV) present in mosquitoes in north Florida?

- Is virus more likely to be present at certain times of the year?
- Does KEYV isolated from mosquitoes match the strain isolated from humans?

What mosquito species (*Ae. atlanticus*, *Ae. Infirmatus*, *Ae albopictus*) carry the virus?

Are there environmental settings in which mosquitoes are more likely to carry the virus?

Mosquito Species, St. Johns County



Identification of Keystone Virus

RT-PCR results

Species	No. of Pools	Location	KEYV +
<i>Ae. atlanticus</i>	97	19	11 (10.7%)
<i>Ae. infirmatus</i>	40	16	0
<i>Ae. albopictus</i>	90	11	0
<i>Ae. triseriatus</i>	1	1	0
Total	228	28*	11

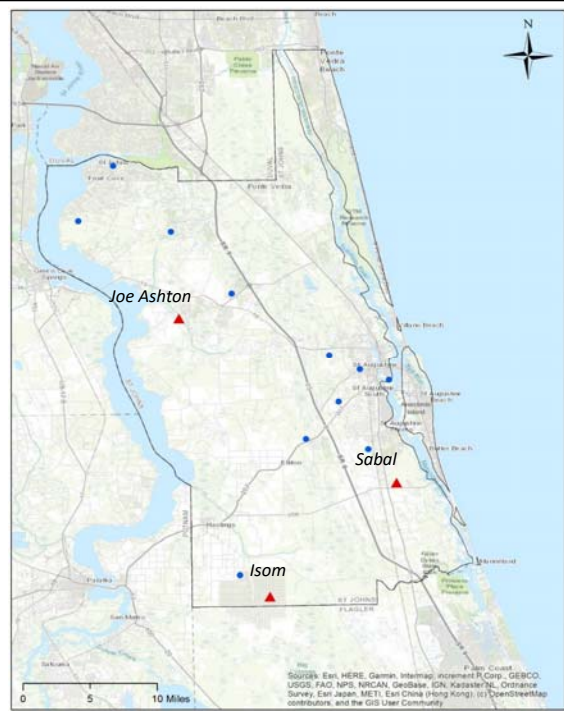
Virus prevalence rate is 10.7% among *Ae. atlanticus* species with a MIR of 1:45 during the months from July – October.

*sites overlap between species, 28 unique different sites

- From 28 exploratory collection sites within St. John's County, 3 had mosquitoes carrying KEYV.

Site	Month	No. of pools	No. of positive pools
Isom	July	6	0
	August	9	3
	September	11	0
	November	2	0
Sabal	July	3	1
	August	4	2
	September	2	0
	October	3	0
Joe Ashton	October	5	5
	November	4	0

- All three sites were near wetlands



Sequencing Results

- Complete genome sequences for the Small, Medium and Large segments of 1/11 virus isolates were obtained in February 2020.
- The resultant virus-sequence is most closely related to a KEYV isolate obtained from Orange County in Texas in 2017 from an unidentified pool of *Culex spp.* with an average identity match of 99.6% across all three genomic partites.
- Isolate distant from the 2016 human isolate from Alachua County

Conclusions

- KEYV appears to be relatively common in *Ae atlanticus* in northeast Florida
 - Possible association with wetlands
 - Appear to be multiple KEYV strains circulating in the region, based on differences in sequence between one of the strains isolated from *Ae. atlanticus* and our previous human isolate
- Given the 30% seroprevalence of neutralizing antibody to KEYV found in humans, mosquito-vectored virus transmission is likely

And More Questions

- How widespread is the virus in mosquito populations in Florida? Is it found in south Florida?
- Can KEYV in Florida be vectored by other mosquito species, such as *Culex*?
- Is there a wetland-associated reservoir host?
- What is the role of KEYV in neuroinvasive disease in the region?

Acknowledgements



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- Mosquito collection interns.
- Kai Blore



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- Dr. Sarah White
- Ms. Nicole Darrow



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- Laurence Thirion

