



# Overview of a Private Industry Mosquito Control Program Using Best Management Practices

## Reclaiming Heron's Forest



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# Two Sides of Mosquito Control in Florida

Division of Agricultural  
Environmental Services  
Bureau of Licensing and Enforcement  
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FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVICES  
COMMISSIONER NICOLE "NIKKI" FRIED

August 11, 2016

## MEMORANDUM

TO: All Persons Interested in Mosquito Control  
FROM: Sarah R. Ogilvie, Chief of Bureau of Licensing and Enforcement   
SUBJECT: Licensing Requirements for Mosquito Control Services

Mosquito control activities are divided into two groups. There is the Public Health component which involves a governmental entity (or government contracted vendors) making widespread community or municipal arthropod control applications over a large area. Then there are individuals or contractors wanting to operate on a for-hire basis that make arthropod control applications to an individual person's property or commercial properties such as hotels, resorts, etc.

Chapter 388, Florida Statutes (F.S.), strictly regulates the Public Health component, establishing districts, commissions and other governmental entities for these programs. Pest Control companies contracted to perform mosquito control activities for a government agency or mosquito control district must have a Public Health (PH) license or be operating under the direct supervision of a PH license holder.

- 38-13.021 (21), Florida Administrative Code (F.A.C.) Public Health Pest Control (PHPC) – a category or classification of licensure that includes private applicators, federal, state, or other governmental employees using or supervising the use of general or restricted-use pesticides in public health programs for the management and control of pests having medical and public health and nuisance importance.
- 38-13.009 (2), F.A.C. Applicators licensed in public health pest control may directly supervise no more than 10 unlicensed employees.

Chapter 482, Florida Statutes, strictly regulates structural pest control activities which includes the performance of any type of pest control and the use of any pest control devices. This law refers to spraying residential and commercial properties as a part of normal business practices. A pest control business license with a certified operator holding the General Household Pest Control or Lawn and Ornamental Pest Control categories is required to offer services in mosquito fogging and barrier treatment services for residential or commercial properties. To qualify for a business license for these purposes, the licensee must have at least one employee who is a Florida certified operator with a category of General Household Pest Control (GHP) or Lawn and Ornamental Pest Control (L&O).

A pest control business license is also required for the install and servicing of automated mosquito control misters in, on or under any structure, lawn, or ornamental (Section 482.071, F.S.) and the service must be performed by a certified operator with the GHP or L&O categories, or a designated ID card holder.

Please contact this office if there are any additional questions.



## Public Health Pest Control

### Public Health License

\*Includes Private for Hire Services

## Structural Pest Control

### General Household Pest or Lawn and Ornamental Pest Control License

Concerns that **GHP** and **L&O** service providers are lacking knowledge in proper mosquito control methods are warranted.

Training is not compulsory but is available and must be sought out.

Barrier applications for the sake of treating without regard for insect identification, mosquito ecology, or targeted pest management is improper.

# Training is Available

2015-2019 Alabama Vector Management Society Annual Meeting- Orange Beach, AL

2016 Dodd Short Course- Identification of the Adult Mosquitoes of Florida  
Identification of the Larval Mosquitoes of Florida  
FMEL- Advanced Mosquito Identification and Certification Course

2017 Dodd Short Course- Domestic Inspections  
Biology and Control of Dengue, Zika, and Chikungunya Vectors  
Mosquito Academy- City of New Orleans and Louisiana Mosquito Control Association  
AMCA Training for IMM Curriculum- Anastasia Mosquito Control District  
FMCA Annual Meeting- Sterile Insect Technique Symposium and concurrent sessions

2018 Dodd Short Course- Fostering Relationships Between Mosquito Control and Beekeepers  
Environmental Management for Mosquito Control- Spill Response  
Aquatic Weed Control  
AMCA Annual Meeting- Various lectures, ESA sub-committee of L&R  
FMCA 4<sup>th</sup> Annual Entomology/Biology Workshop- Various lectures  
FMCA Annual Meeting- Various lectures

Introduction to  
*Culicoides Ecology*

2019 Dodd Short Course  
Instructor: Bethany McInerney  
3 CEU Credits

2019 Dodd Short Course- Fostering Relationships Between Mosquito Control and Beekeepers  
Managing Mosquito Control with the Public and Media  
AMCA Annual Meeting- Bottle Bio-Assay workshop, Presentation for Honey Bee Symposium  
Beach Mosquito Control District- Calibration Training and Chemical Label Review  
FMCA 5<sup>th</sup> Annual Entomology/ Biology Workshop

# Collaboration

Testing for pesticide resistance of target pest populations is essential when following an IPM program.

Sending ovistrips to the Florida Medical Entomology Laboratory for testing provides confidence in the products used for control.

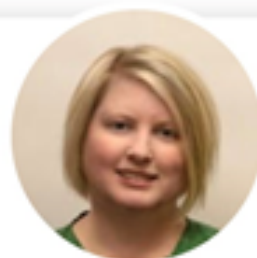
Thank you to Dr. Buckner for providing this valuable service.

## DR. EVA BUCKNER

BIO /

EDUCATION /

PUBLICATIONS



**EVA BUCKNER**

**ASSISTANT PROFESSOR**

Medical Entomology Extension  
Specialist

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## ***"A Community Embraced By Nature"***

***Heron's Forest*** is a coastal residential community in Pensacola, FL established in 1998 and developed with a Department of Environmental Protection (DEP) Conservation Easement with the intent and purpose of assuring that the property will be retained and maintained predominantly in the natural vegetative and hydrological condition existing at the time of development.

155 Acres

0.2 sq mi

2.02 mile Perimeter

178 Residential Homes

Commons Areas

Swimming Pool Tennis Courts Basketball Court

5 Retention Ponds

Nature Trails (just over 1.2 miles)

Wetland Preserve and Coastal Scenic Wildlife Trail



# Neighborhood Priorities

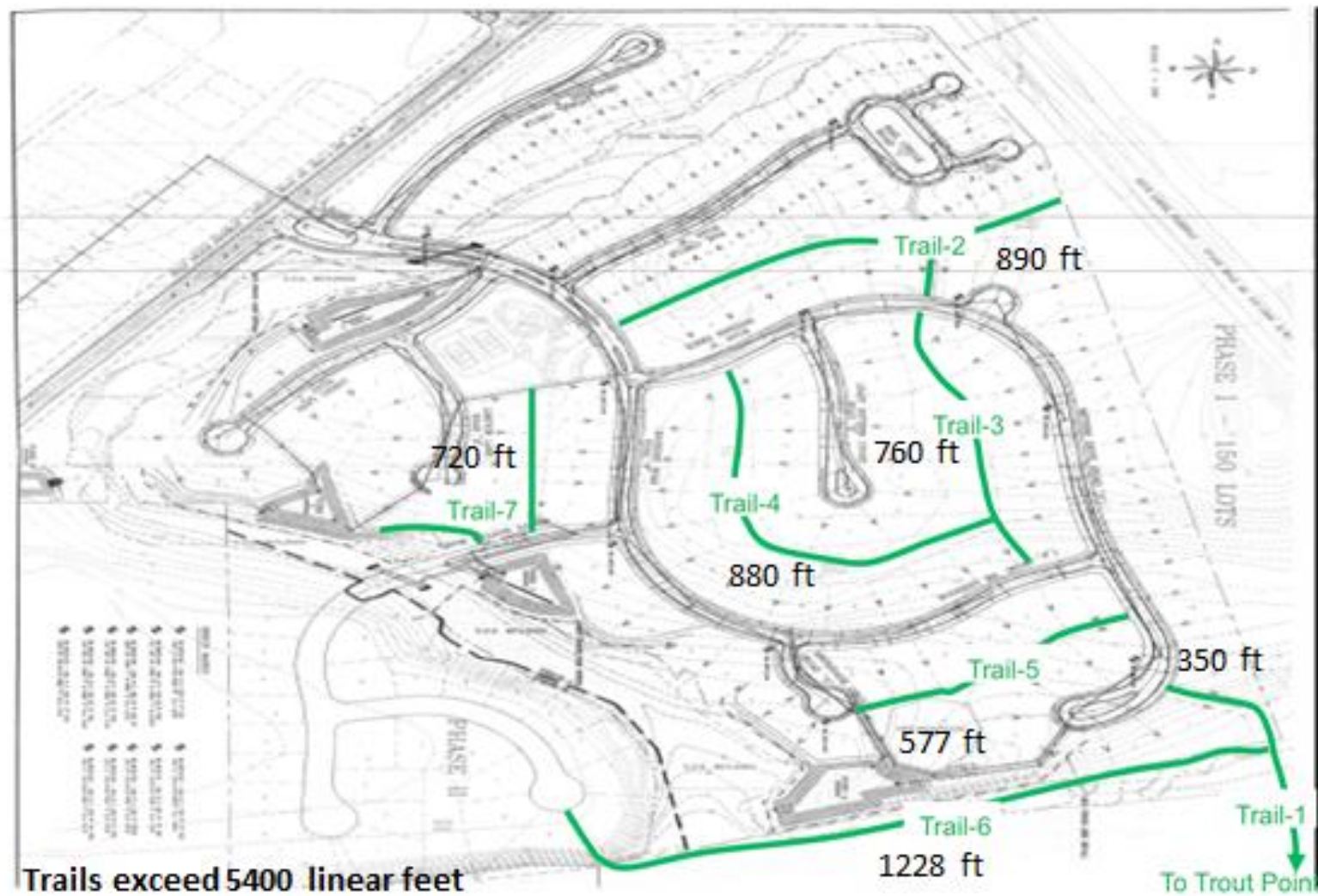


Inquiry into the priorities of the community was communicated through the Board of Managers of the Home Owners Association (HOA) and led to the consensus that biting insect reduction in the commons areas (swimming pool, tennis, and basketball courts) was paramount, followed by control around the homes.

Protection of the nature preserve was heavily stressed.



# Nature Trails



# Habitat for Hungry Insects





# Nature Preserve



# Neighborhood Challenges



April 2018 preliminary trapping showed the majority of the mosquito population was *Anopheles crucians* complex with *Culex nigripalpus*

Retention ponds and storm water drains were supporting *Culex quinquefasciatus*

Standard household artificial containers were harboring *Aedes albopictus*

Heavy populations of Culicoides (biting midges) and *Diachlorus ferrugatus* (yellow flies) (Late June sample)



*Cx quinquefasciatus*  
sampled from drain



*Aedes albopictus*  
sampled from open  
ribbing of pipe





# Trap Sites

Trap 1 Trout Point



Trap 2 Nature Trail

Trap 3 Perimeter Stream





# Re-Tooling Out of Necessity



# Game Plan



## Weekly Surveillance

CDC Light Traps (Dry Ice)  
Larval Sampling

## Weekly Treatments (Bifen)

Commons Areas (0.5 oz/gal)  
Nature Trails (0.5 oz/gal)  
Retention Ponds (0.5 oz/gal)  
25% of Households (1 oz/gal)

\*Residents notified electronically

Retention Pond Basins Monthly (Bti)

After 4 weeks, all households treated and limitations assessed.

16-20 oz concentrate were used per week

18 oz X 4 weeks = 72 oz month

72 oz X 3 months = 216 oz = 1.6875 gal concentrate

72 oz X 6 months = 432 oz = 3.375 gal concentrate



# Communication is the Key

That will be fine. I have notified the owners. Have a great day!

Sincerely,

Cheri [REDACTED] Administrative Staff



-----Original Message-----

From: Dan Killingsworth [mailto:[dan.killingsworth@pest.com](mailto:dan.killingsworth@pest.com)]

Sent: Monday, April 1, 2019 10:53 AM

To: Cheri [REDACTED]

Subject: Heron's Forest Mosquito Service

Good morning. This is Dan Killingsworth with EnSec Pest and Lawn. I hope you had an enjoyable weekend. I wanted to confirm that it was okay to start the mosquito service tomorrow in Heron's Forest. We will be treating the Commons areas and nature trails as well as the residences along Jabiru Lane and Limpkin Lane.

I will be setting surveillance traps out this evening on the property as well.

Please let me know if there are any questions or concerns. I'm happy to take phone calls or texts at [850-712-0792](tel:850-712-0792) or emails at [dan.killingsworth@pest.com](mailto:dan.killingsworth@pest.com).

Thank you for your time. I'm looking forward to making this service a success again this year.

Have a great day.

Kindly,

Dan Killingsworth

Operations Manager/ Field Supervisor

Environmental Security Pest and Lawn

[dan.killingsworth@pest.com](mailto:dan.killingsworth@pest.com)

[850-712-0792](tel:850-712-0792)

Heron's Forest HOA June 26, 2018

Foggy Bottom

10324

10330 Lynn Tobin

10336 Treat backyard outside fence line and tree line. Not the dog run.

10342

10348 Standing water in front gutter

10354

10360

10366

10372 Sign on door: EnSec Pest and Lawn ; Please spray front, side, and back yard

10378 Frank Duffon

10384 Sign on door EnSec Please spray per email received from HOA Thanks

Garden and Fruit trees on left side of house avoided.

10391 Avoided Kai Pond back right of yard

10385 Beekeeper Limited back yard treatment

10383

10373

10367 Workmen on site. Limited perimeter treatment to back fence line.

10361

10355

Tuesday July 3, 2018

Lorikeet

9551 Outside perimeter only in back- dogs

9539 Happy long time customer

9523

9511

9505

9500

9512 Water fountain w Larvae

9518

9524

9530

9536

9542

9548 Gary Southworth



## Results



Over 90% reduction of mosquito populations in residential areas

Ancillary benefit of significant reduction in biting midges and yellow flies due to frequency of treatments in nature trail harborage areas

Streamlined treatments were cost effective and efficient

Neighborhood survey showed overwhelming satisfaction with management program

How Best To Measure Success?

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How Best To Measure Success?

# Positive Feedback

From: Spencer [REDACTED]  
Date: September 13, 2019 at 12:22:58 PM CDT  
To: Dan Killingsworth <[dan.killingsworth@pest.com](mailto:dan.killingsworth@pest.com)>  
Subject: Re: Mosquitos-Herons Forest

Hi Dan,

I wanted to touch base with you and give you some feedback regarding our neighborhood meeting. The budget needs to be tightened this year so we went through some of the services in the neighborhood to gauge the popularity and benefit to the community. **The entire room affirmed in the positive that the mosquito control plan is a great asset to the neighborhood.** I did preface the discussion with the fact that yellow flies are not nearly as affected by this program as mosquitos. Yet **the neighbors all stated they had noticed a significant drop this year with yellow flies.** Perhaps clearing some of the forest around the fences helped as well.

Everyone is very pleased. I was actually quite surprised how vocal the participants at the meeting were regarding how much they like the program. **When we first started this a couple of years ago it was met with a lukewarm reception. However two years down the road everyone is very appreciative that the mosquito abatement program is part of Herons Forest.**

This year the board would like to start the program on May 1st rather than April 1st. Neighbors start using the pool in the latter part of May so we thought this timeframe would be better. If it gets bad we can always start it a bit earlier.

Have a great weekend,  
Spencer



# Conclusion



**BEST PRACTICES FOR INTEGRATED MOSQUITO MANAGEMENT:  
A FOCUSED UPDATE**

*American Mosquito Control Association  
January 2017*



Any successful mosquito management initiative must follow a regimented course of action based on:

- Need
- Surveillance
- Identification of target species and areas of infestation
- Proper planning
- Source reduction
- Judicious use of chemical controls if necessary (Resistance tested)
- Continued surveillance to adjust accordingly

Private pest control companies can achieve highly favorable results following best practices for integrated mosquito management (IMM).

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