

# NEW ORLEANS MOSQUITO & TERMITE CONTROL BOARD

## 2017 SEMI ANNUAL REPORT



*Aedes aegypti*

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*Coptotermes formosanus*

## DIRECTOR'S REPORT

### *Report on the activities of the City of New Orleans Mosquito, Termite, and Rodent Control Board from January 1 - April 30, 2017*

As the year began and cool weather stayed we had just enough time to catch our breath, reflect on the mosquito control activities of 2016, and look forward to 2017. Many lessons were learned from the Florida Zika virus response and it allowed us to evaluate our preparedness. In 2016, our department made incredible strides forward but it also made clear that we still have much to do. In 2017, my number one priority was to have the capacity for our group to conduct area-wide larviciding. In large part due to Ed Foster, NOMTCB's Aviation Supervisor, we now have the machinery to larvicide large areas. Our entire group pulled together to conduct field tests to evaluate different equipment. Our results were very good and at this point, and I can confidently say we have the capacity.

There are other control strategies that need to be evaluated to better refine proactive and reactive options to reduce the risk of Zika virus transmission. In addition, administrative hurdles such as contracts, cooperation with other districts, acquiring additional funding, and more must continue to be tackled this year.

Each year is a bit different and fortunately, this year *Aedes aegypti* and *Aedes albopictus* have been slow to increase in numbers. Floodwater mosquito populations were not as high as usual and treatment for the southern house mosquitoes did not start until late April. As the temperatures increase and the summer travel season begins, abatement activities will increase.

Many other projects have quietly been moving forward out of the spotlight. Mosquitoes and Zika virus have dominated the narrative but rodent and termite projects have continued and in some cases expanded. These projects have been very important in order to fund positions and purchase equipment that are very much needed to function at a high level.

Respectfully submitted,

Claudia Riegel, Ph.D.  
Director

# OPERATIONS AND FACILITIES

**CLAUDIA RIEGEL, Ph.D., Director**

## Employees

In 2017, vacancies opened due to two resignations and a termination of Pest Control Inspectors that were hired in 2016. All the employees had probationary status. Over 80 people were on Civil Service's register for Pest Control Inspector 2, so interviewing began in order to fill the vacancies.

Mr. LJ Kabel (Pest Control Specialist 3) retired in March after 34 years of service (Fig. 1). Mr. Kabel was an exceptional employee and was one of the most influential employees since Mosquito Control was founded in 1964. LJ started when he was 18 years old and became an expert in many fields. Not only could he fix or build anything, he also was a master equipment operator. He used a backhoe, front end loader, and airboat with precision. I personally have been privileged to work with Mr. Kabel for 13 years and have learned so much. On behalf of the City of New Orleans Mosquito and Termite Control Board, we thank you for your dedication and service.



Figure 1. A retirement party was held for LJ Kabel at a local bowling establishment in New Orleans.

## Light Duty

NOMTCB has partnered with Mr. Al Delaparte (Risk Management Director) to provide light duty work for city employees. Many departments do not have light duty available and injured employees are not able to return to work. Approximately one year ago, NOMTCB began taking light duty employees from various departments across the city. We offer many types of light duty work. The

type of work will depend on the restrictions of the light duty candidate. We have had numerous people work in our department. Some are with us for a short period of time (days or weeks) and others have been with our group for nearly one year. The goal of the program is to get the employee back to work as soon as possible. The employee's salary is paid from the light duty employee's originating department. This has been a highly successful program and it has been able to save the city money and get the employee back into the workforce.

## Facilities

### *Administration building*

Many events have been held in the training room so far this year. Examples include NOMTCB departmental meetings, recertifications, LDAF testing, and many other events. A variety of City of New Orleans departments including the Health Department, Civil Service and others have utilized the space. Perry Ponseti (Pest Control Specialist 2) has done an excellent job coordinating the events. The Greater New Orleans Pest Control Association has their spring recertification at our building as well.

The City of New Orleans Homeland Security Department provided funding for a natural gas generator that will provide power to the entire Administration building (Fig. 2). The generator will provide power to the building in the event of an emergency or power outage.

Perry Ponseti has coordinated installation with the contractor, Barnes Electric. The generator was delivered to the Administration building on December 19, 2016 and was put on the mechanical deck of the building. Barnes Electric is responsible for installation, hookup and startup of the generator. After the unit was set on our mechanical deck, Barnes ran the electrical lines from the automatic transfer switch box to the generator and to the annunciator panel at the reception desk.

The process of installation has been slow and there have been several road blocks including permitting

problems. Perry Ponseti has done an outstanding job coordinating all parties in order to finish this project. Several meetings were held with city inspectors and numerous phone calls were made to make sure everything is in order to proceed with the installation of our generator. Finally, it appears all requirements have been met and Barnes Electric has filed for proper permits. The project is supposed to be completed in June.



Figure 2. The generator was delivered and placed on the Administrations mechanical deck on December 16, 2016.

## Warehouses and Hangar

### Middle and backshop

The keys were turned over to the Non-Flood Asset Authority on January 30, 2017. We are finally completely moved to the warehouses located at 5617 Hayne Blvd.

### Hangar

Execution of the hangar lease was a major achievement in 2016. Capital Projects initiated meetings with the design firm and NOMTCB (Ed Foster, Aviation Supervisor, and Claudia Riegel, Director) to begin the process of renovating the hangar. Ellen Waguespack (Capital Projects) has been assigned to the project. She has set up regular meetings to discuss the project and there have been several site visits. She has done an excellent job of keeping the project on schedule to meet restrictions due to the mosquito season. Planning and redesign has started and construction is planned to begin in October. Construction is estimated to last six months.

## Operations

### Zika virus preparedness

Extensive planning (Figs. 3-4) was needed to coordinate the activities and items needed for a larvicide trial. Many members of our staff were involved in the planning aspect of the trial. The number of bio-assay containers, larvae, labeling, purchasing, etc. was extensive.

Valent Biosciences was very generous and provided the Vectorbac WDG as well as technical support by Jaques Dugal. We were appreciative of their technical input and the insecticide donated to the project (Fig. 5).



Figure 3. NOMTCB employees met several times to plan for the larvicide trial.

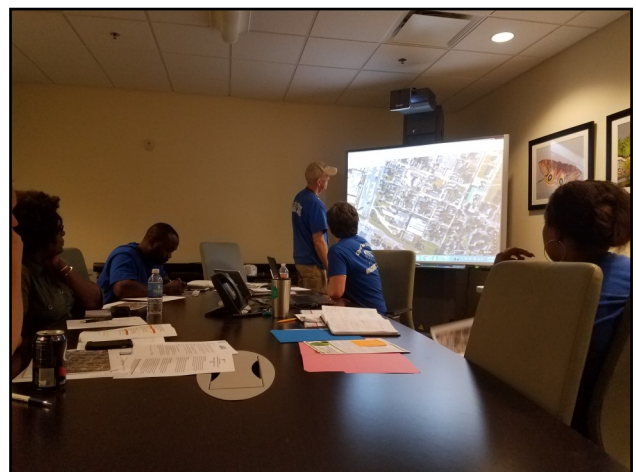


Figure 4. The Lower 9th Ward was selected to conduct the neighborhood trial based on accessibility and housing type.





Figure 5. Ed Foster (left) and Jaques Dugal (right) discuss the application equipment.

Members of the Center for Disease Control and Prevention Emergency Response Team (CERT) spent several days in New Orleans visiting various agencies (Fig. 6). On March 21, several members of the CERT team, New Orleans Health Department employees, and Louisiana Department of Health officials spent several hours in the field shadowing our employees during the larvicide trial executed in the Lower 9th Ward and at the Biolab where the bioassays were run. We had an opportunity to discuss ideas and strategies for responding to a local case of Zika virus.



Figure 6. Members of the CERT team met with employees of the City of New Orleans and the Louisiana Department of Health to discuss many aspects related to Zika virus transmission.

## Cooperative Projects

### Imerys

A novel method of controlling mosquitoes using mechanical control is being evaluated. In 2016, backyard treatments and treatments of the exterior of houses were evaluated. In a bioassay, *Aedes aegypti*, *Ae. albopictus*, and *Culex quinquefasciatus* all exhibited high mortality rates for eight weeks after application. A field trial has been planned in Monte Verde, Honduras to evaluate this product when applied inside and outside homes (Fig. 7). Baseline data will be initiated in May.



Figure 7. Erin Cloherty (left), Princeton King (middle), and David Stewart (Imerys) on the left, evaluate an application using a hand held applicator.

### Operation Blessing

In February, I had the opportunity to conduct a pest control inspection at Zanmi Beni in Port-Au-Prince, Haiti. The goal was to identify pest problems and provide practical solutions to their staff in order to reduce the risk of disease transmission. Many of the suggestions revolved around implementation of pest exclusion (Fig. 8), improved sanitation, and conducting source reduction (eliminating the standing water). An integrated pest management (IPM) approach will be the key to success at the Zanmi Beni facility.

IPM techniques are common sense practices that should be part of everyday life. It is essential to make the link between the pests, health, economic impacts, and the conducive conditions, as this is the first step to success. Improved sanitation, removal of clutter, and habitat modification can easily be implemented in daily life and will eliminate or significantly reduce



Figure 8. The pantry at the Zanmi Beni facility was open to invasion by household pests.

pest pressure. In order to achieve long-term, sustainable control and reduce the health and economic damage, an IPM strategy must be implemented.

Pest control or Integrated Pest Management (IPM) plays an essential role in protecting the health, safety, and general well-being of people and animals. IPM in pest control is a strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as habitat manipulation, modification of cultural practices, biological control, and chemical control. All IPM strategies will start with a thorough inspection and continued surveillance as practices are implemented. Control practices implemented must be selected and applied in a manner that minimizes risks to the health of people, pets, non-target organisms and the environment.

There are a few practices associated with daily living such as sewage, containers, and trash handling practices, which cause the majority of the pest problems. Sewer pits are often covered with concrete panels. The panels keep the children out but gaps between the panels allows for flies, mosquitoes, and cockroaches to easily enter and move freely. These pits are often located close to living quarters and areas where people congregate. The pits are highly organic and provide the habitat and food sources for these pests and pathogens to thrive. Sewers are an ideal breeding ground for

some mosquito species that can transmit a variety of arboviral and filarial diseases.

By linking the conducive condition to the resulting pest problems and diseases, people can be taught a few cultural modifications that can significantly improve their quality of life by eliminating the pest problems. Improved sanitation and exclusion are two strategies that everyone can do and will have the most impact. For example, sealing sewage pits with tight fitting lids will remove breeding grounds for mosquitoes, cockroaches and flies. Garbage, particular food waste, must be placed in containers with tight fitting lids to avoid food for rodents, flies and other pests.

The typical mindset is to wait for a problem before implementing any type of control. However, thinking about these pests prior to a problem is critical to preventing infestations and avoiding the health and economic impacts.

#### *National Pest Management Association*

The National Pest Management Association held a PestWorld East meeting in Dubai, United Arab Emirates the week of April 10th. I gave two presentations at the meeting. It was an amazing opportunity to interact with pest control professionals from many countries and to understand the challenges they face.

Dr. Ron Harrison (Senior Technical Advisor for Orkin) invited me to visit an Orkin Franchise outside of Abu Dhabi. I was able to meet Engineer Mohamed Mahmood AlMarzouqi, Pest Control Projects Department Director, for the region of Abu Dhabi. He wants to increase training opportunities in his jurisdiction. We discussed the programs we offer at NOMTCB and hope to stay in communication in order to set up formal training.

I also visited an oasis that had an expansive date palm plantations (Fig. 9). Roof rats, *Rattus rattus*, and *Anopheles* mosquitoes were two of the major problems. While on site, Orkin pest control technicians were servicing an account (Fig. 10). It was a unique opportunity and always exciting to learn about pest problems.





Figure 9. A water canal made of concrete within the oasis.



Figure 10. Orkin pest control operators deal with roof rats in the date palm plantations.

# MOSQUITO FIELD OPERATIONS

SARAH MICHAELS, Ph.D.,  
PRINCETON KING & BRENDAN CARTER

We continue to develop and refine our preparedness and response to the Zika virus mosquito vectors *Aedes aegypti* and *Aedes albopictus*, while continuing to conduct surveillance and control measures for the primary West Nile virus mosquito vector, *Culex quinquefasciatus*.

## Zika virus

Zika is a mosquito-borne virus that is primarily transmitted to people through the bite of an infected *Ae. aegypti* (yellow fever mosquito) (Fig. 11) or *Ae. albopictus* (Asian tiger mosquito). The virus is in the family Flaviviridae which also includes dengue, yellow fever and West Nile viruses. Vector mosquitoes utilize artificial water-holding container habitats by laying eggs inside. These eggs are desiccation-resistant and have the ability to survive without water for several months. In warmer temperatures, mosquitoes can develop from an egg to adult in as little as a week. The management of these residential containers include locating and removing, emptying, or treating these environments. This can be something as small as a capful or teaspoon of water. Surveys have shown common residential containers in New Orleans include discarded tires, buckets, coolers, plant saucers, pet dishes, and bird baths. Following an intervention, if habitats are not continuously managed, the mosquito population can rebound in as little as two weeks. These vector species can be active

during the day, but are largely crepuscular (active in the twilight hours of dawn and dusk). NOMTCB encourages residents to wear protective clothing (e.g. long pants and long-sleeve shirts), use EPA-approved, effective mosquito repellants, ensure windows and doors have screens in good repair, and to consider using air conditioning rather than keeping the doors and windows open.

The CDC has continued to issue travel alerts (Level 2 – Practice Enhanced Precautions) for travel to countries where Zika virus epidemics have been reported and suggest that pregnant women should avoid travel to those areas due to the risk the virus poses to developing fetuses. Through the end of April 2017, there have been 5,274 Zika virus disease cases reported in the continental U.S. and 36,574 in U.S. territories, mainly Puerto Rico. In the continental U.S., presumed local mosquito-borne transmission has occurred in Florida (N=218) and Texas (N=6). In Louisiana, there has been no local Zika virus transmission, but there has been 39 confirmed travel cases, 14 of which reside in New Orleans. Much of the southeast, including major cities in Florida, Atlanta, GA and New Orleans are considered high risk for local transmission during the warmer, summer months (July-September), especially in areas with high numbers of *Ae. aegypti* mosquitoes and dense human population.

## Outreach and Education

NOMTCB staff continue to present seminars and webinars on Zika virus and management of vector species to other environmental and public health professionals. These presentations cover basic mosquito biology and identification, best practices for insecticide applications, inspections, habitat reduction and emergency preparedness and response. It is critical to train and engage a wide variety of professionals as management of these species complex and can potentially involve many stakeholders.

In early April, NOMTCB and The Louisiana Mosquito Control Association (LMCA) co-hosted the 5th Annual Mosquito Academy. This curriculum is de-



Figure 11. *Aedes aegypti* (yellow fever mosquito) the primary Zika virus vector. The species is present in the Greater New Orleans area.

signed to cover the components of Integrated Mosquito Management, including surveillance, biological control, chemical control (larviciding and adulticiding) and public education. We are lucky to continue to have Dr. Janet McAllister from the Centers for Disease Control and Prevention (CDC) Ft. Collins as a speaker, as she has is a national resource for Zika response and Mosquito Control. This year, former NOMTCB employee, Andrew Ruiz, who now also has a position with the CDC in Atlanta, presented and led one of the hands-on sessions on larviciding and rate calibration. Local speakers included Dr. Kevin Calliouet from St. Tammany Parish Mosquito Abatement District discussing the application of new technologies to Mosquito Control and Dr. Kristen Healy from Louisiana State University, who discussed the effect of adulticides on non-target species and public education strategies. We again had a full class this year and attendees were from a variety of backgrounds, including students and professionals in industry, mosquito control districts, and other positions in local and state governments.

Later in April, Cynthia Harrison (Entomologist 1), Brendan Carter (Pest Control Specialist 1) and Princeton King (Pest Control Specialist 2) attended the Spring Garden Show in City Park. This event is one of many outreach events for the public. Employees displayed biological mosquito control methods and distributed informational brochures and pamphlets.

## Mosquito Surveillance & Control

### *Culex quinquefasciatus*

Gravid trap collection resumed for the season in March following the arrival of spring temperatures (Fig. 12). A total of 307 pools of *Cx. quinquefasciatus* have been submitted to the Louisiana Animal Disease Diagnostic Laboratory at Louisiana State University in Baton Rouge for arbovirus testing through the end of April 2017. No pools tested positive for West Nile virus, St. Louis encephalitis or Eastern Equine encephalitis.

### *Aedes aegypti* & *Aedes albopictus*

*Aedes aegypti* and *Ae. albopictus* surveillance using the Biogents BG Sentinel® (BGS) has been expanded over the last two years. Locations in New Orleans were limited in 2015 (Fig. 13) and increased in 2016 (Fig. 14). Surveillance has been initiated and additional locations across the city will be added in early summer (Fig. 15). Thirty-three BG Sentinel traps

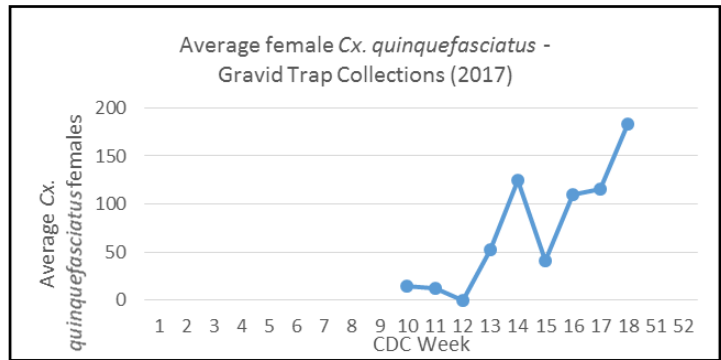


Figure 12 . Average number of female *Culex quinquefasciatus* in gravid trap collections.

were deployed across New Orleans. These traps are routinely deployed each week to conduct surveillance for potential Zika virus vectors *Ae. aegypti* and *Ae. albopictus*. Deployment of BG Sentinel 2 traps began at the end of January 2017 and will continue throughout the year. Currently, four inspectors are dedicated to running the traps each week and six employees are dedicated to sorting, identifying, and tabulating mosquitoes. Field inspectors spend three days a week conducting surveillance and service requests.

Each BG Sentinel trap requires a trained inspector to properly place and set up the mosquito trap. The trap must be placed in shaded or secluded areas with vegetation to effectively catch *Aedes* mosquitoes. Traps are often set in multiple locations across the city. All BG Sentinel traps run on 12 volt batteries and can run for at least 24 hours. Upon collection, each 12-volt battery must be recharged on a battery charger to ensure the trap will function properly.

BG Sentinel traps utilize visual and chemical attractants to lure mosquitoes to the trap. The color difference of the BG Sentinel 2 trap and a scent lure that smells like human sweat attract *Aedes* mosquitoes to the traps. Each lure must be replaced about every 3 months. Traps are labeled with labeling tape and placed in a -20° C freezer. Mosquitoes are then identified to species using a microscope.

Populations remained low through April and additional locations are planned as the season continues. Additional monitoring and collection methods including ovitraps and container assessments will also be employed. Ovitrap are plastic cups lined with seed germination paper to collect eggs that will be



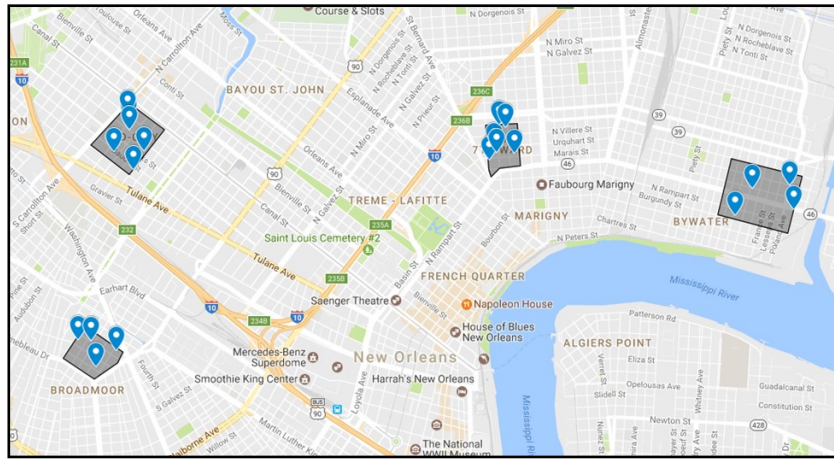


Figure 13. BG Sentinel trap locations in 2015.

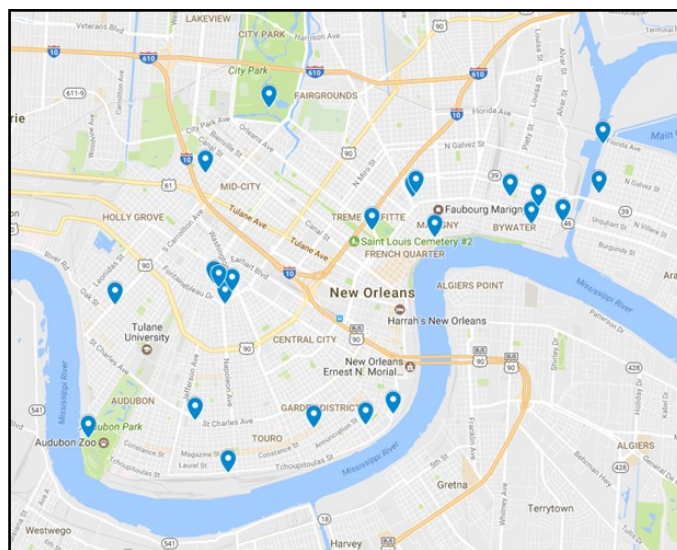


Figure 14. Additional BG Sentinel trap locations were added in 2016. Additional surveillance around Zika virus travel cases is not shown.

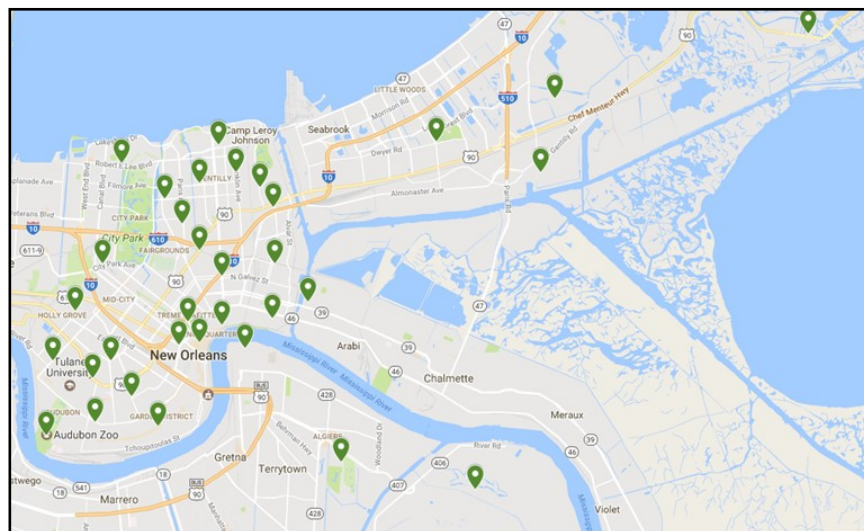


Figure 15. Anticipated trap location for the 2017 mosquito season.

used to test sub-populations for insecticide susceptibility. Container assessments, the evaluation of water-holding containers, and collection of larvae and pupae is currently being employed to collect immature mosquitoes from abandoned waste tire piles.

Starting in the summer of 2017, areas known to have high populations of *Ae. aegypti* will be targeted for more focused BG Sentinel surveillance. These areas include the Midcity, Bywater, Marigny, Broadmoor and Seventh Ward neighborhoods that are some of the more at-risk locations for local transmission.

In addition to routine and focused surveillance, NOMTCB will continue to conduct Zika travel case-related surveillance as we are notified of travel-related Zika cases by the Louisiana Department of Health. Cases are anticipated and the number of traps will be increased as needed.

### Service Requests

The number of service requests in 2017 remained steady (Fig. 16). Many residents continue to be concerned about Zika and standing water near their homes. Through April 2017, 89 service requests were submitted by 311, emails or direct calls to the office. Mosquito control inspectors continue to respond to these requests and educate homeowners on residential mosquito management. Inspectors are to service the request within three business days.

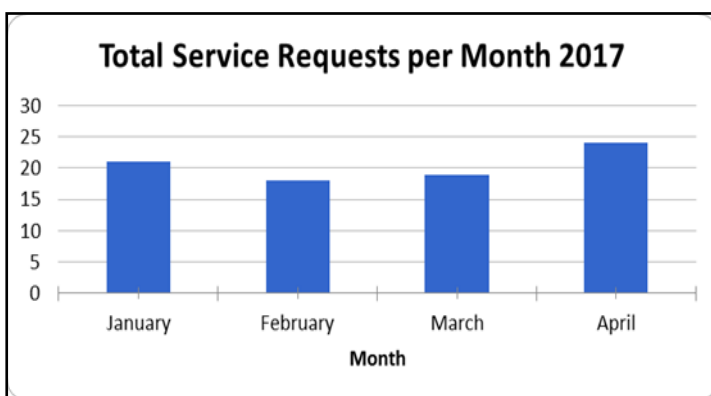


Figure 16. Mosquito service requests received by month in 2017.

The first ground ULV treatments using Fyfanon® (FMC Corporation) (malathion) occurred in April in response to increasing numbers of *Cx. quinquefasciatus* in gravid trap collections. Aerial missions using

Dibrom® (AMVAC) (naled) are expected to resume in May.

### Area-wide larviciding field testing

Since these *Aedes* mosquito species require the effective management of residential containers, many jurisdictions have begun to incorporate area-wide larviciding into their mosquito control programs. This is a similar approach to area-wide adulticiding efforts as equipment can be mounted on vehicles and using ULV or LV (ultra-low volume or low-volume) droplet application methodology. Applications can be made to a large residential area in a single evening. This, in conjunction with adulticide applications, has demonstrated to be an effective tool for rapidly reducing the mosquito population, maintaining low population levels and effectively interrupting Zika virus transmission in south Florida.

Over the cooler months, mosquito control employees began the effort of modifying a Buffalo Turbine CSM/3 Sprayer (Fig. 17) and Curtis-Dynafog LV-8 (Fig. 18). The Buffalo Turbine was designed as an agricultural sprayer, and adaptations were made (details discussed in the Aviation report). A small scale field trial was conducted to determine how effectively small containers could be targeted and to estimate droplet size (Fig. 19). The trial demonstrated variable mortality and additional modifications were made.

In March, both machines were evaluated in multiple field trials. The first trial was conducted in an open field (Fig. 20). Material was applied with a red dye to evaluate droplet density at set distances from the application site (Fig. 21). Bioassay cups collected droplets to evaluate larval mortality. The second trial, using material as typically applied, replicated the open field conditions in an urban neighborhood (Fig. 22). We evaluated distance as well as placement in open and sequestered areas, where mosquitoes typically rest. We were pleased with the results and believe that sufficient data was generated to determine how these tools will be incorporated and deployed. We do plan additional field work for area-wide larviciding technologies throughout the season but we know these machines are ready if a response is needed.





Figure 17. The Buffalo Turbine using dyed material in an open field trial.



Figure 18. The Curtis-Dynafof LV-8 adapted for a mosquito control application, using dyed material in an open field trial.



Figure 19. Open field trial set-up with flag marking location, bio-assay collection cup and card for collecting droplets.



Figure 20. Placing distance markers in an open field in New Orleans East, in preparation for an evaluation of area wide larviciding equipment, March 2017.

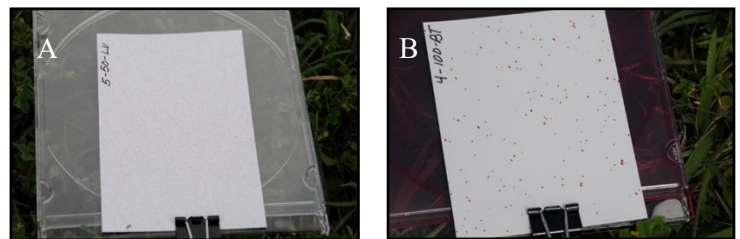


Figure 21. Cards used to collect droplets of dyed (red) larvicide tank mix following the open field trial of the area-wide larviciding equipment.



Figure 22. Area-wide larviciding equipment staging in the Lower 9<sup>th</sup> Ward prior to neighborhood treatment.



## BIOLOGICAL CONTROL

### CYNTHIA HARRISON

The Biocontrol Laboratory (Biolab) is in full operation and will continue with mosquito rearing and copepod and microorganism culturing.

#### *Cleaning*

In January, all cages and rearing trays were removed from the insectary for cleaning and disinfection. The walls were washed, floors were scrubbed, and all wire racks were cleaned. The cages were cleaned with a mild bleach solution and repaired. Rearing trays were cleaned and put back into the insectary.

The Biolab is maintained daily by washing dishes, larvae-pupae separating, and tray setting among other tasks. Andra McClue (part-time Pest Control Inspector) assists with much of the day-to-day work in order to keep the Biolab operational.

#### *Field Collections for maintaining laboratory collections for projects*

Ovicups have been placed throughout New Orleans and egg rafts of *Culex quinquefasciatus* have been collected in order to supplement laboratory colonies to conduct bioassays for industry supported projects and for resistance testing. In addition, these collections will also supplement in-house field trials that are planned later this summer. Typically, the mosquito species of medical importance that are tested include *Aedes albopictus*, *Aedes aegypti*, and *Cx. quinquefasciatus*.

The Biolab personnel provided *Cx. quinquefasciatus* egg rafts and larvae for Kelly Hardison at Carolina Biological laboratory. Mosquitoes were sold to supplement funding to our program.

Monthly runs to the slaughter house located in Kentwood Louisiana to collect blood for colony reproduction is a standard activity. The colonies are fed three times each week. Blood is placed in natural, cleaned sausage casing and placed on top of a cage. A heating pad is used to keep the blood warm. This process is repeated each day for three consecutive days in order to keep the colonies fed so they continue egg production.



Figure 23. Containers were filled with water and larvae one day in advance of the field trail in order to expedite the laboratory portion of the larvicide trial.



Figure 24 . Erin Cloherty and Andra McClue count larvae exposed to cups treated using the Buffalo Turbine and LV8 insect sprayers.

#### *Area-wide larvicide trial*

Large-scale larvicide field trials were conducted in March. Over 10,000 *Ae. aegypti* mosquito larvae were needed and were reared to different larval instars. This took a substantial effort and required extreme organization. Due to the large number of collection cups from the field, water was pre-measured and larvae were pre-counted and placed in containers one day prior to the field study (Fig. 23). Andra McClue, Eric Guidry (Pest Control Specialist 1),

Erin Cloherty (Pest Control Specialist 1), and Carrie Cottone (Principal Research Entomologist) were very helpful in assisting in preparation and evaluation at 24 and 48 hours after larvicide exposure (Fig. 24).

#### *Mosquito identification*

Gravid, light, and CDC trap identification is done on a weekly basis along with data entry. The field inspectors set out the traps on Monday afternoon at predetermined locations and are collected on Tuesday mornings. A team effort is needed to identify the mosquitoes each week. Brendan Carter (Pest Control Specialist 1) tabulates the information and plots the results for evaluation and abatement decisions.

As we continue to increase the number of traps throughout Orleans Parish, additional people with the ability to identify mosquitoes are needed. Carrie Cottone has provided additional people to learn mosquito identification. Eric Guidy and Shaun Broadley (Pest Control Inspector 2) fill in when needed. Additional training is required and I will continue to hold hands-on sessions until they become proficient (Fig. 25). In addition, training continues for larvae identification along with bottle bioassay resistance testing.



Figure 25. Mosquito identification training sessions were held in order to increase the number of people that can assist with weekly mosquito identification.

This year, *Ae. japonicus*, *Ae. triseriatus* and *Ochlerotatus fulvus pallens* were collected. These species have been previously reported but are not rou-

tinely collected. Of interest, *Ae. japonicas* was collected by Dr. Tamer Ahmed (Pest Control Inspector) as larvae from a tire pile in New Orleans East. Additional traps will be placed in the same area to try to collect additional specimens.

#### *Mosquito Outreach*

The Mosquito Academy wrapped up in April and was well received by those in attendance.

The display of mosquitofish and turtles are always successful at outreach events. Our fish and turtles are requested to show their lovely talents and skills at educational shows and public events. Thousands of *Ae. aegypti* and *Toxorhynchites* larvae were reared for school education, public, and corporate shows. The City Park Garden Show and Univar Crawfish Boil are just some of the places where we are asked to attend.

#### *Biological control*

We are continuing to write and edit an in-house manual for mosquito and copepod rearing. The lab also provided mosquitofish for 10 abandoned swimming pools and ponds for homeowners. We hope to continue working as a beneficial organization in the community for the rest of the year.

## AVIATION ED FOSTER

Taking what we learned from the initial field trial (Fig. 26), we designed and constructed a new chemical atomizing system and made some additional modifications to the machine.

Subsequent to these efforts, another type of a machine had been purchased for applying larvicides and this machine also required modification for the intended purpose (Fig. 27). We worked with the manufacturer and our staff to carry out these modifications and install the unit in one of our trucks.

Having made these modifications (Fig. 28) and installing the machines, it was now time to test and validate them. The team devised a test plan for conducting multiple field trials using both machines. The goal was to generate sufficient data for use in making decisions on how to best incorporate and deploy the new equipment.

In mid March, we conducted the planned field testing and were pleased with the results. The data indicated that we had improved upon the efficacy of our initial trial and overall, the effort was a great learning experience.

Concurrent with all of this activity, aircraft and spray system maintenance was ongoing and progressing towards completion. We expect to have everything completed and ready to conduct spray flights in early May.



Figure 27. The Curtis-Dynafof LV-8 was adapted for mosquito control.



Figure 28. The Buffalo Turbine CSM/3 was adapted for mosquito control.



Figure 26. The Buffalo Turbine CSM/3 with the factory configuration.



# RODENT CONTROL OPERATIONS

## JOYCE BROWN AND ANGELO ANDERSON

### Rodent Service Requests

NOMTCB inspectors continue to service residential calls for citizens who have observed rodent activity. Inspectors provided fact sheets to residents regarding how to pest proof their homes and took the time to educate them about rodent control. Table 1 summarizes the service requests from January through the end of April. A total of 201 service requests were received by 311, email or direct calls to the office. We service all requests within three business days.

Month	Inspection	Re-inspection	Total
January	57	3	60
February	34	3	37
March	65	6	71
April	45		

Table 1. Rodent service requests received in January through April 2017.

### French Quarter: Storm Drains Treatment

On February 15, NOMTCB inspectors treated 379 storm drains in the French Quarter using 2,274 bait blocks (WeatherBlox XT, Syngenta, Basel, Switzerland). A re-inspection was performed and an average of 40% consumption was observed (Fig. 29). Another treatment will be performed in June.

The French Quarter has many commercial businesses, restaurants, and residences in a relatively small area. The commercial areas of the French Quarter are of particular concern due to the high volume of trash and food waste. Norway rats utilize the storm drains as harborage and can move underground through broken pipes.

### Special Assignments:

#### *Margaret Place/Underpass*

We continue to inspect and treat the burrows and storm drains at Margaret Place and under the overpass located at Camp St./Clio St./St. Charles Ave. Burrows are treated occasionally and are inspected as needed. There are several challenges inspectors encounter during these treatments. The area has available food, trash and debris that hinder our efforts.



Figure 29. Measuring bait consumption in treated storm drains.

Some greenspace need to be trimmed so that the rodent hiding places can be removed.

#### *Duncan Plaza*

Inspectors continue to treat rodent burrows and storm drains around Duncan Plaza, New Orleans Public Library, and Lee Circle. The rodent problems continue because of humanitarian efforts to supply daily free meals in the park (Fig. 30), the presence of dog feces, and open garbage cans.

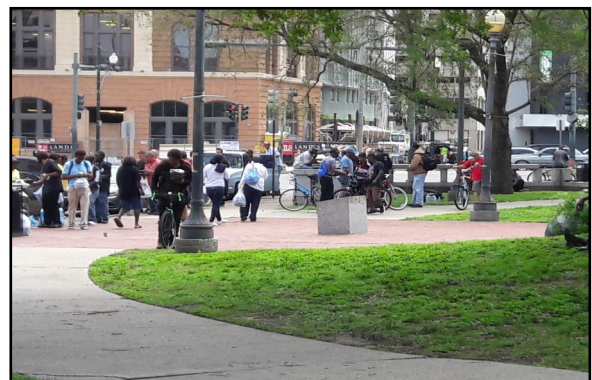


Figure 30. Free meals are distributed daily in Duncan Plaza.

#### *Other Sites*

There are several sites in the city where we continue to inspect and treat because of the ongoing available food, water, harborage, and places for these animals to hide (Fig. 31). Because of the on going treatments, follow up inspections are regularly performed. Sites included Bienville Triangle, commercial proper-

ties, and many city-owned properties. Cooperation is needed from all departments in order to get effectively remediate the rodent problems.

### *World War II Museum Inspection*

NOMTCB inspectors serviced parts of the Warehouse district and baited the drains around the World War II Museum. Rodent burrows were observed in the tree beds on both corners of Magazine St. and Andrew Higgins St. There were open trash cans and a dumpster on Magazine St. that contributed to the rodent activity in the tree beds located in the sidewalks.

I spoke with the building manager and explained to him about the importance of pest exclusion. The closed trash cans (Big Belly) that will be provided by the City of New Orleans Sanitation Department will remove the available food source. Without a constant food source, the rodent colony will likely not survive. The new garbage cans will be placed at the corner of Magazine St. and Andrew Higgins St.



Figure 31. Open dumpster (A) and vacant lot (B) that has created harborage for rodents.

# RODENT CONTROL AND WILDLIFE SPECIAL PROJECTS

**FRIEDERIKE BAUDER, ERIN CLOHERTY, TIMMY MADERE AND  
PHILIP L. SMITH**

## Operational Rodent Research

NOMTCB continues to conduct field trials as part of research agreements made with collaborators in the private industry. This year, Friederike Bauder (Pest Control Inspector 3) and Philip L. Smith (Pest Control Inspector 4) (Fig. 32) are continuing studies with Dr. Joe DeMark (Dow AgroSciences), Ted Bruesch, (Liphatech Inc.) and Simone Jeans (Bell Labs), which are now in the final stages of completion.



Figure 32. Philip L. Smith collecting camera data for an industry sponsored field trial.

## City Facility Pest Control

NOMTCB is implementing IPM practices into all of our city facilities. However, it will take a joint effort with all departments and changing our old cultural practices to achieve this goal. As we move into 2017, we are hoping to see some of the positive outcomes of solid IPM practices, particularly with regards to the ongoing rodent problems in the downtown area and French Quarter.

Mr. Ed Freytag (Research Entomologist) has recently taken over the city facility pest control posi-

tion, and is currently reaching out to the different city department heads in an attempt to coordinate our efforts addressing the recent surge in rodent activity in the downtown area. Mr. Timothy Madere, (Pest Control Specialist 1), has proven to be an invaluable resource. A ten year veteran of rodent work for NOMTCB, Timmy's knowledge of rodent behavior has greatly assisted the progression of new and innovative ways to solve these problems. These solutions, however, will only work if everyone works together.

## Industry-Supported Mosquito and Wildlife Projects

This year, Erin Cloherty (Pest Control Specialist 1) started a couple of new projects. In addition, she is finishing projects from previous years.

Protocols were written for a mechanical insecticide study to be conducted in Honduras in collaboration with Imerys. This is a continuation of a project that she led from the fall of 2016. Imerys wanted to expand their product testing internationally and NOMTCB has been able to accommodate them with our own international connections with the Honduran Ministry of Health and NGO collaborators, Operation Blessing International. Together we hope to better control adult *Aedes aegypti* mosquitoes to prevent the transmission of arboviruses.

In March, Erin visited Honduras for the mechanical insecticide study to select test sites. She was accompanied by the David Stewart (Imerys) and Hilda Romero (Operation Blessing). She will be returning to commence baseline surveillance and application of the Imerys product at the end of May.

Erin is responsible for many company-sponsored research projects that span multiple disciplines. She has written protocols for a larvicide trials with *Aedes* spp. as well as *Anopheles* mosquitoes. The *Anopheles* trial is in collaboration with CSI Solutions and Dr. Dawn Wesson at Tulane University School of Public Health.



This year, she continued mosquito surveillance in New Orleans cemeteries for *Ae. aegypti* and *Ae. albopictus* for a larvicide study using a novel delivery method. This project was done in collaboration with Dr. Phil Koehler (University of Florida) and is expected to continue until December of this year.

Raccoon trapping (Fig. 33) has entered into its second year. This project is in collaboration with Louisiana State University with the goal to better understand the prevalence of the raccoon roundworm, *Baylisascaris procyonis* (Fig. 34). Seventy-five raccoons are needed for the project. Fifteen more raccoons are needed and trapping is expected to be completed by the end of August.



Figure 33. Raccoons are trapped at residential, commercial, and city owned properties in Orleans Parish.



Figure 34. *Baylisascaris procyonis* adults collected from a raccoon collected in New Orleans.

In April, the ASPCA conducted an outreach event at our Administration building (Fig. 35). This was a unique opportunity to partner with the ASPCA. Erin Cloherty helped organize the event and ran the Zika Prevention Outreach booth (Fig. 36) at the “It’s Hip to Microchip” program sponsored by Entergy. This program vaccinated and microchipped more than 340 dogs from the Gentilly and Algiers neighborhoods. The outreach event was incredibly successful and we anticipate future events with the ASPCA.



Figure 35 . Orleans residents and their dogs outside waiting for treatment.



Figure 36. Information booths held at the It’s Hip to Microchip event held at the Administration building.

# PHOTOGRAPHY, TERMITE INSPECTIONS AND TREATMENTS, AND CITY FACILITIES PEST MANAGEMENT ED FREYTAG

## Photography

Every year PCT (Pest Control Technology) magazine has a photo contest and they only allow one entry per person. I have been submitting pictures every year and usually my entry makes the top ten (honorable mention), though I have won the contest once in the past. Last year, I submitted a picture of an acorn weevil that I shot while in a meeting in Stockbridge, Missouri. I got a call in February from Brad Harbison of PCT magazine announcing that my image had been selected as the best submission (Fig. 37). Winning this contest is always a great accomplishment personally and great advertisement for our department.



Figure 37. Caption from PCT Magazine: **PCT Announces Winner of 15th Annual Photo Contest.** Ed Freytag, senior entomologist at the New Orleans Mosquito, Termite and Rodent Control Board, wins PCT's annual contest with a beautiful photo he submitted of an acorn weevil.

Jack Leonard (retired, Pest Control Specialist 3) periodically updates the Mosquito Control portion of the city website which typically includes announcements such as the Termite, Mosquito and Pest Control Academies, seminars and special events. He has made a copy of the entire picture database and converted all the images to a 800 x 600 pixel resolution so that the images can be uploaded to the website. We also wish to use the website to display selected

pictures for sale, but the limited access to the website does not allow him to use the needed features and it will probably have to be done in conjunction with the city web administrators.

Jack has been testing various free software programs available on the web for editing pictures and videos. Most of the programs available are very expensive and difficult to learn. We are currently using LightZone, IRfanview and Gimp for editing images. Both work extremely well, offer lots of flexibility and are great alternative for Adobe Photoshop. For video editing, he found Blender and Light Works, and for a small monthly rental fee, we can get more robust versions of these free ones.

Last year, we purchased three FLIR ONE IR cameras that attach to Android smart phone (Fig. 38). They are very convenient to transport and easy to use, and the program for enhancing the images work great (Fig. 39). We are currently using the FLIR software to write the infrared reports, converting the final report to a PDF format, and merging it with the PDF versions of the maps and written sections (PowerPoint and Word, respectively).



Figure 38. Camera side of the FLIR ONE infrared camera attached to a smartphone.



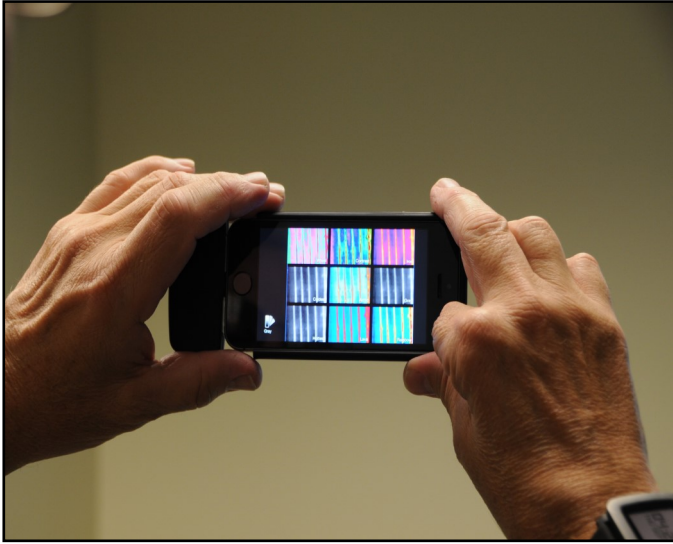


Figure 39. FLIR ONE camera attached to a smartphone, showing studs with different color palettes.

We were going to shoot videos while training new personnel on how to inspect and treat a tree infested with Formosan subterranean termites using a liquid termiticide injected as a foam application. Unfortunately, the foaming machine sprung a leak and we were not able to repair it in the field. We are hoping to proceed with the video shoot once the foaming machine is repaired.

Other notable photographic and video assignments included both the Termite and Mosquito Academy during the lecture, lab, and field sessions, a walk-through inspection of the VA hospital downtown (exterior and interior), larviciding trials with truck mounted equipment (open field and sequestered areas in a neighborhood), the installation of the emergency generator on the new administration building inspection of the roof of the new building, growth of mold behind book shelves and pictures in the offices of the new administration building (Fig. 40), and one single collection of *Aedes japonicus*, a seldom seen and collected mosquito species in our area (Fig. 41).

### Infrared (IR) Inspections

A total of five infrared inspections have been conducted from January to April. Most of the infrared camera inspection requests have been from homeowners concerned with either moisture problems or with trust issues with their current pest control com-



Figure 40. Mold growth behind a book shelf in an office of the new administration building.



Figure 41. Sample of *Ae. japonicus* collected in the field, frozen, and photographed in the lab using the stacking technique to obtain a completely focused image.

pany. All the structures inspected had been treated with a liquid termiticide, and the biggest issue was with reinfestation of Formosan subterranean termites after spot treatments.

### Inspections and Treatments

We conducted the annual termite inspections of the historical buildings at Federal City in January. Although the buildings had the Sentricon termite bait system (Dow AgroSciences, Indianapolis, IN) installed around the perimeter for several years now, a few buildings still have aerial pockets of live Formosan subterranean termite colonies. Building 4, a large two story building with 43,332 square feet, had an active termite colony in the floor of the second floor



in the northwest side of the building. Two above-ground stations (AGs) had been installed last year but none had been fed on.

During the inspection we found additional termite activity so the AGs were moved and installed on flooring with live termites. A follow up inspection in April revealed that the termites had fed on almost 100% of the bait from both AGs and no live termites could be found in that area. We also treated building 104 on Constitution St., Federal City, with two AGs placed on the wooden floor of the porch on the south side of the building. On a follow-up inspection two months later we found the bait matrix completely consumed (Fig. 42), but there were still live termites. Additional bait was added to make sure the whole colony was eliminated. Although we have eliminated the termite activity in many of the buildings in the Federal City complex, they are still deteriorating from neglect and extreme moisture and fungal issues due to roof leaks.



Figure 42. The bait of Sentricon Above Ground stations at 104 Constitution, Federal City, completely consumed by Formosan subterranean termites.

The old coroner's office located on the west side of the Orleans Parish Criminal District Court is undergoing extensive renovations and the construction crew found live Formosan subterranean termites in the flooring area by the air conditioner unit. Two AG stations were installed over the active termites on the floor in October of 2016 and were moved to a more effective location due to lack of feeding in early 2017. Meanwhile the construction company has been complaining that we are delaying the construction

process because they can not install the air conditioning unit. Fortunately we convinced the architects that it's imperative to eliminate the colony before the construction continues or else they will be tearing up the offices within a few years when they find that the termites damaged all the new work. Both AGs still had lots of termites feeding on the bait matrix so until the activity ceases completely, we are not going to let the construction disrupt the baiting process. Elimination of the colony is expected in May.

The elimination of the Formosan subterranean colonies on these three buildings demonstrate the importance of employing above ground baits when the termite colony is aerial and not connected to the soil.

### City Facilities Pest Management

City facilities are constantly being invaded by insects, specifically roaches, ants, flies, wasps, beetles, termites, silverfish, springtails, fleas and other occasional invaders (e.g. spiders, caterpillars) throughout the year, but mostly in the spring and summer. Mice and rats are also a cause for alarm for employees in any City facility, as they can cause not only panic, but damage and contamination. The New Orleans Mosquito, Termite and Rodent Control Board oversees the management of all the pests in hundreds of city facilities, but it's a daunting and challenging undertaking. Old buildings have construction issues that provide unseen entry points for rodents and insects, and are not always easy to correct. Our management approach is IPM, or integrated pest management, relying on exclusion, sanitation, prevention and education, and using pesticides in conjunction with or as a last resort.

City Hall is currently experiencing a rodent infestation on the outside perimeter of the building. Rodent burrows are visible on the front of the building, the west side (City Council parking), and in the back around the large trash container and HVAC unit (Fig. 43). Many employees and the maintenance personnel have called our office because of sightings of rats during the day and night. We have installed 37 bait stations around the building where the burrows are concentrated and we have been baiting them but with no apparent effect on the population. Initially we baited with three types of bait; Maki, Generation Blue Max, and WeatherBlox, to determine which bait was more palatable. After the first bait inspection, it



Figure 43. Large rat burrow with fresh excavated soil located behind City Hall.

was determined that the rats preferred Generation Blue Max, so the bait stations were loaded only with that bait. We have observed dead juvenile Norway rats and flies coming from the burrows, but it appears that the mature reproductive rats are either not feeding on the bait, or are not being impacted. We have been taking bait consumption assessments since early February to determine if the rats are consuming the bait. Based on the data gathered so far, we can deduce that the rats were slow to initiate consumption (13.8% consumption), followed by a peak of consumption in early April (72.1% consumption), and then the feeding slowed (18.8% consumption). It is important to note that the bait consumption is somewhat skewed for two reasons: 1) we were not able to read bait consumption in March and 2) slugs, earwigs, ants and other organisms are also eating the bait. The slugs got so bad (one bait station contained over fifty slugs) that we had to get slug bait just to protect the rodent bait.

There are many factors that are contributing to the lack of bait consumption at City Hall. The dumpster located in the back is not designed to prevent rat entry, so the contents (which include food and paper) are always accessible to the rats. There are several organizations and churches that provide free daily lunches at a distribution site in Duncan Plaza immediately adjacent to City Hall. From what we have noticed, the people can take as many food plates as they can carry. A lot of the food is wasted and ends up in

the open trash cans or in the bushes. As long as the rats have an abundance of available food, it will be a challenge to have them feed consistently on the rodenticides that are provided.

City Hall is being baited on a weekly basis, along with Duncan Plaza (10 bait stations) and the main public library (26 bait stations). The public library had similar consumption rates as that of City Hall. Some of the bait consumption at the main library is being affected by the slugs, so slug bait was applied inside the stations to reduce the slug population. Slugs, ants and cockroaches are commonly found in bait stations and bait consumption by these organisms produce a different feeding pattern and is easily recognizable.

## **TERMITE CONTROL DIVISION**

### **CARRIE COTTONE, Ph.D.**

This year, we are very excited about some upcoming opportunities for our team. We are working more with other departments to be further cross-trained. We have also had the unique opportunity to assist the city of Mobile, AL to initiate area-wide treatment for Formosan subterranean termites to protect their historic buildings. We will also be expanding our laboratory capabilities as well as our capacity to protect city trees against termite damage.

The following are the proposed goals of our Termite Control Division for 2017:

1. Gain knowledge of termite biology through research projects
2. Protect properties and trees from termite damage
3. Provide high-quality services
4. Continue extension services

The following pages detail how we are achieving these goals.

### **Termite Research Projects**

#### *Industry-Supported Research*

NOMTCB continues to conduct field research and laboratory bioassays as part of agreements made with collaborators in the private industry and universities. So far this year, we have met with Dr. Joe DeMark (Dow AgroSciences), Dr. Kyle Jordan (BASF), Mr. Chris Barber (Timber Products Inspection), and Dr. Phil Koehler (University of Florida) with whom we are working with in conjunction with Polyguard and FMC. We are still collaborating with Drs. Bob Davis and James Austin (BASF), Mr. Glenn Larkin (Michigan Technological University), and Mr. Bill Abbott (Copper Care).

These collaborations involve testing products both in the laboratory and in the field against termites. Some projects are completed within a few weeks, while others are to take place over a period of five years. Many of these studies involve testing the efficacy of new bait and liquid termiticide formulations against Formosan subterranean termites. We also test novel

wood preservative materials and methods against termite attack.

Mr. Barry Yokum (Entomologist 1) continues to do a great job managing multiple field sites and data for Dow AgroSciences and BASF. Mr. Timmy Madere (Pest Control Specialist 1) has done an excellent job coordinating all the field research and logistics for Timber Products and Michigan Technological University.

#### *Alate Trapping*

We have made plans to continue the monitoring of Formosan subterranean termite alates (swarmers) in the French Quarter and Jackson Barracks from April through July this year during the termite swarm season. We have installed 35 alate traps in the French Quarter and 15 within Jackson Barracks. These traps consist of glue boards mounted on plastic clipboards, which are both encased and protected by a wire mesh cage. This cage protects birds from becoming stuck to the glue boards if they attempt to eat termites that have been trapped. These traps are all anchored to street lights, as swarmers fly at night and are attracted to lights. These traps are checked for termites and replaced twice a week. Mr. Frank DiGiovanni (Pest Control Inspector 4), Mr. Shaun Broadly (Pest Control Inspector 2), Mr. Barry Lyons (Pest Control Specialist 1), Mr. Steve Ollar (Pest Control Inspector 3), and Mr. Eric Guidry (Pest Control Specialist 1) have really done a great job installing, maintaining, repairing, and checking all alate traps on schedule.

So far, a total of only 28 alates have been captured on these traps in the French Quarter and 493 have been captured at Jackson Barracks. We expect that swarming will increase through May and June, and then taper off around the end of July. The full data from this trapping for the year will be given in subsequent reports.

In addition to conducting our own monitoring of alates in New Orleans, we have also been assisting Ms. Erin Harlow (University of Florida/IFAS, Jack-



sonville) with launching a program to monitor alates in Jacksonville, FL. The program which she is managing is to be similar to ours, as it is based on our methodology, but much more extensive in areas covered. We are very excited to work with her on this project.

## Protecting Properties and Trees

### *Annual Inspections*

We are still protecting historically significant and city-owned properties by installing and servicing Sentricon® Recruit HD Always Active bait around structures and trees. Steve Ollar has done an excellent job managing the data for these sites within the software system, PestPac. Steve, Barry Lyons, Shaun, and Eric have done a great job keeping up with all the annual inspections, servicing all in-ground stations at our protected sites, and maintaining these sites year round. Table 2 is a summary of all inspections our group has completed so far this year.

### *Tree Treatments*

We are very excited to be able to expand our capacity of treating trees on city greenspaces and parks this year. Through an agreement between the city and the

United States Department of Agriculture (USDA), we have received several pallets of liquid termiticide, foaming agent, and tree plugs to perform foam injection treatments for termite-infested trees. This method of treating trees involves first drilling the tree in several areas to locate a hollow cavity if the tree is infested. Then, a dilute solution of liquid termiticide is mixed with a foaming agent in a foaming machine. Foam is then injected within hollow cavities of infested trees, which kills termites on contact and leaves a residual termiticide to protect the tree from further damage (Figs. 44-45). Mr. Ed Freytag (Research Entomologist) has begun conducting training exercises for our group (Fig. 45). We are working with Parks and Parkways and City Park to prioritize which trees should be treated first. Our goal is to treat 50 trees this year.

## Providing High-Quality Services

### *PestPac Reporting*

All data collected from inspecting in-ground bait stations located at city facilities, historic sites, and commercial sites is logged and stored within PestPac software. This system also keeps track of whether sites are inspected on time and if all stations at each site are serviced during each inspection interval. Current-

Table 2. Termite inspections of protected properties from January through April, 2017.

Site	Location	Month Inspected	Observations
City Park Trees	City Park	January-April	3 trees showed new feeding on termite bait, though no live termites were observed
Jackson Barracks	6400 St. Claude Ave.	January-March	Evidence of new feeding on bait, though no live termites were observed
Parks & Parkways B	2829 Gentilly Blvd.	January	No new termite activity detected
Festival	City Park	January	No new termite activity detected
Decatur Fire Station	317 Decatur St.	January	Evidence of new feeding on bait, though no live termites were observed
Scout Island	City Park	January	Evidence of new feeding on bait, though no live termites were observed
City Putt	City Park	February	Evidence of new feeding on bait, though no live termites were observed
Algiers Point Library	725 Pelican Ave.	March	Evidence of new feeding on bait, though no live termites were observed
Latter Library	5120 St. Charles Ave.	March	No new termite activity detected
Fire Station #18	778 Harrison Ave.	March	No new termite activity detected
New Orleans Courthouse	2700 Tulane Ave.	April	Evidence of new feeding on bait, though no live termites were observed
Kidland	City Park	April	Evidence of new feeding on bait, though no live termites were observed
Parker's Café	City Park	April	Evidence of new feeding on bait, though no live termites were observed
Federal City	2500 General Meyer Ave.	April	Evidence of new feeding on bait, though no live termites were observed



Figure 44. Tree being treated with an injection of foam and liquid termiticide to protect it from further termite damage.



Figure 45. Ed Freytag gives a demonstration of the proper method of drilling a tree to confirm a termite infestation before treating it with a foam injection.

ly, none of our sites are past due and all site checks are complete.

## Extension Services

### *Termite Academy*

Our annual Termite Academy was held from March 7-9 and was a great success. It was well-received by all the attendees and our guest speakers expressed that they were also impressed with our Academy and are willing to return for future academies. Guest speakers for this year's academy included Mr. Aaron Mullins (University of Florida), Mr. Milton Scheis- mann (Louisiana Department of Agriculture and Forestry), Mr. Ernie Esteve (Billiot Pest Control),



Figure 46. Dr. Bob Davis discusses best practices when performing a post-construction liquid termiticide barrier treatment for a house.



Figure 47. Timmy Madere demonstrates best practices for a liquid perimeter termite treatment when rodding.

Mr. William Robinson (Train2Build), and Dr. Bob Davis (BASF) (Fig. 46).

Members of NOMTCB presenting at the academy included Dr. Carrie Cottone (Principal Research Entomologist), Mr. Eric Guidry (Pest Control Specialist 1), Mr. Ed Freytag (Research Entomologist), and Mr. Timmy Madere (Pest Control Specialist 1). Mr. Perry Ponseti (Pest Control Specialist 3) and Mr. Steve Ol- lar (Pest Control Inspector 3) did a great job with pre- paring the training room and all meals and refresh- ments. Steve, Timmy, Perry, and Milton Schleismann all worked together to set up the outdoor hands-on portion of the Academy (Fig. 47). Eric did another

fantastic job at setting up and instructing during the laboratory portion, and Ms. Jennifer Hamilton (Pest Control Specialist 2), Ms. Soloma Condall (Pest Control Inspector 3), and Mrs. Abbey Poyadou (Pest Control Inspector 2) were all essential in registration, logistics, and overall organization of the Academy.

### Area-Wide Termite Treatment in Mobile, AL

This year, NOMTCB has enjoyed the unique opportunity to assist the city of Mobile, AL to protect some of their historic buildings from Formosan subterranean termites. Unlike the city of New Orleans, Mobile does not have a designated city agency that handles termite control for city-owned buildings. Instead, they have been contracting the work using different pest control companies. A lack of communication between these companies, as well as a combination of barrier treatments and spot treatments have hindered efforts to reduce overall termite populations.

Dr. Carrie Cottone (Principal Research Entomologist) and Mr. Ed Freytag (Research Entomologist) have met with city of Mobile officials, the local pest control company in Mobile, Lewis Pest Control, who have been hired to begin baiting termites within one block of historic Mobile, and BASF, whom have agreed to donate their bait product. While on site, we toured one block of historic buildings which are now museums (Fig. 48) and observed plenty of termite damage within the buildings (Fig. 49).

It was our recommendation that the city of Mobile, AL switch from liquid treatments to protect their historic buildings to using only bait products as we have done in New Orleans. This would affect entire colonies, thus reducing the overall termite population in



Figure 48. Tour of historic buildings in Mobile, AL that have suffered termite damage.



Figure 49 . Termite damage around a window frame in a museum in Mobile, AL.

the city over time. We will be returning to Mobile throughout the year to assist them with installing bait, data collection, and follow-up inspections.

### Insect Identification

One of the services we still provide is to identify insects brought to us by members of the pest control industry as well as members of the general public. Mr. Eric Guidry is an expert at insect identification and responds to all insect identification queries within two days.



## *Extension, Technology Transfer and Education*

### **Presentations**

Michaels, S. January 25, 2017. Zika: New Orleans Public Health Response. Tulane University, New Orleans, LA. Webinar.

Freytag, E. March 2, 2017. Biology and habits of the Formosan subterranean termite- Case studies in termite colony foraging and migration. New England Pest Management Association Spring Training Seminar and Expo. Boston-Woburn, Massachusetts.

Cottone, C. March 7, 2017. Subterranean and dry-wood termite biology and control. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Freytag, E and C.J. Leonard, March 7, 2017. Inspections and inspection tools. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Guidry, E. March 7, 2017. Introduction to entomology. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Guidry, E. March 7, 2017. General pest: wood-destroying organisms. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Guidry, E. March 7-9, 2017. Termite and wood-destroying organism identification laboratory. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Madere, T. March 7, 2017. Rodent biology and control. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Freytag, E. March 8, 2017. Tree treatments. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Freytag, E. March 8, 2017. Post-construction treatments—baits. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Cottone, C. March 9, 2017. The label. GNOPCA & NOMTCB Termite Academy. New Orleans, LA.

Michaels, S. March 15, 2017. Zika virus & other vector-borne diseases in the U.S. National Park Service, Environmental Health Staff. Webinar.

Madere, T. March 21, 2017. Rodent biology and control. Louisiana Department of Agriculture and Forestry 7D technicians recertification. Alexandria, LA.

Freytag, E. March 23, 2017. Termite biology. GNOPCA & NOMTCB Structural pest control technician recertification. New Orleans, LA.

Freytag, E. March 30, 2017. Backyard mosquito control. New York Pest Management Association Spring Fling 2017. Howard Beach, New York.

Guidry, E. April 4, 2017. Mosquito identification laboratory (adult and larvae). NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Harrison, C. April 4, 2017. Microscope instruction and identification laboratory. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Michaels, S. April 4, 2017. Bionomics and recognition of important species. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Michaels, S. and B. Carter. April 4, 2017. Mosquito surveillance. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Guidry, E. April 5, 2017. Hands-on training of additional mosquito identification. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Harrison, C. and B. Carter. April 5, 2017. Biological control. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Harrison, C. April 5, 2017. Resistance monitoring and bottle bioassay demonstration. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Madere, T. April 5, 2017. Backyard mosquito inspections and treatments. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

Michaels, S. and S. Babcock. April 6, 2017. Public health inspections and code and enforcement. NOMTCB & LMCA Mosquito Academy. New Orleans, LA.

### Meetings

Michaels, S. Monthly. Municipal Separate Storm Sewer System (MS4) city permit with partner city agencies and Sewerage and Water Board.

Michaels, S. February 6, 2017. LEPC Schools & Universities Quarterly Meeting. Conference Call.

King, P. and B. Carter. February 13-17, 2017. American Mosquito Control Association. San Diego, CA.

Michaels, S. February 29, 2016. EPA/ UWFP Water Quality Monitoring Stakeholders Meeting. New Orleans, LA.

Michaels, S. and B. Carter. March 15, 2017. Zika Response Tabletop Exercise. New Orleans, LA.  
Cottone, C. and E. Freytag. March 21, 2017. Area-wide termite treatment for Mobile, AL meeting. Mobile, AL.

Cottone, C. April 20, 2017. Station placement for area-wide termite treatment for Mobile, AL meeting. Mobile, AL.

Michaels, S. and B. Carter. April 23, 2017. Urban Waters Coordination Meeting.

### Education & Extension

Michaels, S., C. Harrison, and B. Carter. January 30, 2017. New Orleans Mosquito Control Board. Tulane University, Dr. Dawn Wesson's graduate Medical Entomology class. New Orleans, LA.

Michaels, S. and C. Harrison. February 4, 2017. Resilience District Event. Arthur Ashe Charter School, New Orleans, LA.

Cottone, C. March 10, 2017. Career day at Mandeville Middle School. Mandeville, LA.

Michaels, S. and C. Harrison. March 21-23, 2017. American Mosquito Control Association – Integrated Mosquito Management Master Trainer Certification. Mt. Laurel, NJ.

Carter, B. March 23, 2017. Walk + Learn -- A Visit to the Broad Street Rain Garden & SWBNO Pump Station. New Orleans, LA.

Brown, J., C. Harrison, P. King, and B. Carter. April 7-9, 2017. City Park Garden Show. New Orleans, LA. (Fig. 50).



Figure 50 . Princeton King and Brendan Carter at the City Park Garden Show.

Harrison, C. and J. Brown. April 10, 2017. Univar Crawfish Boil. Harahan, LA.

Carter, B., and J. Brown. April 28, 2017. Annual Environment Awareness, International Day. Benjamin Franklin Elementary School. New Orleans, LA. (Fig. 51).



Figure 51A, B . Brendan Carter and Joyce Brown answer students' questions at the Benjamin Franklin Elementary Environmental Awareness Day.

### **Recertification**

This March, we hosted a technician's recertification put on by the Greater New Orleans Pest Control Association. It was well attended by approximately 100 pest control technicians. NOMTCB employees speaking at this event included Dr. Claudia Riegel, Ed Freytag, Eric Guidry, and Timmy Madere. Our group continuously wants to engage our audience using different means (Fig. 52). This year for the recertification, we included a quiz game in which members of the audience could participate as a team to answer questions pertaining to general entomology, pest control, and safety. This was met with much enthusiasm from the audience and helped us fulfill the presentation requirements for the recertification.



Figure 52. NOMTCB started incorporating games shows in the training session to add fun while still learning the subject matter.

### **Publications**

Austin, D. and T. Madere. February 2017. Why is rodent tracking so important? PCT Magazine.

Barker, C., R. Connelly, J. Conlon, M. Debboun, A. Faraji, K. Fujioka, C. Lesser, S. Michaels, K. Smith, G. White and I. Unlu. Best Management Practices for Integrated Mosquito Management. 2017. American Mosquito Control Association. <http://www.mosquito.org/>

### **Peer-reviewed Publications**

Cottone, C. and N.-Y. Su. 2017. Survival of Formosan subterranean termites during periods of flooding. *In* Climate Change: Effects on Urban Pests. CAB International Climate Change Series 10, Boston, MA. Partho Dhang (ed.) 65-79.



**New Orleans Mosquito Control Board**  
**Tornado Disaster Response**  
*Week of February 7 – 10, 2017*

The tornado occurred on February 7, 2017 and caused a devastating path of destruction in parts of New Orleans. The Biolab was close to the path of the tornado but did not sustain damage. Summary of activities after the tornado are documented.

*February 7, 2017*

Cynthia Harrison (Entomologist 1) and Audubon Institute employees sheltered in place at the New Orleans Biological Control Facility (Biolab) during the storm. Power was lost at the Biolab located at 13200B Old Gentilly Road. The facility was inspected for damage, water leaks and other adverse conditions by Joe Robert (Pest Control Inspector 2) and Ed Freytag (Research Entomologist), and the items in the building were secured by Cynthia Harrison. Equipment, freezer and fridge-stored items, and live organisms were secured and moved as needed due to power loss. Sarah Michaels (Entomologist 1), Ed Freytag, and Brendan Carter (Pest Control Specialist 1) also assisted Cynthia Harrison in a secondary assessment of the BioLab as well as moving equipment. In addition to potential damage to facilities, vehicles may have potentially been damaged by hail. Princeton King (Pest Control Specialist 2) inspected trucks and other NOMTCB facilities for potential damage.

*February 8, 2017*

Cynthia Harrison continued to move additional equipment and colony-reared organisms due to the continued power outage. Princeton King continued to inspect and itemize potential damage to vehicles. Princeton also moved equipment to the Biolab due to the continued outage. Sarah Michaels planned treatment areas and surveillance in affected areas, assembled equipment, and managed data.

*February 9, 2017*

An adulticide treatment by truck was completed between Willowbrook Drive and Dwyer Boulevard in New Orleans East on the evening February 9 (Fig. 53). Mosquito surveillance by human landing collection was completed (Table 3). Human landing collection involves catching host-seeking mosquitoes attracted to a mosquito control inspector and are collected with a mechanical motorized aspirator. Power was restored at the Biolab and equipment was moved back by Cynthia Harrison.



Figure 53. Spray mission path along Willowbrook Drive and Dwyer Boulevard in New Orleans East on the evening of February 9.

Table 3. Landing rate results on February 9, 2017 in the tornado damaged area of New Orleans.

Date	Time	Duration*	Collector	Location & Coordinates	Mosquito Species Identified**
2/9/2017	6:11 pm	5 minutes	Princeton King & Brendan Carter	14001 Dwyer Blvd, New Orleans, LA (30.040610, -89.918139 in decimal degrees)	38 female <i>Culex nigripalpus</i> 8 female <i>Culex salinarius</i> 2 female <i>Aedes vexans</i>

\*A total of 48 mosquitoes were collected during the 5-minute collection period resulting in a collection rate of 9.6 mosquitoes per minute.

\*\*All mosquitoes collected are flood-water mosquito species.

*February 10, 2017*

An adulticide treatment by backpack was completed near the Mary Queen of Vietnam Church in preparation for Tet Festival in celebration of the Vietnamese New Year. An adulticide treatment was deemed necessary due to heavy mosquito pressure experienced by mosquito control inspectors the night before on February 10th. Princeton King conducted the backpack treatment and was assisted by Devante Lee (Pest Control Inspector 2) and Jurand Louis (Pest Control Inspector 2). Cynthia Harrison and Brendan Carter identified the mosquitoes from the human landing collections from the night before. Sarah Michaels will summarize surveillance data. A post-treatment human landing rate was conducted.