

Progress and Outlook of the CDC Southeastern Center of Excellence in Vector Borne Diseases

● Kaci D. McCoy, MPH&TM
Center Program Coordinator



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The Gateway Program

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Progress and Outlook of the CDC Southeastern Center of Excellence in Vector Borne Diseases

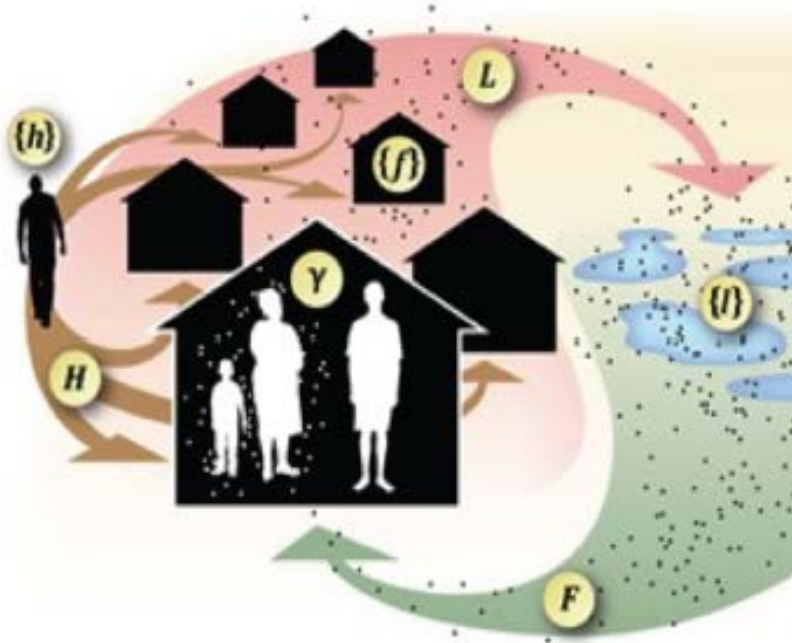
GOALS OF THE CENTER

- (1) Develop novel control interventions and discover insecticide-resistance-breaking compounds
- (2) Expand the level of inter-institute/inter-agency coordination and partnership in the exchange of research and operational information in the Southeast
- (3) Establish a comprehensive, three-tiered training program for public health entomologists and students throughout the Southeast
- (4) Provide an evidence-based set of recommendations for a locally-tailored surveillance-response program in the form of a decision-making tool



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GATEWAY PROGRAM PROJECTS



- ❑ PROJECT 1: Understanding vector ecology, arbovirus infection rates & insecticide resistance to optimize mosquito control [Beier, Bloomquist, DeGennaro, Mathias]
- ❑ PROJECT 2: Breaking the transmission of zoonotic arboviruses by mosquitoes [Unnasch]
- ❑ PROJECT 3: Ecological and acaricide-resistance models of tick vectors in the Southeast US [Glass]
- ❑ PROJECT 4: Multi-scale, modular models for Vector-Borne Disease [Cummings]



PROGRAM PROJECT OUTCOMES



- ❑ A unified mathematical model to understand the biocomplexity of mosquito-borne arbovirus transmission
- ❑ Suites of study designs for evaluation and recommendation of mosquito and vector control technologies
- ❑ Identification of new chemical actives for insecticide-resistant *Aedes spp.*
- ❑ Recommendations for approaches to break winter-time zoonosis transmission
- ❑ High-resolution spatial mapping of tick vector distributions and recommendations for management of acaricide-resistant ticks

Multi-tiered Public Health Entomology Training Program of the Southeastern Center of Excellence in Vector Borne Diseases

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Multi-tiered Public Health Entomology Training Program of the Southeastern Center of Excellence in Vector Borne Diseases

OVERALL PROGRAM FRAMEWORK

HYPOTHESIS:

►To train a cadre of public health entomologists with the knowledge and skills required to rapidly detect and respond to vector-borne disease (VBD) threats in the United States we must lower the barriers to access



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

Dodd Short Course Training Fellowship 2018–2020

Florida Mosquito Control Association



- ❑ February 3 – 7, 2020
- ❑ 13 Awardees (2018), 12 Awardees (2019), 13 Awardees (2020) from FL, SC, TX, NC, GA, PR
- ❑ Targeting smaller programs throughout the Southeast region
- ❑ Staff → Managers/Directors

Total number of awardees to date: 38



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

Mosquito University 3.0

Tennessee Department of Health



- ❑ May 1 – 2, 2019
- ❑ 25 Attendees
- ❑ Public health and vector control professionals from AL, AR, KY, MO, MS, SC, TN
- ❑ Instructors from TNDOH and CDC
- ❑ Staff → Managers/Directors



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

Midwest Four Corners Tick Workshop

Arkansas Department of Health



- ❑ June 17th – June 21st, 2019
- ❑ 11 Attendees
- ❑ Instructors from AR DOH and CDC
Rickettsial Disease Branch, University of
Arkansas, USDA
- ❑ Epidemiologists, Directors, Program
Coordinators, Graduate Researchers,
Entomologists, etc. from MO, KS, AR, TN



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

Insecticide Resistance Workshop

East Carolina University



- ❑ February 12, 2019
- ❑ 14 Attendees
- ❑ Public health and vector control professionals from NC and SC
- ❑ Instructors from East Carolina, Western Carolina, and North Carolina Universities
- ❑ Staff → Managers/Directors



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

SUMMER INTERNSHIP PROGRAM



Joe Davis



Lauren Hintenlang



Morgan Smith



Rachel Bales



Elise Richardson



Lettie Cronin

- ❑ Hypothesis: Attracting a younger generation of students to the profession will instill excitement in this career trajectory
- ❑ Supports the placement of interns in mosquito control districts, departments of health, universities throughout SE
- ❑ Facilitates Center Program Project Milestones
- ❑ Interns are from entire Southeast region
- ❑ Provides a stipend for intern effort

2017 INTERNSHIP PROGRAM = 6

2018 INTERNSHIP PROGRAM = 5



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TRAINING PUBLIC HEALTH ENTOMOLOGISTS



Emory Babcock



Elizabeth Henderson



Penny Reif



Mandi Pearson



Not pictured: Kyndall Braumuller and Sarah Machado

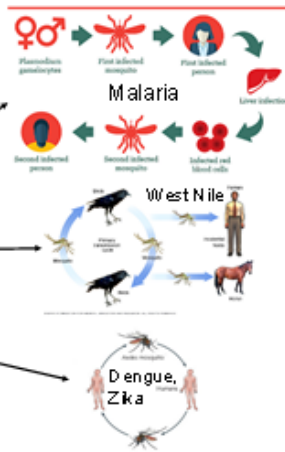
2019 INTERNSHIP PROGRAM = 6

TOTAL # OF INTERNS TO DATE: 17



Why Mosquito ID is Important

- Different mosquitoes transmit different diseases
- *Anopheles* mosquitoes
 - Can transmit malaria from human to human
- *Culex* mosquitoes
 - Can transmit West Nile Virus and encephalitis from birds to humans
- *Aedes* mosquitoes
 - Can transmit Dengue, Zika, and Chikungunya virus from human to human



Regulations for Mosquito Control in Florida

- Mosquito control can be divided into those provided by
 - Mosquito Control Districts (government entity)
 - Pest control companies providing mosquito control for hire
 - Individuals doing mosquito control on their own property in Florida with General Use Products (GUP)
 - No certification required
 - Includes individual residences and businesses

ONLINE COURSE

- ❑ Hypothesis: The pest management industry can be brought into the community of practice
- ❑ Dr. Faith Oi (UF/ENTO; *Pest Management University*) & Dr. Phil Koehler (UF/ENTO; *Urban Entomology*)
- ❑ In collaboration with FDACS, IFAS, UF Health CLLT
- ❑ CEU credits can be earned through FDACS and transitioned into other states
- ❑ Live on *Canvas Catalog* as of June 1, 2018
- ❑ FREE for first 1,000 trainees



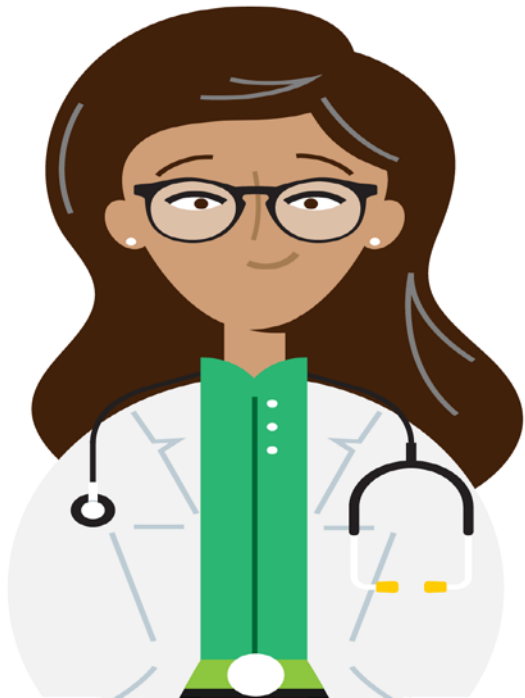
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TRAINING PUBLIC HEALTH ENTOMOLOGISTS

TICK WORKSHOP

- Hypothesis: Increasing the number of public health entomologists with expertise in tick ID, biology and ecology viz. disease transmission requires a hands-on course
- May 17–30, 2020**
- US National Tick Collection (Georgia Southern)
- Workshops held in 2018 (N = 20) and 2019 (N = 16) participants
- Includes instructors from the CDC, as well as US and European Academic Institutions

Total # of trainees to date: 36



PREVENT & PROTECT



**MOSQUITO CONTROL MESSAGES
FOR YOUR COMMUNITY**



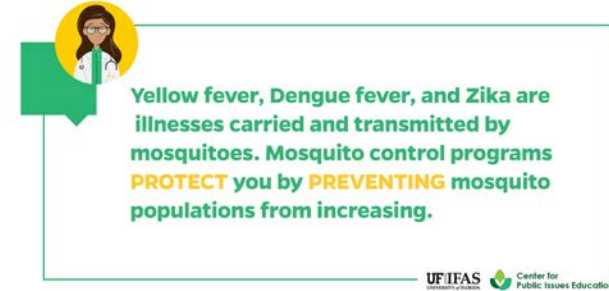
Mosquito control toolkit
developed by the UF/IFAS
PIE Center



Toolkit materials

- Social media schedule and customizable posts available for a four-week campaign on Facebook and Twitter
- Infographics, info sheets

Sample Posts



Yellow fever, Dengue fever, and Zika are illnesses carried and transmitted by mosquitoes. Mosquito control programs **PROTECT** you by **PREVENTING** mosquito populations from increasing.

UFIFAS Center for Public Issues Education



Only two tablespoons of insecticide are applied to an area the size of a football field in aerial application.

UFIFAS Center for Public Issues Education




PREVENT & PROTECT
WHAT YOU CAN DO TO HELP ELIMINATE MOSQUITOES AT YOUR HOME

KEEP THEM OUTSIDE
Mosquitoes can live indoors and will bite at any time, day or night.

- Keep doors and windows shut
- Use air conditioning
- Keep screens on all windows
- Repair any ripped screens

STOP THEM FROM BREEDING
Mosquitoes breed by laying eggs in and near standing water.

- Put down leaves that are rotting and not being used
- Flush out water-holding plants with a hose every 4 weeks
- Once a week, empty, scrub, flip, and invert anything that could hold water

UFIFAS Center for Public Issues Education



Impact of Mosquitoes on Florida's Economy and Tourism

PREVENT & PROTECT

DID YOU KNOW?
While visiting Florida, out-of-state visitors spend more than \$130 billion in a single year. In 2016, more than 85,000 jobs were directly supported through tourism in Florida. That is one out of every six jobs.

However, Florida's tourism was not always this successful. Mosquito populations posed a serious threat to both the livelihood of Floridians and appeal to visitors. Since the 1970s, mosquito population control efforts have reduced the number of mosquitoes in Florida by more than 90 percent! Mosquito control has had positive results for one of Florida's most important assets: its tourism industry. Millions of tourists enjoy all that Florida has to offer without constant worry of nuisance mosquitoes. The control of mosquitoes leads to increased jobs, revenue, and enjoyment.

97% TOURISTS VISIT FLORIDA EVERY YEAR

WHILE IN FLORIDA, TOURISTS CAN BE EXPOSED TO ANY OF THE 80 SPECIES OF MOSQUITOES

AS FLORIDA'S MOSQUITO POPULATION DECREASED, FLORIDA'S TOURISM INDUSTRY INCREASED

FAILURE TO CONTROL MOSQUITOES CAN NEGATIVELY AFFECT FLORIDA'S

- ECONOMY
- VISITORS
- HEALTH
- JOB

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PREVENT & PROTECT

USING AERIAL TREATMENT FOR MOSQUITO CONTROL

DID YOU KNOW?
Aerial treatments are used to treat a large area with a very small amount of insecticide to kill either the mosquitoes or their eggs or both mosquitoes. It's called an aerial treatment when conducted in coming to operation, aerial treatment is safe, quick, and efficient way to help control mosquitoes that can carry viruses and other diseases.

When you have a mosquito problem, you may be getting frustrated. The good news is that there are ways to help control mosquitoes that can carry viruses and other diseases.

Aerial treatment is just one way to help control mosquitoes.

Insecticides used for aerial treatments have been studied for their effectiveness and safety. The small amount that is used to treat is not expected to pose a health risk for people or pets.

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Educational materials

- Four videos (part of the Toolkits)
- Lesson plan for elementary classrooms
 - Includes content outline, a worksheet, and a homework assignment
- Lesson plans for middle and high school classrooms
 - Includes content outline, four lessons, worksheets, a unit exam, and PowerPoint presentations





PREVENT & PROTECT



MOSQUITO CONTROL MESSAGES
FOR YOUR COMMUNITY

LEARN MORE

<https://preventmosquitoes.org/>



Thank you!



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Visit us online at <http://cdcsercoevbd-flgateway.org/>

or

contact Kaci McCoy directly at kd.mccoy@ufl.edu